

# Attitude of Students Toward the Study of Mathematics in Odoben Senior High School, Ghana: Implications for Curriculum Implementation

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## Abstract

The purpose of the study was to investigate the poor attitude of students of Odoben Senior High School toward the study of mathematics and its implications for curriculum implementation. Specifically, the study investigated the factors that influenced students' poor attitude toward the study of mathematics, its effects on students' academic performance in mathematics. The study adopted the descriptive design with a population of 500 students and six teachers. The simple random sampling technique was used to select 10 students while six mathematics teachers were purposively sampled. A semi-structured questionnaire was used to collect data which was analysed thematically. The findings revealed that most students of the school had poor attitudes toward the study of mathematics because of teachers' failure to break mathematical concepts into their simplest forms for easy understanding, absenteeism of students in mathematics lessons, behavioural characteristic acquired through socialization in the school environment and lack of both qualified mathematics teachers and teaching and learning resources for the smooth implementation of the mathematics curriculum. The major effect was poor academic performance of students in mathematics. Based on the findings of the study, recommendations are made for teachers, parents and GES on how best to ensure that students adopt positive attitudes toward the study of mathematics.

**Keywords:** Attitude, Mathematics, Implications, Curriculum Implementation

## 1.0 Introduction

Attitude is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation (Orora 1986). Studies on students' achievement in mathematics for instance have been linked to favourable attitudes towards the subject as well as conducive school environment (Carolinem & Kaczala, 1980). This is affirmed by Tadesse (2006) who indicates that teaching methodologies which develop students' interest have direct positive effects on student' performance. Since teachers are the intermediaries of teaching and learning, students are crucial in what is actually taught as approved by the official curriculum. Teachers adopt particular methods of teaching depending on the needs of the students and this may differ from the official curriculum to be implemented. This calls for the need to consider selecting appropriate learning targets based on the characteristics of learners (Rodgers, 2000). Rhodreck (1997) reveals that no expressive teaching and learning can be effective without adequate instructional resources. For national curriculum to be fully implemented, the education authorities ought to supply schools with adequate and relevant teaching and learning resources to enable teachers and students to play active roles in the curriculum implementation process.

Curriculum plays a critical role in the academic performance of students and its implementation puts into use the structured or planned content relevant for the reflection of the societal cultural norms. It is important to note that after the curriculum is planned, the next thing to do is implementation. The final stage of curriculum implementation is in the classroom where teachers and students work hand in hand to bring together various components of the curriculum (Abubakar, 2008). Teachers are crucial in the implementation of the mathematics curriculum in Ghana. Teachers are the main implementers of the curriculum despite the existence of other stakeholders in the implementation process. The competence of teachers in the implementation process determines the quality of teaching and subsequently students' performance in the subject.

The implementation of the mathematics curriculum cannot be attained without the supervisory duties of the school authorities. The headmasters monitor and guide curriculum implementation by ensuring that schemes of work and lesson plans are prepared regularly. Effective curriculum implementation does not take place in schools where the headmasters are incapable of executing supervisory functions (Geoffrey & Rodgers, 2000). Oluwole (2001) is of the view that parental discipline affects academic output of students' degree of self-efficacy. Students of tolerant parents are too complacent, unmotivated, and lack self-efficacy. Ghanney (2007) advocates that positive parental attitude toward education, parental support and interest lead to improved academic achievements. Parents are expected to provide for the basic needs of their wards while the government ensures that school infrastructure, teaching and learning resources, among others, are made available to the school to

enhance the implementation of the mathematics curriculum. The inability of teachers, parents and other stakeholders to function as expected of the curriculum hinders the teaching and learning process.

The competences gained in the study of mathematics are widely used in all spheres of human life. Mathematics plays a key role in shaping how individuals deal with the various spheres of private, social, and civil life (Anthony & Walshaw, 2009). This justifies why it is important for all students who go through basic and senior high education in most countries are expected to study mathematics. Mathematics is therefore a core subject at the basic and senior high school levels of education in Ghana.

It is regrettable, therefore, that in contemporary times many students struggle with mathematics and perform abysmally low in their final examinations. In Ghana, students' performance in mathematics at the senior high schools has not been encouraging of late. Candidates are reported to have exhibited poor understanding of mathematical concepts and are unable to form the appropriate mathematical models which could be tackled with the requisite skills (Chief Examiner's Report, 2017).

Irrespective of the competence of teachers in the implementation process, attitude as an individual's pattern of thinking, acting and behaving is significant (Voeten-Smith, 2004). It has very serious implications on the learner, the teacher, the immediate social group with which the individual learner relates, and the entire school system. Attitudes are formed as a result of some learning experiences students go through (Harbison & Hanushek, 1992). In this respect, learners draw from their teachers' disposition to form their own attitude, which may likely affect their learning outcomes and therefore teachers with positive attitude toward mathematics are inclined to stimulate favourable attitudes in their pupils (Dzakadzie, 2015). Teachers' attitude and beliefs play very significant roles in shaping classroom practices (Voeten-Smith, 2004).

## 2.0 Statement of the Problem

Attitudes formed by students when studying mathematics tend to remain for a long time and these attitudes help them to learn mathematics better if it is positive or favourable (Evans, 1965). This may however not always be true since students may also form unfavourable attitudes as they learn mathematics in the senior high schools. There are some well-equipped senior high schools with well-organized classrooms and enough teaching and learning resources yet students in such schools perform gloomily poor in mathematics. Orora (1986) indicates that students in secondary schools who have very positive attitudes toward learning mathematics have interest to pursue further studies in mathematics.

Orora (2010) again stresses that the most glaring weakness in students' mathematics attainment in the West African Senior School Certificate Examination is the students' lack of knowledge of elementary techniques and their ignorance of simple algorithms and processes. The Ghana Education Service (GES) in collaboration with the West Africa Examinations Council initiated in-service training courses for mathematics teachers in senior high schools in Ghana in an effort to improve their teaching techniques (Dzakadzie, 2015). Despite these efforts, students of some schools do not learn mathematics adequately to enable them perform better in their final mathematics examinations (Etsey, Amedahe & Edjah, 2004). Failure to learn mathematics is an indication of some factors hindering effective teaching and learning of the subject (Costello, 1991). Odoben Senior High School is one of the senior high schools in Ghana whose students have very poor attitude towards the study of mathematics hence the need for this study.

## 3.0 Purpose of the Study

This study aimed at investigating the poor attitudes of students of Odoben Senior High School toward the study of mathematics and its implication for curriculum implementation. Specifically, the study sought to:

- Establish the factors that influence students' poor attitudes toward the study of mathematics.
- Identify the effects of students' poor attitudes toward the study of mathematics on their academic performance in mathematics
- Suggest measures that can be put in place to minimise students' poor attitudes toward the study of mathematics

## 4.0 Research Questions

1. What factors influence students' poor attitudes toward the study of mathematics?
2. What are the effects of students' poor attitudes toward the study of mathematics?
3. What measures can be put in place to minimise the poor attitudes of students toward the study of mathematics?

## 5.0 Significance of the Study

The findings and recommendations of the study would be very beneficial because:

- Teachers would be informed of the causes of students' poor attitude towards the study of mathematics,

it's their effects on their academic performance as well as measures to minimise it.

- Parents would be enlightened on the necessity to provide the educational needs of their wards.
- GES would also be aware of the need to provide adequate teachers as well as teaching and learning resources for effective curriculum implementation.

### **6.0 Scope of the Study**

The study was restricted to Odoben Senior High School in the Central Region of Ghana with focus on students' poor attitudes toward the study of mathematics because the researchers could not conduct the study in all schools which had similar challenges due to time and logistic constraints.

### **7.0 Limitations of the Study**

- Questions asked by the researchers, through the semi-structured questionnaire, might have been seen as framing the topic from the interviewers, not the interviewee's perspective.
- Creswell (2003) maintains that interviews present limitations since they produce data that have been filtered through the interviewee. The respondents had to respond to only questions that the researchers asked.
- Data are useful only when respondents are honest, and they provide answers that characterize their true attitude, as opposed to socially acceptable responses (Gay & Airasian, 2003). Respondents might not have given the correct responses.

### **8.0 Methodology**

#### **Research Design**

The study adopted the descriptive survey design rooted in the qualitative approach. Cohen, Minion and Morison (2007) emphasise that the descriptive design is appropriate for observing and describing the behaviour of participants deprived of the researcher influencing the outcome in anyway. The descriptive research design was used to describe students' poor attitudes toward study of mathematics.

#### **Population**

The population for the study was 300 first, second and third year students of Odoben Senior High School and their six mathematics teachers.

#### **Sample and Sampling Techniques**

The sample size for the study was 16 made up of 10 students and six mathematics teachers. The study adopted a multi-stage sampling technique to select the 10 students who had poor attitudes toward the study of mathematics while the six mathematics teachers were purposively sampled.

#### **Research Instrument**

Semi-structured questionnaire was used to collect data for the study. The questionnaire was made up of three sections. Section A was on the factors that influence students' poor attitudes toward the study of mathematics. Section B and C focused on the effects of students' poor attitudes toward the study of mathematics and measures that can be used to minimise it respectively.

#### **Validity and Refinement of the Instrument**

To ensure that the questionnaire was valid, it was designed in accordance with the research questions and objectives of the study. Two lecturers from the University of Cape Coast evaluated the questionnaire to check if all the items on it could elicit the needed responses and also to give their suggestions. The suggestions of the lecturers were used to revise the questionnaire for pre-testing.

#### **Pre-testing**

The instrument was pre-tested on 10 randomly selected students and six mathematics teachers of Nyakrom Senior High School. This was because students of Nyakrom Senior High School have similar learning characteristics as Odoben Senior High School but they do not form part of the main study sample. This in turn, led to the improvement of the questionnaire.

#### **Data Collection Procedure**

Data was personally collected by the researchers. The researchers were present and attended to every participant who had problem in responding to the questionnaire to ensure accuracy. The questionnaire was later retrieved from the participants.

## Data Analysis Procedure

Data gathered from the semi-structured questionnaire was coded and transcribed. The responses were grouped into themes as they emerged. Research questions were analysed descriptively and through identifiable themes. The collected data was analysed based on identified themes that emerged. The data was therefore analysed and discussed according to how they emerged during the data collection.

## 9.0 Results and Discussion

### Profile of Respondents

For the purpose of this study, respondents experiences are described in a narrative form, and direct quotations are used from the semi structured questionnaire to underscore the textural and structural experiences of the respondents. In order to preserve anonymity and confidentiality, the identities of the respondents have been concealed. Tables 1 and 2 show the profile of students and mathematics teachers who were respondents of the study.

**Table 1: Mathematics Teachers Profile**

Pseudonym	Gender	Number of Years of Teaching
Jacob	Male	5
David	Male	7
Nelson	Male	10
Francis	Male	10
Rita	Female	14
Josephine	Female	15

It can be seen from Table 1 that out of the six teacher-respondents, four were males while the rest were females. Furthermore all of them were experienced teachers with not less than five years teaching experience.

**Table 2: Students Profile**

Pseudonym	Gender	Year Group
Daniel	Male	1 <sup>st</sup> Year
James	Male	1 <sup>st</sup> Year
Stephen	Male	2 <sup>nd</sup> Year
John	Male	2 <sup>nd</sup> Year
David	Male	3 <sup>rd</sup> Year
Benjamin	Male	3 <sup>rd</sup> Year
Emmanuel	Male	3 <sup>rd</sup> Year
Janet	Female	3 <sup>rd</sup> Year
Sarah	Female	3 <sup>rd</sup> Year
Mary	Female	3 <sup>rd</sup> Year

From Table 2 it can be deduced that out of the ten student-respondents, two were in the first year, three in the second year and five in the third year. Thus half of the student-respondents were third years who had been in the school for long and were very conversant with the activities in the school.

### Research Question 1

What factors influence students' poor attitudes toward the study of mathematics?

This research question was aimed at finding out from respondents reasons for students' poor attitude towards the study of mathematics. The responses have been grouped into five themes.

#### **Theme 1: Interpersonal factors**

Six students admitted that they understood mathematics concepts as soon as they were taught but within a day or two, they would not remember even a single one because of lack of constant practice. Janet, a third year students, said "*studying mathematics is time consuming and it is only good to be studied by students who had good foundation of the subject from basic school but not those of us who had bad foundation*". She explained further that mathematics took almost all their time that could be used to study other subjects. The results show that while eight students did not agree that mathematics should be a compulsory subject for every student, all the teachers disagreed. Furthermore, four teachers reported that students did not take the subject as serious as their elective subjects. These revelations confirm Zeleke (1995)'s observation that interpersonal factors contribute to students' poor attitudes towards the study of mathematics.

#### **Theme 2: Students' Anxiety**

The results indicate that seven students stated that they felt uneasy and extremely fearful any time they were to

write mathematics class tests or examinations. James, a first year student stated “*everybody knows that mathematics exams are more difficult than the other subjects*”. Alomar (2006) argues that students’ attitudes towards the study of mathematics are formed with pre-determined mind that the subject is very difficult to learn. Eight students were of the view that their mathematics teachers did not give more room for them to ask questions. John, a second year students declared “*our teachers don’t allow flexibility for us to feel free to ask any question we want*”. The responses indicate that mathematics teachers did not make the subject very friendly for students to go along with, instead lessons were teacher-centred. If mathematics teachers make lessons very interesting and lively it will minimise the fear of the study of the subject and students will perform well in it.

### **Theme 3: Teaching and Learning Resources**

The results of the study reveal that all the respondents indicated that inadequate teaching and learning resources make teaching and learning unexcited and this agrees with the opinion of Zeleke (1995) that availability of teaching and learning resources motivate students to learn. A teacher with ten years teaching experience, Nelson, remarked “*insufficient teaching and learning materials could be a reason for students’ poor attitudes toward mathematics since the class does not become as interesting as other subjects*”. Teaching and learning resources are key to the formation of positive attitudes by students towards the study mathematics and consequently the smooth implementation of the mathematics curriculum. Inadequate resources is therefore a major cause of students’ poor attitude formed towards the subject.

### **Theme 4: Punctuality of teachers and students to class**

The findings of the study show that nine students were of the view that their mathematics teachers attended classes regularly and were also punctual. A third year student, Sarah, said “*our mathematics teachers are always punctual at class*”. Francis, a male teacher, confirmed “*almost all the mathematics teachers I know report to class on time to teach*”. Some students deliberately however absented themselves from mathematics classes with the excuse that their teachers were not punctual. Such students had very poor attitude towards the subject and therefore did not performed well in it. Engin-Demir (2009) emphasises that teachers’ punctuality to class as a compelling strategy to encourage students to be punctual in class to learn. Punctuality of teachers encourage students to have love and passion to study the subject

### **Theme 5: Motivation**

Seven students agreed that as a result of lack of motivation from teachers and parents, students were not delighted to study mathematics and that resulted into poor performance in their mathematics examinations. Mary, a student in the third year, reported “*our mathematics teacher gives most of the questions in the text book to us as take-home assignment without explanation and this does not encourage us to learn mathematics*”. Another third year student, Benjamin, declared “*teaching and learning mathematics should be more interesting in the junior high schools to motivate students to have interest in it when they get to the senior high schools*”. The teachers however maintained that they always tried to motivate students. These views of the respondents corroborate Oluwale (2001)’s assertion that if students are not well motivated to develop interest in teaching and learning of mathematics at the lower levels of the educational ladder they are not likely to pursue the subject as a major programme at higher levels. Positive reinforcement and motivation are significant strategies for teaching and learning of mathematics. Lack of motivation can result in students developing poor attitudes to the subject and therefore hampering the smooth implementation of the mathematics curriculum

## **Research Question 2**

What are the effects of students’ poor attitudes toward the study of mathematics?

The objective of this research question was to reveal the outcome of students’ poor attitude towards the study of mathematics. The responses have been categorised into two themes.

### **Theme 1: Poor Academic Performance in mathematics**

Five students indicated that students who did not behave very well during mathematics lessons performed academically low in the subject. David, a second year student, remarked “*some of my friends misbehave during mathematics classes so our mathematics teacher sometimes does not explain things well because my friends will not listen*”. He explained further “*students who behaved well during mathematics classes performed better because they listened attentively to what the mathematics teachers would say and they were able to understand every concept very well*”. Thirteen respondents agreed that poor attitude toward the study of mathematics decreased students’ chances of performing better in the subject and this confirms Aronson (1994)’s claim that factors such as fear, anxiety and negative perceptions about mathematics are accountable for the poor performance in the subject. Students’ poor attitudes towards the study of mathematics is therefore a major cause

of their poor academic performance in the subject.

### ***Theme 2: Carryover Effect***

The outcome of the study reveals that students' poor attitudes toward the study of mathematics had influence on other related subjects. All the teachers believed that poor attitudes of students toward the study of mathematics decreased their performance in mathematics as well as other mathematics related subjects like science. Five student agreed that poor attitudes toward the study of mathematics had negative effects on other related subjects. Apparently, Emmanuel who was in the third year, maintained, "*our poor attitudes developed toward mathematics has affected our performances in core science because there is mathematics in physics and chemistry*". This assertion is in agreement with Chachisa (2005)'s observation that socio-personal factors such as unwillingness, low self-esteem and low self-motivation of students in the study of mathematics are likely to influence their attitudes and subsequently poor performance in other mathematics related subjects. This supports the view of Andualem (2006) that students' poor behaviours and attitudes towards mathematics are stumbling blocks to their performance in the subject and such attitudes are likely to be extend to other subject areas.

### **Research Question 3**

What measures can be put in place to minimise students' poor attitudes toward the study of mathematics? The main purpose of this research question was to elicit from respondents the possible solutions that could help curtail students' poor attitudes toward the study of mathematics. The responses have been grouped into four themes.

### ***Theme 1: Realistic rather than abstract teaching***

Fifteen respondents expressed the view that appropriate teaching strategies could encourage students to have very good attitude towards the study of mathematics and so the school should stress on that. Rita, a teacher who had taught for fourteen years, declared "*teaching mathematics should start with things which are familiar to students before unfamiliar concepts are introduced, that is teachers should ensure that he starts from what students already know and have in their environment before moving to more difficult concepts*". The responses affirm the opinion of Gangaru (2004) that mathematics teachers should ensure that they make use of real objects and materials which students can manipulate for effective understanding of concepts before proceeding to abstract ones. The concept of teaching mathematics from known to unknown is therefore essential in minimising students' poor attitudes towards the study of the subject. Melesse (2006) also subscribes to this assertion by indicating that, application of the right forms of mathematical principles and methodology is one of the best measures to motivate students to understand the need to study mathematics.

### ***Theme 2: Organization of Peer Teaching***

Ten respondents identified peer teaching as a strategy that can enhance students participation in mathematics lessons and thereby minimising the development of poor attitudes towards the subject. In this regard, a teacher with seven years teaching experience, Kenedy, suggested "*peer teaching approach is the best intervention to be used to minimise students' poor attitudes towards the study of mathematics because students understand concepts better when their colleagues explain them than the teacher-centred methods that teachers use to teach*". This finding confirms the view of Costello (1991) that students have more time and patience to explain concepts to their colleagues than their teachers.

### ***Theme 3: Full Implementation of Formative Assessment***

Another measure that was identified by all the respondents as capable of minimising students' poor attitudes towards the study of mathematics is the use of formative assessment such as class tests, exercises, assignments and end of term examinations. A first year student, Daniel, said "*as a result of take home assignments, I am able to explore and ask my elder brother who is a university mathematics student to help me*". A second year student, Stephen confirmed "*constant class tests help make students study mathematics*". A teacher with ten years teaching experience, Francis, admitted "*conducting class exercises every day to determine students' understanding and application of mathematics concepts will help students*". He continued "*mathematics assignments are meant to help students explore additional methods in solving mathematical problems; these assignments if well done by students personally or through consultation, encourage them to do better*". The actual purpose of frequent assignments after every lesson is to prepare students to develop the habit of learning and solving mathematical problems personally rather than depending solely on the teacher to "spoon feed" them. This observation is consistent with Engin-Demir (2009)'s assertion that assessment motivates students to learn.

### ***Theme 4: Effective Curriculum Implementation***

Amadi and Obiefuna (2005) observe that curriculum implementation is the actual engagement of learners by the

teacher with planned learning opportunities. All the participants of the study agreed that teachers, students, the headmaster as well as external agents such as parents, community members and local authorities should play their respective roles very well for effective implementation of the mathematics curriculum. All the mathematics teachers unanimously agreed that they had been contributing to the implementation of the school curriculum. One female teachers, Josephine who had fifteen years teaching experience, said “*teachers are very important in curriculum implementation because we break down the syllabus presented by curriculum planners into smaller segment such as schemes of work, modules and units, selecting appropriate learning objective before teaching it.*” She continued “*we should therefore continue to play our roles effectively*”. These assertions agree with Alaezi and Onwuka (1990)’s observation that when curriculum planners have put in their best to present a curriculum for use in schools, when facilities and other material needs have been provided, the resources person who would ensure that the curriculum objectives are realized is the classroom teacher.

All the teacher-respondents also confirmed the importance of students in the teaching and learning process. Students influence teachers in the selection of content and learning experiences since teachers need to consider the students relevant previous knowledge before determining what is to be taught and the strategies to be used in teaching. Students therefore cannot be left out in curriculum implementation.

Implementation of mathematics curriculum cannot be effective without the supervisory function of the headmaster. He allocates subjects to be taught by teachers and creates an atmosphere conducive to effective teaching and learning. Very good supervision is therefore necessary for effective curriculum implementation. The use of teaching and learning resources in the implementation of the mathematics curriculum cannot be underestimated and these are provided by the headmaster to the teachers. “John, who is in the second year, reiterated “*the use of teaching materials by the mathematics teacher always helped us to understand topics better and it also made the class lively*”. This confirms Rodgers (2000)’s assertion that no meaningful teaching and learning take place without adequate resource materials.

Respondents further believed that external agencies such as parents, community members, and local authorities also influenced curriculum implementation. They explained that the agencies provided the schools with financial assistance and equipment and therefore sometimes influenced management decisions and thus played leading roles in curriculum implementation. External agencies must augment their contributions to ensure effective curriculum implementation.

The school environment is also an important factor in curriculum implementation. A teacher who had five years teaching experience, Jacob, pointed out “*the parents of most the students are poor and so they are not able to buy all their educational needs and this affects their studies*”. Another student also revealed that the school lacked mathematics teachers and other teaching resources. These information corroborate the observation of Rhodreck (1997) that schools located in rich socio-economic environments and those that have adequate human and material resources can implement the curriculum to an extent that would be difficult or impossible for schools in poor economic environments. Thus the school environment is a factor that influences curriculum implementation and so must be improved upon.

From the foregoing, Onyemerakaya (2003)’s opinion that curriculum implementation is the actual use of the curriculum plan or document in the classroom cannot be discounted. Curriculum implementation can therefore be described as the stage in the midst of learning activities where teachers are involved in negotiation aimed at promoting learning. Mathematics teachers should therefore play the roles expected of them to ensure efficient and effective implementation of the mathematics curriculum.

## **Major Findings**

### ***Factors that led to students’ poor attitudes toward the study of mathematics***

- Students formed poor attitudes toward the study of mathematics as a result of their teachers’ failure to break mathematics operations and problems into simplest forms for understanding.
- Students did not see the need to study mathematics as a core subject in the senior high schools and therefore deliberately absented themselves from mathematics lessons.
- Students poor attitudes toward the study of mathematics were behavioural characteristics acquired through socialization in the school environment.
- There were inadequate qualified mathematics teachers as well as teaching and learning resources for the smooth implementation of the mathematics curriculum.

### ***Effects of students’ poor attitudes toward the study of mathematics***

- Poor performance in mathematics was the major effect of students’ poor attitude toward the study of the subject.
- Students’ poor attitudes toward the study of mathematics resulted in the poor performance in other mathematics related subjects.

***Suggestions by participants on measures that can be put in place to minimise students' poor attitudes toward the study of mathematics.***

- Mathematics teachers should present their lessons from known concepts to unknown ones.
- Peer teaching must be encouraged in the study of mathematics since students have enough time and patience to explain concepts to their peers.
- More formative assessment should be conducted in the teaching and learning of mathematics.
- Teachers must use teaching and learning resources in mathematics lessons.
- Mathematics teachers must ensuring effective implementation of the school curriculum by playing their roles expected of them very well.
- Headmasters should provide the needed teaching and learning resources as well as good supervisory roles for effective implementation of the school curriculum
- There is the need for other external agencies such as parents, community members and local authorities to play meaningful roles to ensure effective implementation of the school curriculum.

**10.0 Conclusions**

- Students poor attitude toward the study of mathematics is prevalent in Odoben Senior High School
- Poor performance in mathematics was the major effect of students' poor attitude toward the study of the subject.
- The poor attitude toward the study of mathematics can be attributed to students, teachers and GES.
- Both students and teachers in the school are aware of some of the measures that can be put in place to minimise students' poor attitude toward the study of mathematics.
- The teachers in the school play leading roles in the implementation of the mathematics curriculum despite the fact that the headmaster and the other external agencies exist to complement the roles of the teachers.

**11.0 Recommendations**

Based on the findings of the study the following recommended are made:

- Orientation programmes should be organised for students of the school on the importance of studying mathematics as a core subject.
- GES should provide the school with adequate and qualified mathematics teachers for effective implementation of the mathematics curriculum.
- GES should organise frequent in-service training programmes for mathematics teachers in the school to help them become abreast with the effective ways of teaching mathematics.
- Mathematics teachers should make use varied teaching methodologies so that students can grasp concepts easily.
- Mathematics teachers should use appropriate formative assessments that will motivate students to learn.
- External agencies such as parents, community members and local authorities should increase their assistance to teachers in the provision of instructional resources to promote effective teaching and learning of mathematics to ensure effective implementation of the mathematics curriculum.

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