

**FACTORS AFFECTING THE PERFORMANCE OF SECONDARY
SCHOOL STUDENTS' MATHEMATICS IN OYO STATE
"A Case Study of Secondary Schools in Ibadan North West Local
Government Area of Oyo State"**

BY

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CERTIFICATION

This is to certify that this project was carried out by *Surname, Firstname Othername* and has been read and approved for the Department of Mathematics, at Emmanuel Alayande College of Education, Oyo.

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DEDICATION

This project is dedicated to no one but Almighty Allah and my beloved parents
Mr. and Mrs. *Surname*.

ACKNOWLEDGMENT

All praise and adoration belongs to Allah, The Lord of the Universe. I give thanks to him for his protection and guidance over me throughout the four years course of study.

I further thank my loving parents, Mr and Mrs. *Lastname* for their support and encouragement. I wonder if I could have gone this far without them.

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ABSTRACT

Lack of home supports, poor standard of living, students' lack of motivation to learn or anxiety, poor teaching method, unfamiliar teachers' attitude, classroom congestion and low utilization rate of classrooms are common features related to secondary education in Nigeria. They have negative impact on both secondary school teacher productivity and student learning input, and thus secondary school students' academic performance.

Thus, study investigated the extent to which the aforementioned factors determine the performance of secondary school students in Senior Certificate Examinations (SSCE) conducted by the West Africa Examinations Council (WAEC) in Oyo State, Nigerian. 200 students from 5 secondary schools in Ibadan North-West local Government Area of Oyo State were randomly selected for the study. The multiple regression analysis, one-way analysis of variance and chi-square were used to analyze the data. The four research hypotheses which guided the study was tested at 0.05 minimum level of significance.

Findings revealed that the class factors when taken together, determined significantly secondary school students academic performance in Oyo state, Nigeria. These factors along with students' variable and teachers' variable were also found to have significant influence on secondary school student's mathematics performance in the state.

Home support and parents' socio-economic status were however discovered not to have significant influence on the students' achievement in mathematics.

These findings are of great significance for educational planners, policy makers, parents, teachers and both federal and state governments.

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CHAPTER ONE

1.0 INTRODUCTION

Mathematics as a subject affects all aspects of human life at different degrees. The social, economic, political, geographical, scientific and technological aspects of man is centered on numbers. Disciplines where numbers are predominant and form integral part of mathematics include: statistics, accounts, arithmetic, engineering, etc. For example the earliest civilization of mankind came through mathematical manipulations.

The inter-relationship between mathematics, development and advancement of humans shows the importance of mathematics in life due to its numeral and symbolic nature, it is more related to the scientific and technological facets of man's world than to any other aspect as it occurs and re-occurs in the physical and natural sciences.

The basic skills underlying all scientific and technological skills are the control of the tools of mathematics.

Mathematics is seen as the language used to describe the problems arising in most branches of science and technology. It is a subject that is related to other school subjects in areas like number and numeration, variation, graphs, fractions, logarithms and indices, algebraic processes, solution of equation and also in area and volume.

However, the performance of students in mathematics has been a great concern to the society. Awokoya (1975), Fafunwa (1980), both agreed in different researches that we live in a world where science and technology have become an integral part

of the world culture, therefore for any nation to be relevant; it must not overlook the importance of mathematics in her educational system.

Accordingly, the observed poor performance in mathematics has been a matter of serious concern to all well-meaning educators. Students' poor performance in mathematics over the years has been attributed to the fact that the subject is difficult. In the same view, student's performance in mathematics tests has been observed to vary from person to person and from school to school.

This study therefore sought to provide data on some of the factors that affects performance of students in mathematics and the suggestions and recommendation that can best be used to curb them.

1.1 HISTORICAL BACKGROUND OF THE STUDY

In most third world countries, enrolment exceeds provision for secondary education in terms of adequate furnished classrooms, hence, the perennial problem of classroom congestion. The poverty level and low classroom utilization rates in these countries worsen the situation.

Nigeria is a third world country where the situation is not different. Secondary education in the country is poorly funded, hence most of the secondary schools experience classroom congestion, low students-classroom-space and low classroom utilization rates. These situations may likely affect secondary school students' academic performance adversely; hence this sought to establish the extent to which the selected classroom factors determined secondary school student's academic performance in Oyo State, Nigeria.

The large number of students passing through the secondary school system in Oyo State is a serious problem, particularly with the state government's inability to provide adequate furnished classrooms. The National policy on Education prescribed a maximum of 30 students in a class, but in most secondary schools in the state average class size exceeds 50. The situation has negative impact on the average classroom space per student. Yet, these students need to learn in comfort.

In most of the secondary schools in the state, the classroom utilization rate in perpetually low. This is because most of the schools are not able to have the eight periods in most school days. The few secondary schools that have enough teaching staff, at times have low classroom utilization rates, perhaps because of poor supervision. This situation does not favour academic learning.

The teacher factor and students' achievement in mathematics at the senior secondary school level is another concern. The issue of teacher as a factor that affects students' achievement in mathematics is not yet resolved. TIMSS (2002) found that trends in mathematics achievement over three decades showed a "re-occurring decimal" pointing to the teacher as a major decision variable in mathematics achievement. Earlier, Afrassa and Peeves (1999) showed that in Australia, the teacher factor cannot be undermined in questioning low achievement of students in mathematics.

In the same vein, the National Centre for Education Standard (2000) measured and found that teacher factor stands as a major pivot in students' general achievement and mathematics in particular. Furthermore, Lamb and Fullarton (2000) found that in Australia, although student background variables influenced their achievement in mathematics, classroom and school factors contributed substantially.

In the Nigerian context, Ibebuike (2006) had noted that many students, even as far back as their primary school days did not take interest in mathematics to a meaningful degree; remarking that methods of instruction were not very favorable to these students. He posited that this was due to the paucity of competent and adequately qualified mathematics teachers who were invariably over labored. Arguing further, Iwuoha (2007) identified lack of thorough grooming in mathematics concepts; unsuitable teaching environment, wrong evaluation techniques by both teachers in schools and WAEC's lack of incentives to mathematics teachers as major factors that caused low mathematics achievement. Hence, this study seeks to investigate teacher variable such as his method of teaching and attitude towards mathematics and their relationships with students' achievement in mathematics.

In the same vein, a students' home environment can be seen as an agency that aids in the construction of student attitudes and school achievement. Martin (1996) posited that many studies have in fact shown that there is a relationship between family background characteristics and students' achievement. Researchers have suggested that achievement in mathematics and science in secondary school is a function of many interrelated variables such as students' ability, attitudes and perceptions, socio-economic variables, parent and peer influences, and school related variables. Many of these variables are home and family-related and thus are difficult to change and are outside the control of educators (Sign, Granille and Dika, 2002).

Arguing further, Beane and Lipka (2003) posited that some of the young peoples' difficulties at school can be due to problems caused by parents. They argued that home is the backbone for children's personality development and influence children directly and indirectly through the kind of relationship the family

members have among themselves as well as through helping them to get in contact with society.

In the Nigerian context, Sharma (1997) contended that home environment exerts a significant influence on students' educational aspirations, which in turn influence the school-to-work transition. In other words, when parents have high expectations, youths have high occupational aspirations. Sjogren (2002) emphasized that youths from poorly educated parents are sensitive to economic incentives since they are to a greater extent attracted to occupations with high wage rates and high return in education.

Other factors such as mental disorder or deceases and lack of monitoring of schools by constituted government authorities and the corrupt nature of the educational system that has given a firm support for examination malpractices has worsen the problem.

Hence, this study seeks to investigate the extent of all these factors relationship with students' achievement in mathematics at the senior secondary II level in Oyo State, Nigeria.

1.2 PROBLEM STATEMENT

The Chief Examiners' reports of results of our public examinations (WAEC, 2009-2013) had shown markedly a decline in the percentage of passes in mathematics. Ahiakwo (2006) found that the performance of various levels of students had decelerated over the years especially in mathematics achievement with that of Nigerian children quite remarkable. There is a perceived risk that the percentage of failures in secondary schools and in universities is greater in scientific matters than

in others. STAN (1992) has earlier outlined a number of factors responsible for students' poor performances in science disciplines and mathematics in particular. These included the nature of science curricula, teachers' methods of teaching, the parents, the government and lack of science facilities in schools amongst others. Ojo (2004) in his paper "improving mathematics teaching in our schools" identified the teacher problems as one of the problems of teaching mathematics. Does that suggest a likely relationship between the teacher variables of method of teaching and attitude towards mathematics and students' achievement in mathematics? To what extent do these teacher variables relate to students' achievement in mathematics at the senior secondary students level in Oyo State, Nigeria? Hence, this study is poised to investigate these phenomena.

An increasing number of students are experiencing mathematics problems. On the international scene, United States of America had recorded dropping percentage in mathematics achievement (Coetzer, 2001). The national pass rate for mathematics in South Africa was 49,5% in 2004, dropping to 46,3% in 2005 and to 42,1% in 2006 (Pretoria News, II July, 2007). In the case of Iranian students, Kiamanesh (2005) found that factors responsible for variance in mathematics included home background of the students (2,5%). In the Nigerian context, Ojimba (2000) had found that the governments, parents, guardians, teachers and the general public have continued to show concern about the standard of mathematics and the consequent poor performance in mathematics of our primary and secondary school pupils. Corroborating this view, Adegboye (2001) posited that the general poor trend of performance by students in mathematics at the secondary school level is no longer debatable. Though, Adeniye (2003) had associated the poor performance of students in mathematics to poor teaching methods, the literature on home background factors and achievement in mathematics are scanty.

Re-echoing the relevance of the home to science achievement in general, Ahiakwo (2006) harped that home science experience, are useful to formal school science. He stated that if a good teacher should teach a lesson beginning from the known to the unknown, a good starting point is the previous knowledge arising from what the learner knows. A careful perusal of these statements suggests a likely relationship between home background factors and students' achievement in mathematics. The question now comes – to what extent does home background factors relate to students' achievement in mathematics at the senior secondary school level in Oyo State, Nigeria?

The poor funding of education in most third world countries does not enable the school system to have manageable class sizes, adequate student classroom space and appropriate class utilization rates in spite of the fact that these factors determine the productivity of teachers and students academic performance. Hence, this study is interested in the investigation of the extent to which class factors like class size, student-classroom space and classroom utilization rate determined secondary school students' academic performance in Oyo State of Nigeria between 2009 and 2013 school years. The study tried to establish the relative and composite impact of these factors on students' academic performance in the state.

1.3 SIGNIFICANCE OF THE STUDY

The study is to investigate the retarding role of factors impeding students' mathematics performance in order to improve the standard of the students' performance in Mathematics in secondary schools in the selected schools and the state in general.

Hopefully, the result of this research will be of benefit to the teachers, learners, government and to the parents and it will help in monitoring academic progress of the students and arresting or curtailing the deadly effects of the highlighted factors.

1.4 RESEARCH OBJECTIVES.

The main concerns of this study are:

- The factors that affects secondary school students' mathematics performance.
- To study the joint i.e combined effect of the factors and their individual effect.
- To discuss how these factors affect students' performance for necessary approach to correct them
- To explain how the government, parent, teacher, school and students can reduce or exterminate these effects
- To suggests ways through which the above listed agents can succeed in tackling the menace.

1.5 SCOPE AND LIMITATION

1.5.1 SCOPE OF THE STUDY

The scope of the study is to understudy the factors that have been noted to impede students' performance in Mathematics in secondary schools in some selected schools in Ibadan North West Local Government of Oyo state. The selected schools for the study were:

- Army Barracks Grammar School, Letmmauck Cantonment, Mokola, Ibadan.
- Oba Abbass Akinyele High School, Eleyele, Ibadan.
- Onireke Girls Grammar School, Ibadan.
- Eleyele High School, Eleyele, Ibadan.
- An-warul Islam Grammar School, Eleyele, Ibadan.

Rational sampling was used among Senior Secondary II students to select students for participation in the research.

1.5.2 LIMITATION OF THE STUDY

The research is however limited by the low number of schools (5 in all) and students used (100 altogether). This might make it very difficult to generalize the outcome of the result as the sample is too small to represent the population.

Poor reception from schools or teachers and the students discouraging attitude towards the research programme could also affect the outcome.

1.6 RESEARCH QUESTIONS AND HYPOTHESIS

Research Questions

- How can you rate the performance in mathematics of Oyo state senior secondary students?
- What are the factors that determine secondary school students performance in mathematics?

Research Hypotheses

- Home Support and Socio economic status do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.
- Teacher variables (like attitude in class, method of teaching, qualification e.t.c) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.
- Student variables (readiness to learn, attitude & mindset, sex e.t.c.) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.
- Class factors (like class size, student-classroom space and class utilization rate) do not significantly affect secondary school students' performance in mathematics in Oyo State of Nigeria.

1.7 JUSTIFICATION OF THE STUDY

The justification for the research is the insight it provides into the factors underlying secondary school students' poor performance in mathematics. The Chief Examiners' reports of results of our public examinations (WAEC, 2003-2008) had shown markedly a decline in the percentage of passes in mathematics. There is a perceived risk that the percentage of failures in secondary schools and in universities is greater in scientific matters than in others. Urgent steps therefore need to be taken.

STAN (1992) has earlier outlined a number of factors responsible for students' poor performances in science disciplines and mathematics in particular. These included the nature of science curricula, teachers' methods of teaching, the parents,

the government and lack of science facilities in schools amongst others. The project further confirms this and describes the weight of each the factors.

The Third International Mathematics and Science Study (TIMSS) represent the most comprehensive international comparism of students' achievement yet conducted (Kiamanesh, 2005). The TIMSS assessment was conducted to study the effects of different factors on students' achievement, including instructional activities, classroom environment, home background and possessions, students' confidence in mathematics and science ability, and students' attitudes towards mathematics. This project also supports the outcome of the research in our own local environment.

In conclusion, problems are half solved if their causes are identified. The awareness provided by this study leads to control over the problem of poor students' performance in mathematics and how it can be achieved. The roles of all the necessary agent involved is also itemized and if well implemented can improve the performance of students' in mathematics in particular and the standard of education in general.

1.8 DEFINITION OF TERMS

PERFORMANCE: An act or process of performing a task or function (Concise Oxford English Dictionary)

FACTOR: A circumstance, facts or influence that contributes to a result (Concise Oxford English Dictionary)

ACADEMIC: connected with education; especially studying in schools and universities. (Oxford Advance Learner Dictionary)

ACHIEVEMENT: a thing that somebody has done successfully, especially using their own effort or skill. (Oxford Advance Learner Dictionary)

ATTITUDE: the way that you behave towards somebody or something that shows how you think and feel. (Oxford Advance Learner Dictionary)

SUPPORT: to help or encourage somebody or something by saying or showing that you agree with them/it.

: to give or be ready to give help to somebody if they need it.

(Oxford Advance Learner Dictionary)

CHAPTER TWO

2.0 LITERATURE REVIEW

The students' achievement in the outcome of mathematics tests depends on how much interest the students have in the subject. Achievement processes have been viewed by the characteristics of students and their environments, utilization of teaching-learning models, instructional materials as well as the structural ability of the students. Human and social psychologists have viewed the term performance or achievement in varying ways. On the effect of attitude and consistent overt behavior, that can be manifested by an individual through a pattern of performance in a given task, Linn (1965), Anderson (1942), Akpan (1989) all agree that the lack of straight line relationship between attitude and consistent action is not real. They concluded that if an individual is not influenced by fear or other external influences, the individual would always produce consistent action or behavior which will reflect his attitude towards the object of interest. This is to say that if an examinee has an unfavorable attitude towards a subject, then this will reflect in his performance on that subject. They confirmed that attitude predicts behavior.

Thus, it can be inferred that the perceived difficulty of mathematics tests, by some examinees is as a result of their poor attitude towards the subject.

On the influence of sex on performance in mathematics tests, Mitchelmore (1971) acknowledges the superiority of males over females when he noted that in all tests, boys obtained higher scores than girls at 0.01 levels.

Also Maccoby and Jacklin (1975), Fischer and Walker (1972), Grambs (1972), Comber Keeves (1973), Fin et al. (1979), Fennema and Sherman (1977) and Tyler (1961) in separate studies found out that boys clearly perform better than girls in mathematic tests. Maccoby (1966) referred to the differences as a direct effect of

sex stereotyped interests. In another study it was revealed that “members of each sex are encouraged in and become interested in and proficient at, the kinds of tasks that are most relevant to the roles they currently or are expected to play in the future” (Lee and Stewart 1976 p. 449).

On school location and performance, Simmelkjaer (1979), Friedman (1962), Bell (1971), Kostman (1977) and Bell (1975), in their studies reported that educational institutions in the urban share common features of learning impediments such as reading retardation, high absenteeism, drug abuse, students vandalism, and apathy. These vices as well as overcrowding, account for the causes of poor performance in the urban school as compared to schools in the rural areas.

However, in contrast, Ogunlade (1973), Lawin (1973), Obot (1991) and Anwana (1979) all disagreed on this view. They maintained that schools in the urban are well staffed, and with good facilities. Hence these factors induce better performance in the urban than the rural areas.

On school type and performance, opinions and positions of many researchers have shifted with time. Thus, in the seventies and eighties, it was common to see headlines as ‘Crisis Hits

Private School’ or “College in Crises” West (1982) reported that private schools were those days in financial trouble. However Washing Post (April 13, 1981) reported contrary to this view when it ran the story concluding that private schools are more integrated than public schools and that they produce better cognitive outcomes even as they control for student quality.

2.1 TEACHERS' VARIABLE

a) Teachers' method of teaching and students' achievement in mathematics

Ojoko (2001) defined teaching as the art and science of directing the learning process. According to him, teaching is often viewed narrowly as a process of imparting knowledge and skills in developing attitudes. It also entails managing instructional facilities and equipment, providing and organizing learning materials and resources and meeting students' needs. However, Gbamanja (2001) stated certain principles of teaching to include: planned teaching results in more teaching; students tend to achieve in ways they are tested; students learn more effectively if they know the objectives and are shown how to gain the ends; the teachers function in the learning process is that of guidance to reach an objective and that pupils learn from one another. He pointed out that the problem of stimulating students to be thrilled with learning and gaining the zest for education that will continue for life is an elaborate task.

Furthermore, he pointed out that the teaching profession is concerned fundamentally with the attainment of maximum beneficial learning for the individual. It is the teachers' task to ensure that learning is efficient and effective in order for students to discover their human potential. Having examined the basic principles of teaching, we proceed to establish the relevance of the teachers' method of teaching on student achievement with reference to mathematics teaching. Etukudo (2002) had pointed out that the inadequacy or otherwise of a facilitator, instructor or a teacher as the case may be definitely produces a conspicuous effect on both the learner and what is learned. Furthermore, two teachers can teach the same group but the average learning outcome may vary. This shows that what is learned is a function of what is taught.

Sometimes, two schools located in the same community have significant variation in their mean performance in standardized achievement test. The reason may not be far-fetched. It may be attributable to anemic pedagogical approach of teachers. In the same vein, Manouchetri (2002) pointed out that good subject matter knowledge alone is not enough for a teacher to teach well; they (teachers) need adequate knowledge of how to teach to enable them perform well and give out a rich harvest.

Iwuoha (2001) observed that it was teachers' lack of effective methods of teaching mathematics that scared the students away from mathematics. Other studies such as Iwuoha (2000) and Ibebuike (1999) had earlier revealed that lack of thorough grooming in mathematics concepts; unsuitable teaching environment; wrong evaluation technique by both teachers in schools and WAEC; and lack of incentives to mathematics teachers were responsible for the low achievement in mathematics.

Invariably, methods of teaching are derived from four modes of teaching as postulated by Gbamanja (2001). These four modes of teaching are didactic mode, heuristic mode, philetic mode and the guristic mode. He further explained that the didactic is the telling mode of teaching. Activities of this mode include: lectures, assignments, recitations and examinations. The content of this mode of teaching is traditional subject matter.

The heuristic mode involves the inquiry and discovery methods. Here, the teacher acts as an arranger, organizing inquiry/discovery activities to facilitate meaningful learning. Activities of this mode include organizing learners, giving criteria, holding conferences and checking progress of students. However, the philetic mode of teaching is the affective style and it involves the arousal of students'

feelings or opinions. A philetic teacher is a friend, counselor and a 'parent'. The teacher who operates in this mode creates moods and a performer of things for the enjoyment of students. All these activities are focused on the ego of the learner.

The guristic mode of instruction involves the teacher explaining his experiences or feelings. There is no motive to teach per se; no desire to impart any of the above three modes. From the teacher's information about his own view of life, students pick out what their lines of interest are. The guristic teacher is a good interpreter of the future. He sees the future and imagines for the learner. His major activity involves reflective thinking.

However, various methods of teaching include lecture method, discussion method, demonstration method, project method, field trips, discovery/inquiry method, laboratory methods, the process approach, individualized learning methods and questioning methods. These methods of teaching are embedded in the mode of teaching enumerated above. While method is a way of doing something or an approach adopted by a teacher to explain a subject matter to a group of students or learners; methodology means the study and practice of various methods of teaching and it involves all the things a teacher would do to enhance teaching and learning. These include different teaching methods, clear statements of instructional objectives; learning resources, presentation skills, writing and following a good lesson plan.

Furthermore, Aina (1982) had earlier demonstrated the importance of appropriate method in teaching and learning when she referred to the "triangle of teaching". Constituting the triangle are the teacher, the learner and the subject matter with the method in the middle of the triangle as the determinant factor in teaching and learning. Each of the factors at the apexes of the triangle is very important to the

selection and development of a method. Therefore, there is no one method that could be referred as the most effective. Rather, a good teacher considers the age of the learners and their assimilation potentials/objective of the lesson in the selection of his method. Ojoko (2001) identified several methods that science teachers could use in presenting scientific information, principles and skills to the learners. These include discovery or inquiry method, field trip, discussion method, demonstration method and the laboratory method. He opined that the success of these methods of teaching depends largely on two factors – the use of teaching aids by the teacher and the use of motivation by the teacher.

Alamina (2001) had defined teaching aids as all materials and devices that a teacher would need for optimum teaching. She emphasized that teaching aids are materials and devices that enhance teaching and learning; in some cases serve as substitutes to reality. However, teaching aids should fit into the work of the class in a logical and sequential manner. The use of teaching aids for a particular topic is generally determined at the lesson planning stage.

Earlier studies had revealed the importance of teaching aids in the achievement of students in mathematics. Scopes (1973) remarked that textbook provides something of a prop, giving the requisite mathematical content at least to presentation and providing the necessary materials for students to be involved in doing mathematics for themselves. Explaining that mathematics is for all, he further contended that every normal student is capable of good mathematical reasoning if attention is directed to the activities of his interest. In his own view, Butler (1960) stressed that multisensory aids and laboratory/field experiences in mathematics are often regarded as means of motivation. They are indeed avenues through which important learning can and should take place. Chapman (1973) also stressed the importance of teaching aids when he said “I hear and I forget, I see and

remember, I do and understand”. With this, he has emphasized the use of instructional materials by both teachers and students of mathematics for better understanding of its concepts.

In his contributions to the approaches of teaching mathematics, Salau (2002) posited that by its very nature mathematics is abstract and extra effort is required to bring students to understand its underlying concepts, principles and applications. Specifically, many principles and concepts in mathematics are not easily explained with common sense deduction. This obviously adds to the difficulty students’ encounter in the comprehension of mathematics generally. Notably, examples of these concepts are symmetry, place value, additions, subtraction, number system, geometry, probability as well as longitude and latitude to mention but a few. The abstractness of these concepts requires so much recourse to using concrete instructional aids.

Considering the ambit of motivation by the teacher in pedagogy, Blair (1962), Siann and Ugwugbu (1980) found that motivation and achievement are learned early in life as this becomes a stable characteristic of an individual if appropriate circumstances are given. Atkinson (1958) on his earlier study discovered that objects with high achievement motivation or need for achievement perform well on tasks involving individual, initiative but not on routine tasks.

Similarly, Sill (1968) carried out a study and discovered that when the motivation to succeed (M_s) is greater than the motivation to avoid failure (M_{af}) that is $M_s > M_{af}$, there will be the strong tendency to achieve, but when on the other hand, motivation to avoid failure is greater, which happens when achievement need is weak all interest – oriented activity is inhibited and the child may indulge in any crooked business as a cheap way towards success. Kiamanesh (2005) in an

international study found that motivation was correlated with achievement and academic performance. Harping on the study by Kiamanesh; Banks, McQuarter and Hubbard (2006) found that motivation leads to engagement in academic tasks which is related to achievement. They asserted that generally in Iran, several factors such as self-concept, attitudes toward subject, home background, external motivation and attribution were significantly related to students' mathematics achievement. The correlation coefficient between motivation and achievement of the students under study was 0.79.

On teacher motivation and achievement in mathematics Gbamanja (2002), Alamina (2001) and Ahiakwo (2006) had argued that motivation is necessary for every teacher if achievement in mathematics and science is to be realized. Consequently, an overview of these literatures on motivation and achievement suggest that enduring motivation for learning mathematics comes from the genuine understanding of the subject itself. The more students understand mathematics, the more they want to learn about it. Lack of understanding consequently leads to continued foundation and negative attitudes towards the subject. The literature revealed that the disabling effect produced in the pupil by emotional reactions such as fear or dislike of the subject taught and loss of confidence through lack of success calls for effective motivation by these teachers of mathematics. The question therefore will be – is there any likely relationship between teachers' method of teaching and students' achievement in mathematics at the senior secondary school level in Oyo State, Nigeria? If there is, to what extent is this relationship? This research study is poised to investigate this phenomenon.

b) Teachers' attitude and students' achievement in mathematics

Hill and Rowe (1996) carried out a study on teacher attitude to their work and students' achievement in mathematics and found that substantial difference existed between teachers who had a better attitude towards the subject and those who did not. They found out that it is primarily through the quality of teaching that effective schools make a difference.

Harping on teachers' attitude towards mathematics, Emenalo (2000) remarked that since the teaching is carried out by the teacher while the achievement in mathematics concerns the student (learner), it then becomes obvious that the attitude posed by the teacher in the teaching-learning process would likely impact the achievement of the student. He noted that the attitude of teachers in the classroom could cause fear of the subject, which had claimed many casualties over the years in internal and external examinations in Nigeria. He ex-rayed some responses from students when he asked the question'; Do you like mathematics?

I hate it; I fear it; if I had a free choice I would never do it again. I try to do my best, but I just cannot understand it. I do but our class teacher makes me to fear it. No, I do not want to run mad (p.18).

These responses indicated that teachers' attitude has a role to play in students' achievement in mathematics. This reiterates the fact one of the most important factors adversely affecting the teaching and learning of mathematics was the psychological barrier of fear of the subject on the part of students. The attitude of teachers in the classroom could cause fear of the subject thereby resulting in low achievement or abysmal failure of the learner.

Furthermore, Chima (2002) had hinted that there was no denying the fact that mathematics as a subject has acquired the infamous status of students' enemy number one. It has become such a terrible nightmare and monster to most students that they not only fear but also hate it. He contended that hatred for mathematics was so much that teachers of this unpopular subject were oftentimes victims of misplaced aggression from students who extended their morbid fear and hatred for mathematics to this embattled group of teachers. He advised teachers that if they wish to inculcate the love of mathematics, they must attend to three things:

a) The experience of others – by continual study of books, reports and discussion. They should not confine themselves to their own country alone or their own types of schools.

b) The intelligent and sensitive teaching of the daily common task – unless they cope with this, they are bound to feel uncertain and harassed; but for this work they must continually seek inspiration, material and spiritual from the wider cultural, historical and recreational aspects of his subject.

c) The emotional response of his pupils – to win a faithful response from his students may call for a real adjustment of attitudes on the part of the teacher.

From the statements above, it may be argued that many children are easily disturbed by their early experience of mathematics and that loss of confidence, bewilderment, or repeated failure gives rise to distaste for mathematics. Do these statements point to the fact that teachers' attitude has a role to play in students' achievement especially in mathematics at the senior secondary school level in Rivers State, Nigeria? This research study is posed to investigate this phenomenon.

2.2 HOME BACKGROUND

Valdez (2006) stated that “there is a huge risk of educators’ neglect or overlooks of cultural values and family engagement in the learning process”. Many educators focus on effective instruction in the mathematics and science learning without paying much attention to the idea of home support for education. Researchers often argue that learning in the home is crucial in helping all children become and remain motivated learners.

In his views, Schaverien (2001) stated that “the freedom felt in a familiar non-threatening environment of one’s home encourages scientific and mathematical exploration that, in a formal school setting may be intimidating”. Furthermore, at home, parents’ engagement in their children’s learning strengthens children’s capabilities for intellectual growth and allows them to make sense out to everyday activities, thereby deepening their understanding of mathematics, science and technology.

Secada (2001) noted that “children who are deeply involved with their families tend to “persistently ask questions” to continually observe and participate in the mature activities of the communities. They tend to adopt strategies such as looking, reading and manipulating to repeatedly explore exhibits. In other words, do all students encounter a wealth of home practices that contain mathematical content? If the students engage in all of these activities or practices, are they likely to increase students’ achievement in mathematics at the secondary school level?

Supporting the importance of home education for students’ achievement in mathematics, Hall (2002) stated that “central to learning at home are partners of learning with understanding”. He observed that many approaches parents (especially mothers or caretakers of young children) use to facilitate a child’s

understanding should be used in classroom based teaching. However, researchers have documented many difficulties experienced by the parents on the education of their children especially in mathematics. McCollum and Russo (2003) outlined the following four concerns:

1. Parents do not necessarily see structured time together as beneficial to their children, nor do they always see the learning value of play.
2. Parents may unwittingly subvert the purpose of the time together by taking over the tasks themselves to make sure that they are done properly.
3. Creating activities that all participants can carry out together is difficult. Older children are often more proficient in English than their parents, which can complicate group dynamics.
4. Many parents look at parent – child time as simply the price they must pay to have access to the adult instruction.

As evident from these concerns, is it not complicated to develop students' achievement in mathematics if home support for education is ignored? What is the situation on the international scene? Let us proceed to examine some studies on home background with special reference to home support for students' achievement in mathematics. Halpern and Myess (2003) found that pre-school experience has a modest but positive influence on initial achievement of primary school in developing countries. The trends in international mathematics and science study (TIMSS) and progress in International Reading Literacy Study (PIRLS) are the largest and most comprehensive international studies that Iran has ever participated in. In these international studies, students' achievement in mathematics, science and reading comprehension have been subjected to

comprehensive analysis. In addition, numerous background variables affecting students' achievement have been investigated using background questionnaires.

PISA (2005) carried out an investigation on students' achievement in mathematics. The December 2006 issue of education mathematics reported on the latest results from the programme for international student assessment (PISA) for students' achievement in mathematics. It found out that among the 41 participating countries, students in only two – Hong Kong China and Finland performed better than Canadian students in mathematics. Students in seven other countries performed as well as Canadian students, while students in the remaining countries performed less well. In fact, students in three provinces – Alberta, Quebec and British Columbia ranked among the best in the world.

Drawing from the analysis of PISA (2005) results, two sets of factors affected student achievement in mathematics. The first consists of the role played by student attitudes to and perceptions of mathematics. The second consists of the relationship between parent education and occupation and students' mathematics performance.

Furthermore, socio-economic status (SES) is a term used to summarize a variety of actors including parental education and occupations that influence student performance. Simich-Dudgeon and Weinstern-shor (2004) found that other socio-economic characteristics (e.g. parents' education, income, median age, home ownership, number of children) taken into consideration, students are more likely to succeed academically if their parents actively support their learning. They outlined the socio-economic roles of parents in students' achievement as below:

a) Provide “a home environment that supports children’s learning needs

- b) Volunteer in schools as aides or in other roles
- c) Monitor children's progress and communicate with other personnel
- d) Tutor children at home to reinforce work done in school.

In addition, Sticht and Weinstein-shor (2005) found that children's achievement in school was directly correlated with the mother's level of education as mother is usually the first teacher. Furthermore, constructing conversations, talking about books and pictures in those books, telling bedtime stories, reading aloud, and asking questions are important steps towards developing the children's literacy skills. Weinstein-shor (2005) cites research that shows how parent-child interaction affects students learning and how such interaction is especially valuable where literacy in a foreign language is new to both parent(s) and child. Arguably, because the family is a crucial resource for making sense of a new life in a new setting, its basic economic, social and psychological needs should be reflected in designing ways to help learners achieve mathematical and scientific proficiency and power.

However, in PISA (2003), SES is measured by an index that includes information describing family structure, parental education and occupation, parental labour market participation, and whether a students' family has specific educational and cultural possessions at home. An earlier analysis of PISA (2000) results, which focused mainly on literacy, found that students from higher socio-economic families tended to show stronger literacy skills. The same result was found in PISA (2002) in which students from families with higher socioeconomic status also tended to perform better in students' achievement in mathematics.

Comparing Canada with other countries, differences in socio-economic status had a smaller impact on students' achievement. Furthermore, differences in socio-

economic status among Canadian students also were smaller than in most countries. In the same vein, parental occupation may also influence how students perceive the value of mathematics learning, their beliefs about the usefulness of mathematics and the learning environment at home. Examining this further, if occupation is considered, as an indicator of parental skill use, it appears that students whose parents worked in occupations with greater skill requirements also performed better in mathematics.

Critically examining the PISA (2002) results, students whose parents were in professional or managerial occupations were found to have higher mathematics achievement than others. In other words, students whose parents had occupations that specifically required strong mathematical skills – that is, physical mathematical and engineering science professionals tended to have higher mathematical scores than other students. It was also observed that students whose parents were in the occupational category that includes legislators, senior officials, executives and managers in fact performed almost one proficiency level lower than students whose parents worked in the mathematics intensive occupational group.

Mburza (2003), said that parents of Nigerian secondary school students being largely illiterates are scarcely capable of reading well informed decisions about the future of their youths. Thus ever-so-often, it is the parents own misconceptions of the nature of work rather than the demand on the employment market that provides many youths with the prime stimulus to select occupation. Earlier, Bojuwoye (2000) affirmed that Nigerian parents (especially the educated ones) are known to be in the habit of dictating career choices to the students. These parents, he stressed, need assistance of a counseling nature in developing appropriate skills in parent-child interaction. Sjøgen (2002) found that parental formal education is another factor influencing occupational choice of the student. He harped that

youths from poorly education parents are sensitive to economic incentives since they are to a greater extent attracted to occupations with high wage rates and high returns to education. Adesemowo and Adenuga (1998) earlier noted that educated parents were more concerned about their children than the uneducated ones. This might be as a result of their level of education which have exposed them to series of information about life generally.

Echebe (2000) noted that, development of interest in occupation starts from the home. He stressed that the occupation of the individual's parents and other key figures in his/her family influences the occupational choice of such an individual. Smith and Cheung (2004) conducted a study on the Philippines primary school children and found that home support for education from the parents had shaped the school attainment of their children. Several studies have explored the relationship between home background of students and their achievement in mathematics in China, India, Kenya, Nepal, the Philippines and Thailand. Could this be true for Nigeria and Rivers State in particular? There is a yawning gap in literature concerning home background and students achievement in mathematics, besides the literature available are scanty hence the need to investigate this relationship and its extent.

2.3 CLASS FACTORS

Class factors are very important in the teaching-learning activities, particularly when students' academic performance is being considered. Class size is an important factor in relation to academic performance of students.

There is a consensus among various researchers and educationists that, the lower the class size or teacher-pupil ratio, since students' achievement decreases as class size increases. Many studies have pointed out the significance of teacher pupil ratio

to cognitive learning in the school. (Idienumah, 1987; Ojoawo, 1989; Fabunmi 2000).

The National policy on Education (1981) recommended that the teacher-pupil ratio should be 1:35. In emphasizing the importance of class size to the learning/teaching process, the All Nigeria conference of principals of secondary schools (ANCOPSS) recommended a maximum of forty students per class for effective management and better control. Oguntoye (1983) in his own study found that class size had negative coefficient with examination performances of students.

The relationship between class size and academic performance is a major controversy. The lower teacher-pupil ratio allows for more effective communication between the learner and the teacher. The effect of class size on cognitive achievement has been debated and researched for many years and has been inconclusive.

Robison (1990) opined that even with these methodological problems, research has generally demonstrated the influence of class or teacher – students' ratio on student's performance in a variety of educational setting. In the view of this fact, it could be said that teacher-pupil ratio is one of the important factors determining good academic performance of students.

A recent study by Idienumah (1987), reported that there is positive relationship between certain variables such as class size, teacher – pupil ratio, students factors and performance in examination.

They were discovered to be factors that have strong and direct influence on academic performance of schools. Schools with larger class size and high teacher-

pupil ratio recorded poor performance while better academic performance is associated with schools with small size and lower teacher-pupil ratio.

Other studies like Bozzomo (1978), Bourice (1986) and Bolton (1988) confirm that there was no relationship between the size of the class and the results. Ojoawo (1989) in one of his major findings revealed that the class sizes were found to be negatively related to school academic performance.

Bolton (1988) found that “there was no significant difference in posttest achievement scores between large classes and small class control groups in developmental English”.

According to Bolton’s (1988) experience, “larger is sometimes better”. Edge (1980) identified two of the problems, which large classes pose, they are (1) the provision of an opportunity for discussion or for any kind of oral input to the written work is difficult; and (2) the amount of making involved can dissuade even the not enthusiastic teacher from setting the amount of written work that he feels would benefit the students. Coleman (1987) pointed out that for enthusiastic teachers, “if classes are very large, it is important that as far as possible, the learners should be constantly busy and the tasks should function continuously without repeated intervention from the teacher”.

On the other hand, most parents, teachers and students have a strong belief that small group classes are preferable to large ones. As Bolton (1988) put it “there is, after all, an orthodox tradition to the proposition that small classes are necessary for student achievement”. In some of the experiments performed, Roe et al. (1987) discovers that “in reading scores on individual tests, the smallest classes were significantly higher and the largest classes were lowest of all”. As a corollary to this, Smith and Glass (1980) indicates through meta-analyses that compare to large

classes, small classes lead to higher pupil achievement, more favorable teacher effects (e.g. moral, attitude towards student) greater attempts in individual instruction, a better classroom climate and more favourable student effects (e.g. self-concept and participation).

Other studies have been carried out on class size and academic performance of students.

Mc Daniel (1963) conducted a study on class size” the findings of the study revealed that class size whether large or small was not related to academic achievement of pupils in a standardized achievement test in mathematics, reading and language”.

Johnson (2000) who used data from the 1998 National Assessment of Educational Progress (NAEP) reading test to establish the impact of smaller classes on academic achievement discovered that being in a small class does not affect reading achievement in any significant way.

While Fabunmi and Okore (2000) also investigated the relationship between average class size and secondary school academic performance in Epe Local Government Area of Lagos State, in Nigeria. The researchers used both Pearson Product Moment Correlation and Spearman Rank Correlation to test the only hypothesis, which was formulated. The analysis, which was done with Pearson Product Moments correlation, revealed a negative and low relationship, but that of Spearman Rank Correlation revealed significant and positive relationship between average class size and students’ academic performance.

CHAPTER THREE

3.0 METHODOLOGY

This chapter deals with the method used in the collection of information and data needed for the analysis of the research topic. The method needs are questionnaire, oral interview and score of the 2009 - 2013 S.S.C.E mathematics examination.

The aim of this study was to find out the relationship existing between such variables as class factors (sex, school location and school type), home background, teachers' attitude & method of teaching in class and students' factor and performance in mathematics test. Therefore inferential survey design was considered appropriate because of its descriptive nature, as it involves the collection of data to accurately and objectively describe existing phenomena, which in this case was the average no. of pass student (students that have credit) in 2009 - 2013 S. S. S. C. E mathematics examination. The relevant data for this study were obtained from the Senior Secondary School examination test items in mathematics for the year 2009 - 2013.

3.1 POPULATION AND SAMPLE

The population for this study is the Senior Secondary School II students of Oyo State taking Ibadan North Local Government as a case study. The schools selected were in the urban area making it difficult to relate school location (rural and urban area) as one of the factors affecting students' mathematics performance. The schools were randomly selected in Ibadan North-East Local Government of Oyo State for research work.

The sample size of this study was 100 students randomly selected from the 5 schools in the local government.

3.2 SAMPLING TECHNIQUE

At random, the one hundred students' (100) were selected using sample random technique from those selected school i.e twenty senior secondary II students (20) from each school.

The schools involved are:

- Army Barracks Grammar School, Letmmauck Cantonment, Mokola, Ibadan.
- Oba Abbass Akinyele High School, Eleyele, Ibadan.
- Onireke Girls Grammar School, Ibadan.
- Eleyele High School, Eleyele, Ibadan.
- An-warul Islam Grammar School, Eleyele, Ibadan.

3.3 RESEARCH INSTRUMENT

In order to collect information for this work, the researcher used questionnaire for this students. The questionnaire comprise of two sections. Section A consists of personal information or data concerning the students' and section B consists of the questions to be answered.

In administering the questionnaires, the researcher sought the assistance of the teacher of the schools and research assistance of research assistants for smooth monitoring of the procedures.

All these questions were answered and returned in all the school in his presence before he leaves.

The S. S. S. C. E mathematics results for 2009 to 2013 were also used to generate data to confirm the effect of some of class factors and sex on performance. Oral interview was conducted for mathematical teachers to gather their views on the cause for the degenerating students' performance in mathematics.

3.4 VALIDITY OF THE INSTRUMENTS

The instruments used combined were able to present in detail the factors responsible for students' poor mathematics performance.

The selected schools were thoroughly supervised to enhance the effectiveness. After vivid consideration of the students' response, the instruments serve its purpose.

3.5 METHOD OF DATA COLLECTION

The questionnaire was designed in an attempt to obtain necessary and relevant information for the research. The questionnaire was designed after a careful study of related questions of other writers on nearly the same topic.

The original drafts of the questionnaire for the students were sent to expert in the field of mathematics for security and adjustments were possible.

Questionnaires were given to some selected students in the selected schools. The student tries to fill the questionnaire by having it in mind that he wants to justify the factors in his own view that are responsible for his performance in mathematics either good or bad.

Information on the number of furnished classrooms, number of lesson periods in the previous week and the number taught, information on the average area (in meters) of classrooms in the school) and information on students' performance in senior school certificate Examinations (SSCE) conducted by the West Africa Examinations Council (WAEC) for the 2009-2013 period were also sought for.

3.6 DATA ANALYSIS

The responses from questionnaire and interviews which were filled are recorded in the next chapter. The researcher shall use percentage in order to analyze the questionnaire and chi square and regression for the hypotheses set in chapter one.

Method of Analysis of the Class factors: The average class size which was used in place of the actual class size was obtained by dividing the total student's enrolment for each secondary school by the number of furnished classrooms in the schools.

Student – classroom space was measured by dividing the average area of classrooms by the average class size. The classroom utilization rate was calculated by dividing the average number of periods taught by the eight periods expected to be taught, and then multiply the products by 100. The percentage of passes in mathematics in SSCE was taken as a measure of academic performance.

Student with credits in Mathematics were assumed to have passed. One-way Analysis of variance and the Multiple Regression Analysis were the statistical tools used to test the class factor hypothesis (Hypothesis IV) at 0.05 level of significance.

3.7 TESTING OF HYPOTHESIS INTERPRETATION

To arrive at a reasonable conclusion on this research work, the researcher employed chi-square (X^2) and regression analysis to test the hypotheses applied in this study at 0.05 (5%) level of significance.

The Chi-square is defined as:

$$X^2 = \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where,

X^2 = chi-square

Σ = summation or sum or total

O = Observed frequency

E = Expected frequency

$$E = \frac{FR \times FC}{N}$$

where

FR = total row frequency

FC = total column frequency

N = total frequency

To determine the value of X^2 , we first determine the associated degree of freedom. The degree of freedom (DF) in a contingency table is given by:

$$DF = (R-1)(C-1)$$

where

R = number of rows

C = number of columns

When the chi-square calculated (X^2) is greater than the chi-square from the table, the hypotheses is rejected. But if the chi-square from the table (X^2) is greater than the chi-square calculated, the hypothesis is accepted.

The In-built Microsoft Excel Data Analysis Tool is used to compute the multiple linear regressions.

CHAPTER FOUR

4.0 RESULT AND DISCUSSION

This chapter presents the data collected and their analysis. It discuss the findings of each hypothesis tested using chi-square method and regression. The hypothesis is re-stated alternative form. After the questionnaire was administered, the calculated value was compared to the critical value and the degree of freedom $(\text{row}-1)(\text{column}-1)$ calculated at 5% level of significance.

4.1 COMPOSITION OF THE RESPONDENTS

4.1.0 SEX COMPOSITION OF THE RESPONDENTS

Table 1 below shows the distribution of the respondent. The male SSS II students are 45 (45%) while the female are 55 (55%). We can easily conclude that the number of female students willing to and that took part in the research is more than their male counterpart.

Table 1: Sex composition of the respondents.

Sex Status	Composition	Percentage
Male	45	45%
Female	55	55%
Total	100	100%

4.1.1 AGE DISTRIBUTION OF THE RESPONDENTS

Table 2 below however displays the age distribution of the respondents. The students within 11 – 15 years are 75 while those within 16 – 20 years are 25. There are no students above 20 years old.

Table 2: Age Distribution of the respondents.

Age range	Frequency	Percentage
11 – 15	75	75%
16 – 20	25	25%
21 – 25	-	-
Total	100	100%

Table 3: Summary of students' performance for the 5 years (2009-2013) considered for the five schools.

	Tot. of Std	No. Passed	% of M Pass	% of F Pass	% of Total Passed
1	2190	355	55.49	44.51	16.21
2	1450	347	53.03	46.97	23.93
3	1353	362	54.70	45.30	26.76
4	1416	342	52.92	47.08	24.15
5	150	74	263.51	236.49	49.33

Note: The fifth school (Army Barracks Grammar School) graduated their first set in 2013. The average results of the other four schools over a period of five years are presented.

4.2 TESTING OF HYPOTHESIS

The following hypotheses were formulated for the purpose of this project.

Hypothesis 1

H₀: Home Support and Socio economic status do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.

Table 4 is a summary of the influence of home backgrounds on secondary school students' mathematics performance (Appendix B)

The degree of freedom is calculated from;

$$\begin{aligned} \text{Degree of freedom} &= (\text{row} - 1)(\text{column} - 1) = (r-1)(c-1) \\ &= (5-1)(4-1) = 4*3 = \underline{12} \end{aligned}$$

Table 4: Relationship between home background and mathematics achievement						
Variable	Group	Size	Degree of Freedom	X ² cal	X ² table	Remark
Effect of Home Background on mathematics achievement	Agreed	226	12	12.547	21.028	Accept Null Hypothesis
	Disagreed	257				
		483				

From the table 4 above, at 0.05 level of significance, the critical value at 12 degree of freedom is 21.028 while the calculated value is 12.547.

Hypothesis 2

H₀: Teacher variables (like attitude in class, method of teaching, qualification e.t.c) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.

Table 5 is a summary of the influence of teacher variables on secondary school students' mathematics performance (Appendix B)

Table 5: Relationship between Teacher variables and mathematics achievement						
Variable	Group	Size	Degree of Freedom	X ² cal	X ² table	Remark
	Agreed	289	12	21.978	21.028	Reject Null Hypothesis
	Disagreed	200				
		489				

From the table 5 above, at 0.05 level of significance, the critical value at 12 degree of freedom is 21.028 while the calculated value is 21.978.

Hypothesis 3

H₀: Student variables (readiness to learn, attitude & mindset, sex e.t.c.) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.

Table 6 is a summary of the influence of student variables on secondary school students' mathematics performance (Appendix B)

Table 6: Relationship between Student variables and mathematics achievement						
Variable	Group	Size	Degree of Freedom	X ² cal	X ² table	Remark
	Agreed	244	12	27.5	21.028	Reject Null Hypothesis
	Disagreed	253				
		497				

From the table 6 above, at 0.05 level of significance, the critical value at 12 degree of freedom is 21.028 while the calculated value is 27.500.

Hypothesis 4

H₀: Class factors (like class size, student-classroom space and class utilization rate) do not significantly affect secondary school students' performance in mathematics in Oyo State of Nigeria.

Table 7 is a summary of the influence of student variables on secondary school students' mathematics performance (Appendix B)

Table 7: Relationship between Class factors and mathematics achievement						
Variable	Group	Size	Degree of Freedom	X ² cal	X ² table	Remark
	Agreed	303	12	21.17	21.028	Reject Null Hypothesis
	Disagreed	197				
		500				

From the table 7 above, at 0.05 level of significance, the critical value at 12 degree of freedom is 21.028 while the calculated value is 21.17.

Table 8: School & Class Information

Avg. Class Size	Student Classroom Space	Classroom Utilization rate	Avg. Percentage of students that passed math
50	6.32	1	16.21
52	5.52	1	23.93
55	5.56	1	26.76
58	5.11	1	24.15
60	5.26	1	49.33

Table 9: Test of composite impact

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	432.33	144.11	2.22	0.45
Residual	2	194.67	97.33		
Total	5	626.99			

4.3 DISCUSSION OF RESULTS

The discussion of results was done on the basis of the four research hypotheses, which guided the study.

From the table 4 above, it could be seen that the chi square calculated value is less than the tabulated value. The chi square calculated is 12.547 while the square tabulated is 21.028. The implication of this is that the formulated hypothesis should be accepted. Hence, the hypothesis that home support and socio economic status do not affect secondary school students' performance in mathematics in Oyo State of Nigeria is accepted.

From the table 5 above, it could be seen that the chi square calculated value is greater than the tabulated value. The chi square calculated is 21.978 while the square tabulated is 21.028. The implication of this is that the formulated hypothesis should be rejected. Hence, the hypothesis that teacher variables (like attitude in class, method of teaching, qualification e.t.c) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria is rejected.

From the table 6 above, it could be seen that the chi square calculated value is greater than the tabulated value. The chi square calculated is 27.500 while the square tabulated is 21.028. The implication of this is that the formulated hypothesis should be rejected. Hence, the hypothesis that student variables (readiness to learn, attitude & mindset, sex e.t.c.) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria is rejected.

From the table 6 above, it could be seen that the chi square calculated value is greater than the tabulated value. The chi square calculated is 21.17 while the square tabulated is 21.028. The implication of this is that the formulated hypothesis should be rejected. Hence, the hypothesis that class factors (like class size, student-classroom space and class utilization rate) do not significantly affect secondary school students' performance in mathematics in Oyo State of Nigeria is rejected.

Also from Table 9 F is 2.22, which is significant at 0.05 level. Significant F is 0.45, which is less than the 0.05 level of significance. Hence, the hypothesis is rejected. This implies that when class factors are taken together, they determine significantly students' academic performance.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

From the analysis of data and the discussion of findings, the following conclusions were made:

1. There is a no significant relationship between parents' socio-economic status and secondary school students' achievement in mathematics in Oyo State, Nigeria.
2. There is a significant relationship between teachers' variable (like teachers method of teaching) and secondary school students' achievement in mathematics in Oyo State, Nigeria.
3. There is a significant relationship between home support for mathematics and secondary school students' achievement in mathematics in Oyo State, Nigeria.
4. Class factors when taken together determined significantly secondary school students' mathematics performance in Oyo State, Nigeria.

5.2 RECOMMENDATION

Considering the findings and discussions of this study, the following recommendations were made:

- i) That the teacher is a major factor in the teaching of mathematics at the senior secondary school level and therefore should be qualified before being engaged in the teaching and learning processes.
- ii) The perennial failure experienced by students in the SSCE examinations concerning mathematics as a subject could be reduced by organizing workshops and seminars for teachers especially towards pedagogical training
- iii) Government should endeavor to set up mathematics laboratories where teaching aids could be properly utilized in the teaching-learning process.
- iv) Attitudinal training workshops and seminars should be organized for teachers of mathematics to properly inculcate into them, the right attitudes to be exhibited in mathematics lessons. This will enable mathematics teachers eliminate some negative attitudes that hinder good mathematics achievement by the students.
- v) Finally, government and corporate organizations should encourage and sponsor teacher education by offering scholarship, in-service training and other laudable incentives to motivate teachers of mathematics to enable them motivate students to learn mathematics. With increased number of teachers of mathematics in our secondary schools and proper motivation through special allowances, the commitment to teaching will be enhanced hence achieving better results in mathematics.

vi) Parents/guardians should create an environment at home that lends support for mathematics learning by providing mathematical kits to enhance students' achievement in mathematics.

vii) Both federal and state governments should be conscious of these factors while allocating resources to education. Resources have to be allocated in proportion to the student population.

viii) Educational planners have to take factors into consideration while conducting school mapping exercises and educational administrators have to take them into consideration in the course of administering schools.

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APPENDIX A
EMMANUEL ALAYANDE COLLEGE OF EDUCATION, OYO
P.M.B. 1010, OYO STSTE
DEPARTMENT OF ECONOMICS/MATHEMATICS

STUDENT QUESTIONNAIRE

Dear Respondents,

This research work is carried out to know the underlying factors impeding students' performance in mathematics in senior secondary school. Kindly fill this questionnaire with honesty and your answer will be treated with confidence.

SECTION A

School: _____

Class: _____

Age: _____

Sex: _____

SECTION B

Tick 'X' or '✓' appropriate place

SA – Strongly Agree **A** – Agree **SD** – Strongly Disagree **D** - Disagree

S/N	QUESTIONS	SA	A	D	SD
	Home Support and Socio economic status do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.				
1	The occupation and income of your parents influence your achievement in mathematics.				
2	Your parents qualification influences your achievement in mathematics.				
3	The number of children in your home influences your achievement in mathematics.				
4	The culture of your parents influence your achievement in				

	mathematics				
5	You perform better in mathematics because your parents assist you on your mathematics sum and tasks at home.				
	Teacher variables (like attitude in class, method of teaching, qualification e.t.c) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.				
6	Teachers method of teaching influences students' learning of maths.				
7	Teachers teach mathematics better when they are motivated.				
8	Students are motivated to learn maths only when their teacher's attitude in class is good.				
9	Mathematics is taught better by professional mathematics teacher and not any teacher converted to a mathematics teacher.				
10	Inadequate number of mathematics teacher contributes to students level of performance in mathematics.				
	Student variables (readiness to learn, attitude & mindset, sex e.t.c.) do not affect secondary school students' performance in mathematics in Oyo State of Nigeria.				
11	Students perform badly in mathematics because they are lazy				
12	Your performance in mathematics is influenced by your anxiety for mathematics or belief that math is difficult to understand.				
13	Only gifted and talented students do well in mathematics.				
14	Students that perform badly in mathematics suffer from mental diseases that prevent them from understanding maths.				
15	Sex affects students achievement in mathematics.				
	Class factors (like class size, student-classroom space and class utilization rate) do not significantly affect secondary school students' performance in mathematics in Oyo State of Nigeria.				
16	Class size affects your mathematics in mathematics.				
17	Students classroom space influence their performance in mathematics.				
18	Class utilization rates influences students' achievement in mathematics.				
19	Students perform better in class when they study in well-furnished classrooms.				
20	Students perform better when they discuss mathematics concept together in class.				

APPENDIX B

Ques	SA	A	SD	D	
1	27	25	26	19	97
2	29	20	20	23	92
3	21	25	29	23	98
4	15	23	29	32	99
5	20	21	29	27	97
6	29	30	11	25	95
7	33	27	19	21	100
8	20	30	25	25	100
9	26	33	18	22	99
10	27	31	19	23	100
11	15	25	30	29	99
12	27	31	19	23	100
13	20	39	20	19	98
14	16	19	40	25	100
15	25	27	22	26	100
16	30	29	20	21	100
17	45	25	19	11	100
18	22	27	23	28	100
19	30	35	20	15	100
20	29	31	17	23	100
	506	553	455	460	1974

Ques	Agreed	Disagreed
1	52	45
2	49	43
3	46	52
4	38	61
5	41	56
6	59	36
7	60	40
8	50	50
9	59	40
10	58	42
11	40	59
12	58	42
13	59	39
14	35	65
15	52	48
16	59	41
17	70	30
18	49	51
19	65	35
20	60	40

H1 OBSERVED VALUE					
Questns	SA	A	SD	D	Total
1	27	25	26	19	97
2	29	20	20	23	92
3	21	25	29	23	98
4	15	23	29	32	99
5	20	21	29	27	97
TOTAL	112	114	133	124	483
	226		257		

EXPECTED VALUE					
Questns	SA	A	SD	D	Total
1	22.49	22.89	26.71	24.90	97
2	21.33	21.71	25.33	23.62	92
3	22.72	23.13	26.99	25.16	98
4	22.96	23.37	27.26	25.42	99
5	22.49	22.89	26.71	24.90	97
TOTAL	112	114	133	124	483

HYPOTHESIS ONE				
O_{ij}	E_{ij}	O_{ij}-E_{ij}	(O_{ij}-E_{ij})²	(O-E)²/E
27	22.49	4.51	20.32	0.903192
29	21.33	7.67	58.78	2.755208
21	22.72	-1.72	2.97	0.130888
15	22.96	-7.96	63.31	2.757658
20	22.49	-2.49	6.21	0.276259
25	22.89	2.11	4.43	0.19365
20	21.71	-1.71	2.94	0.135338
25	23.13	1.87	3.50	0.151111
23	23.37	-0.37	0.13	0.005747
21	22.89	-1.89	3.59	0.156754
26	26.71	-0.71	0.50	0.018881
20	25.33	-5.33	28.44	1.122807
29	26.99	2.01	4.06	0.150384
29	27.26	1.74	3.02	0.110949
29	26.71	2.29	5.24	0.196309
19	24.90	-5.90	34.84	1.399117
23	23.62	-0.62	0.38	0.016225
23	25.16	-2.16	4.66	0.185342
32	25.42	6.58	43.35	1.705494
27	24.90	2.10	4.40	0.176636
				12.54795

H2 OBSERVED VALUE					
Questns	SA	A	SD	D	Total
6	34	30	6	28	98
7	33	27	19	21	100
8	18	28	25	25	96
9	25	37	18	18	98
10	27	30	19	21	97
TOTAL	137	152	87	113	489
	289		200		

EXPECTED VALUE					
Questns	SA	A	SD	D	Total
6	27.45603	30.46217	17.43558	22.64622	98
7	28.01636	31.08384	17.79141	23.10838	100
8	26.89571	29.84049	17.07975	22.18405	96
9	27.45603	30.46217	17.43558	22.64622	98
10	27.17587	30.15133	17.25767	22.41513	97
TOTAL	137	152	87	113	489

HYPOTHESIS TWO				
O_{ij}	E_{ij}	O_{ij}-E_{ij}	(O_{ij}-E_{ij})²	(O_{ij}-E_{ij})²/E_{ij}
34	27.46	6.54	42.82	1.559712
33	28.02	4.98	24.84	0.886506
18	26.90	-8.90	79.13	2.942238
25	27.46	-2.46	6.03	0.2197
27	27.18	-0.18	0.03	0.001138
30	30.46	-0.46	0.21	0.007012
27	31.08	-4.08	16.68	0.536542
28	29.84	-1.84	3.39	0.113517
37	30.46	6.54	42.74	1.403159
30	30.15	-0.15	0.02	0.00076
6	17.44	-11.44	130.77	7.500326
19	17.79	1.21	1.46	0.082101
25	17.08	7.92	62.73	3.672786
18	17.44	0.56	0.32	0.018271
19	17.26	1.74	3.04	0.175905
28	22.65	5.35	28.66	1.265686
21	23.11	-2.11	4.45	0.192367
25	22.18	2.82	7.93	0.357445
18	22.65	-4.65	21.59	0.953242
21	22.42	-1.42	2.00	0.089341
				21.97775

H3 OBSERVED VALUE					
Questns	SA	A	SD	D	Total
11	15	25	30	29	99
12	27	31	19	23	100
13	20	39	20	19	98
14	16	19	40	25	100
15	25	27	22	26	100
TOTAL	103	141	131	122	497
	244		253		

EXPECTED VALUE					
Questns	SA	A	SD	D	Total
11	20.52	28.09	26.09	24.30	99
12	20.72	28.37	26.36	24.55	100
13	20.31	27.80	25.83	24.06	98
14	20.72	28.37	26.36	24.55	100
15	20.72	28.37	26.36	24.55	100
TOTAL	103	141	131	122	497

HYPOTHESIS THREE				
O_{ij}	E_{ij}	O_{ij}-E_{ij}	(O_{ij}-E_{ij})²	(O_{ij}-E_{ij})²/E_{ij}
15	20.52	-5.52	30.44	1.48
27	20.72	6.28	39.38	1.90
20	20.31	-0.31	0.10	0.00
16	20.72	-4.72	22.32	1.08
25	20.72	4.28	18.28	0.88
25	28.09	-3.09	9.53	0.34
31	28.37	2.63	6.92	0.24
39	27.80	11.20	125.38	4.51
19	28.37	-9.37	87.80	3.09
27	28.37	-1.37	1.88	0.07
30	26.09	3.91	15.25	0.58
19	26.36	-7.36	54.14	2.05
20	25.83	-5.83	34.00	1.32
40	26.36	13.64	186.10	7.06
22	26.36	-4.36	18.99	0.72
29	24.30	4.70	22.07	0.91
23	24.55	-1.55	2.39	0.10
19	24.06	-5.06	25.57	1.06
25	24.55	0.45	0.20	0.01
26	24.55	1.45	2.11	0.09
				27.50

H4 OBSERVED VALUE					
Questns	SA	A	SD	D	Total
16	30	29	20	21	100
17	45	25	19	11	100
18	22	27	23	28	100
19	30	35	20	15	100
20	29	31	17	23	100
TOTAL	156	147	99	98	500
	303		197		

EXPECTED VALUE					
Questns	SA	A	SD	D	Total
16	31.2	29.4	19.8	19.6	100
17	31.2	29.4	19.8	19.6	100
18	31.2	29.4	19.8	19.6	100
19	31.2	29.4	19.8	19.6	100
20	31.2	29.4	19.8	19.6	100
TOTAL	156	147	99	98	500

HYPOTHESIS FOUR				
O_{ij}	E_{ij}	O_{ij}-E_{ij}	(O_{ij}-E_{ij})²	(O_{ij}-E_{ij})²/E_{ij}
30	31.20	-1.20	1.44	0.05
45	31.20	13.80	190.44	6.10
22	31.20	-9.20	84.64	2.71
30	31.20	-1.20	1.44	0.05
29	31.20	-2.20	4.84	0.16
29	29.40	-0.40	0.16	0.01
25	29.40	-4.40	19.36	0.66
27	29.40	-2.40	5.76	0.20
35	29.40	5.60	31.36	1.07
31	29.40	1.60	2.56	0.09
20	19.80	0.20	0.04	0.00
19	19.80	-0.80	0.64	0.03
23	19.80	3.20	10.24	0.52
20	19.80	0.20	0.04	0.00
17	19.80	-2.80	7.84	0.40
21	19.60	1.40	1.96	0.10
11	19.60	-8.60	73.96	3.77
28	19.60	8.40	70.56	3.60
15	19.60	-4.60	21.16	1.08
23	19.60	3.40	11.56	0.59
				21.17