STUDENTS' SOCIAL CLASSROOM LEARNING ENVIRONMENT AND ATTITUDE AS CORRELATES OF MATHEMATICS ACHIEVEMENT IN DELTA NORTH SENATORIAL DISTRICT

BY

OSADUWA, Onyeka

DELTA STATE UNIVERSITY, ABRAKA

JANUARY, 2018

STUDENTS' SOCIAL CLASSROOM LEARNING ENVIRONMENT AND ATTITUDE AS CORRELATES OF MATHEMATICS ACHIEVEMENT IN DELTA NORTH SENATORIAL DISTRICT

BY

OSADUWA, Onyeka
PG/12/13/214846
B.Ed. Mathematics Education (DELSU, 2010)

A DISSERTATION WRITTEN IN THE DEPARTMENT OF SCIENCE EDUCATION, FACULTY OF EDUCATION AND SUBMITTED TO THE POSTGRADUATE SCHOOL, DELTA STATE UNIVERSITY, ABRAKA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF EDUCATION (MATHEMATICS EDUCATION)

JANUARY, 2018

DECLARATION

I, OSADUWA, Onyeka hereby declare that this dissertation titled students' social classroom learning environment and attitude as correlates of mathematics achievement in Delta North Senatorial District, is an original work carried out by me in the Department of Science Education, Faculty of Education, Delta State University, Abraka.

_____ _____

OSADUWA, Onyeka (Student) Date

CERTIFICATION

We certify that this work was carried out by OSADUWA Onyeka in the Department of Science Education, Delta State University, Abraka.

_____ _____
Prof E. Kpangban Date
(Supervisor)

_____ _____
Prof O.P. Ajaja Date
(Head of Department)

_____ _____
Prof. E.P. Oghuvbu Date
(Dean, Faculty of Education)

DEDICATION

This dissertation is dedicated to God Almighty for bringing me this far. Also to my late parents, Mr. and Mrs. A. A. Agboge, who brought me to this earth. More so, to my very supportive husband, Mr. Godwin Osaduwa, and my lovely children,Ifeanyi, Princess and Kensiro-Chukwu Godwin, for their supports and encouragement.

ACKNOWLEDGEMENTS

I wish to express my immense gratitude to the Almighty God for His love and protection during the course of my Master's degree programme in the University. I am grateful to you, father.

My sincere gratitude and appreciation goes to my Project Supervisor, Prof E. Kpangban, for painstakingly reading through my write-up, correcting and always putting me through. I say thank you, Daddy, for your unrelenting efforts during the course of writing this dissertation.You are indeed a daddy and God-sent to me. I equally thank my Head of Department, Prof O.P. Ajaja, for taking pains, despite his tight schedule, to assist me in this research.

I am indebted in no small measure to my departmental lecturers: Prof E.A. Inomiesa, Prof N.S. Okoye, Dr. J.I. Adjekpovu, Dr E.O. Oyovwi, Dr. S.B. Ijeh, Dr T.E. Agboghoroma, and Miss P. Ekpoko, for their encouragement in realizing this dream.

My thanks go to the Principals, Mathematics teachers and students of the schools used for this study. All the lecturers consulted and authors whose views I borrowed, I say thank you all.

My special thanks go to my lovely husband, Mr. Godwin Osaduwa, for his love, moral and financial support throughout the course of my study. I love you, my dear husband. And to my lovely and understanding

children,Master Ifeanyi, Princess and Kensirochukwu Godwin, God bless you all. I equally thank my siblings, Somotochikwu Isima, Edeme Chineye, Ngozi Enebeli for their support and prayers and to my Pastors, Rev. Adanu Ubah and Rev Ejinewe Friday for their prayers and encouragement throughout my stay in school.

Finally to my friends, Joyce, MrsP.O. Irabor, my coursemates and all those, who in one or the other contributed to the success of this research work,may the good Lord bless you all. Amen.

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

This study examined students' social classroom learning environment and attitude as correlates of achievement in mathematics. Six research questions and six hypotheses guided the study. The ex-post facto research design was adopted. The population of the study comprised 16,473 SS2 students in public secondary schools in the nine Local Government Areas of Delta North Senatorial District of Delta State. The sample comprised 1,647 SS 2 students drawn from five schools each from the nine Local Government Areas of the Delta North Senatorial District. The instruments used for data collection are Students' Social Classroom Learning Environment Questionnaire (SSCLEQ), Students' Attitude towards Mathematics Scale (SAMS) and students' previous scores in Mathematics. The data obtained were analysed using Pearson's coefficient of determination and Pearson's correlation coefficient, as well as a Two-Way Analysis of Variance (ANOVA). The findings of the study revealed that there was a significant relationship between students' social classroom learning environment and students' achievement in mathematics; that there was a significant relationship between students' attitude towards mathematics and their achievement in mathematics. The study, however, found no significant interaction effect between social classroom learning environment and gender on students' achievement in mathematics. It was thus recommended that teachers should develop positive relationship with students and encourage classroom activities which will involve active teaching-learning processes and students' participation in the class; and that teachers should endeavour to create conducive and stimulating atmosphere for all the classes, irrespective of school location.

CHAPTER ONE

INTRODUCTION

Background to the Study

Education has been recognised as the single most important instrument for national development. Without education, it is hard to imagine where the world and of course Nigeria would have been. This is because education is the vehicle which drives technological, social, political and economic development of any nation. It is a means by which society ensures its stability. It is through the educational system that young members of the society are taught the expected behaviour of the society. Through the education system, people are taught to meet the changing situations. Schools are opened by communities not only to preserve the culture and to maintain continuity but also to bring about progressive change. Education among other social institutions, is a vehicle for changing society. It has and is being used for transformation of the economic, political and social systems.

In the school, system, different subjects are taught. These subjects are taught at different levels of education to aid the achievement of national goals and objectives. Mathematics is one of such subjects.Esiana (2012) described mathematics as a subject of figures or science of size and numbers. Osafehinti (1990) refers to mathematics as a universal

subject which provides a means of sharpening the mind of an individual, shaping his reasoning ability and developing his personality. The knowledge of mathematics is indispensable in the formation of an educated man, trained to approach the affairs of his daily life with some sense of detachment, objectivity and to reason about them soberly and correctly (Esiana, 2012).

The vital role which mathematics plays in education is derived from the cultural, utilitarian and interdisciplinary values which the subject seeks to inculcate in the learner. Mathematics education is to a nation what protein is to a young human organism (Odual, 2013). It is a vital tool for the understanding and application of science and technology. The discipline plays the vital role of a precursor to the much needed technological and national development of Nigeria. Hassan (2002) as cited in Odual (2013) opined that mathematics as a subject is now universally recognised and accepted as indispensable to self-reliance and sustainable development of any nation because of the perceived functional utility. Any nation seeking to develop a strong level of science and technology must pay attention to the teaching and learning of mathematics. Hence, Umuoyang (1998) cited in Odual (2013) warned that "any nation that seriously desires technology must not relegate the teaching and learning as well as research into mathematics to the

background". In support of the above assertion, Odual (2013) is of the opinion that mathematics is a model for thinking, developing scientific situations, drawing conclusions as well as for solving problems. Mathematics trains the mind on attention and concentration which are bound to be useful for the student throughout life. He went further to stress that mathematics also promote the habit of accuracy, logical, systematic and orderly arrangements. Because of the importance attached to technological development, the Nigerian government has not only made mathematics a compulsory subject in the curriculum of the primary and secondary levels of her education system, but also as a prerequisite to the study of science courses in her colleges, polytechnics and universities (Odual, 2013).

Despite the importance of mathematics in realising any national development and aspiration, over the years, there has been a repeat of low achievement of students in mathematics at both junior and senior secondary school level. Poor achievement in mathematics in Nigerian secondary schools has assumed an alarming proportion and caused a lot of concern for many years to educational stakeholders. Research has shown that mass failure in mathematics examination is real and the trend of students' performance has been on the decline (Betiku, 2002; Maduabum & Odili 2006; WAEC, 2008, 2011; NECO, 2009). Mensah,

Okyere and Kuranchie (2013) observed that many students have developed negative attitude towards the study of Mathematics as a result of mass failure of students of the subject.

A lot of reasons have been adjudged to be responsible for these low achievement in mathematics among secondary school students. The reasons deduced by several researchers include interest (Aremu, 1998), anxiety (Odunnuga, 2007), motivation (Broussard & Garrison, 2004; Tella, 2007), reasoning and numerical ability, problem solving skill (Onabanjo, 2007), mathematics phobia (Bature, 2006) and instructional strategy (Onabanjo, 2007). However, the variables that are of importance to this researcher are classroom social learning environment and attitude.

The quality of education depends not only upon the subjects taught and the level of achievement, but also on the social classroom learning environment of the particular class. The social classroom environment is a type of classroom that has to do with social interactions in the classroom. These interactions involve: teacher/students' interactions and students/students interactions (Anafulude, 2006). According to Idowu, (2006), teacher/students interaction deals with interaction between the students and their teachers. The relationship may be positive or negative. This relationship depends on how effective both the teachers as well as the students are able to perform their roles in the relationship. According

to Dewey (2006), the poor student/teacher relationship may lead to poor achievement while good student/teacher relationship may lead to better achievement in Mathematics. Another form of interaction in the classroom according to Mgboro and Omebe (2005), is the students/students interactions. This form of interaction involves the peer group. The peer group is a group of individuals who are of equal age with whom the child finds himself in the same class. The individual according to Onyehalu, (2004) relies on peers for social acceptance, support and solidarity. When his/her peers accept him/her, there is likely going to be a better achievement in mathematics than when the student is rejected by his/her peers. A conducive social classroom learning environment does not only serve the child's emotional developmental needs but also encourages intellectual development by giving the child opportunity for experimentation, exploration and self-knowledge. Allen (2004) contented that a stimulating social classroom environment provides motivation for a child to become a miniature researcher through the process of reading, recalling, self-achievement and actualization. Hence, the mind of the learner and his interest is in what he is presented with and conditioned by the stimuli in his social learning environment.

Another variable of interest to the researcher is attitude. Attitude as a concept is concerned with an individual's way of thinking, acting and

behaving. It has very serious implications for the learner, the teacher, the immediate social group with whom the individual learner relates, and the entire school system. Attitudes are formed as a result of some kind of learning experiences students go through. It has a part to play in the teaching and learning situation. It is a general observation that students having positive attitude towards Mathematics get more marks in it in comparison with those students who have negative attitude towards Mathematics. Much of the work has been done, based on the assumption that attitude affect achievement. Several researchers (Segars, 1995; Thomous & Wangu, 1995; Hart, 1995; Anthony& Purushothaman, 1995; Sriniwasan, 1999; Choudhury & Kumar, 2009) found in their studies that students' positive attitude towards Mathematics is significantly related to Achievement in Mathematics. It is generally believed that students' attitude towards a subject determines their success in that subject. In other words, favourable attitude result to good achievement in a subject. A student's constant failure in a school subject and mathematics in particular can make him to believe that he can never do well on the subject thus accepting defeat. On the other hand, his successful experience can make him to develop a positive attitude towards learning the subject.

Also of interest is the moderating variable of gender and school location. There is no gainsaying the fact that gender has influenced virtually every areas of our life. For example, Okoro (2008) observed that males and females show great differences in their interest and career choice. Block (2006) states that gender is a strong predictor of human conduct and many differences have been documented on attitude and behaviour that affect academic performance between males and females.

School location is another variable that could influence achievement in Mathematics among secondary school students. School location in this case is referred to urban and rural. Akpan (2008) indicated that schools in urban areas have electricity, water supply, more teachers more learning facilities and infrastructure. To support this Ezike (2001) stated that urban areas are those with high population density, high variety and beauty while rural areas are those with low population, subsistence mode of life, monotonous and burden. Onah (2011), and Owoeye (2002) indicated that schools in the urban areas achieved more than schools in the rural areas in science subjects. Specifically Owoeye and Yara (2011) showed in their studies that schools in urban locations had better academic achievement than their rural counterparts in chemistry.

From the above cited researches, it is evident that the achievement of secondary school students in mathematics is poor and there seems to be several factors responsible for this development. It is the aim of this study therefore, to investigate students' classroom social learning environment and attitude towards mathematics as correlates of their achievement in mathematics. The study will also investigate the moderating variables of gender and location as they influence achievement in mathematics.

Statement of the Problem

Observations and reports from examining bodies such as WAEC, NECO and NABTEB revealed that a high percentage of secondary school students failed mathematics examinations and the failure often generated much concern especially to parents, teachers, students and other stakeholders in education. This is so because, without a credit pass in mathematics, the dream of a student getting admitted into any tertiary institution will remain a mirage. Several efforts have been made by the government, teachers, parents and even the students themselves, yet, solutions does not seem to be forthcoming. So many reasons have been given as being responsible for the low achievement in mathematics, but none of them has been related to social classroom learning environment and attitude towards mathematics. The problem of this study therefore,

was: would students' social classroom learning environment and attitude towards mathematics correlate with achievement in mathematics?

Research Questions

The following research questions guided the study:

1. Is there any relationship between students' social classroom learning environment and students' achievement in mathematics?
2. Is there any relationship between students' attitude towards mathematics and their achievement in mathematics?
3. Is there any interaction effect between social classroom learning environment and gender on students' achievement in mathematics?
4. Is there any interaction effect between social classroom learning environment and school location on students' achievement in mathematics?

5. Is there any interaction effect between attitude towards mathematics and gender on students' achievement in mathematics?
6. Is there any interaction effect between attitude towards mathematics and school location on students' achievement in mathematics?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

Ho1: There is no significant relationship between students' social classroom learning environment and students' achievement in mathematics

Ho2: There is no significant relationship between students' attitude towards mathematics and their achievement in mathematics

Ho3: There is no significant interaction effect between social classroom learning environment and gender on students' achievement in mathematics

Ho4: There is no significant interaction effect between social classroom learning environment and school location on students' achievement in mathematics

Ho5: There is no significant interaction effect between attitude towards mathematics and gender on students' achievement in mathematics

Ho6: There is no significant interaction effect between attitude towards mathematics and school location on students' achievement in mathematics

Purpose of the Study

The purpose of this study was to examine students' social classroom learning environment and attitudes as correlates of their achievement in mathematics. Specifically, the study determined if:

- there was any relationship between students' social classroom learning environment and students' achievement in mathematics;
- there was any relationship between students' attitude towards mathematics and their achievement in mathematics;
- there was any interaction effect between social classroom learning environment and gender on students'achievement in mathematics;
- there was any interaction effect between social classroom learning environment and school location on students'achievement in mathematics;

- there was any interaction effect between attitude towards mathematics and gender on students' achievement in mathematics;
- there was any interaction effect between attitude towards mathematics and school location on students'achievement in mathematics.

Significance of the Study

The findings of this study will be of great benefit to curriculum planners/ developers, Mathematics teachers, the government, and school administrators.

The findings of this study may provide curriculum planners and developers with information regarding the quality of social classroom learning environment in which Mathematics will be best taught in secondary schools, with a view to guiding them in recommending the ideal social classroom learning environment for Mathematics, thereby incorporating it in mathematics curriculum to enhance students' achievement.

Again, the outcome of this study may provide information to the Mathematics teachers and educators with the nature of students' attitude towards Mathematics and ways of improving such attitudes in order to achieve maximum performance in Mathematics and also guide the

teachers in providing conducive learning atmosphere by arranging and organizing the classroom in a way that the students will like. This will increase their interest towards their social classroom learning environment and ultimately enhance students' achievement in Mathematics. Information provided by this study may sensitize teacher to help create a better interaction in the classroom.

The outcome of this study may provide information to the government on the level of students' attitude and achievement in Mathematics in rural and urban schools, knowing that this will help improve the social classroom learning environment in Mathematics, by increasing educational conditions of such schools that will enhance Mathematics achievement in Nigeria. The government, if aware of social classroom learning environment can direct supervisors to monitor social classroom environment for optimum performance.

Findings of this study may help school administrators to guide their teachers in creating better social classroom learning environments in all schools for optimum performance of students.

Information provided by this study may also serve as resource materials to researcher who may be interested in working in this area. Additionally, it will provide the frame work for other researchers to build on. Findings of this study will help to increase the knowledge base of

what is known already about social classroom learning environment and attitude, and how they affect achievement in mathematics and may help to open up a research field for Mathematics educators and researchers.

Scope and Delimitation of the Study

This study focused on the students' social classroom learning environment (such as relationship with teacher and peer group) and attitudes towards mathematics as correlates of their achievement in mathematics. The study also examined the influence of moderating variables of gender and location on mathematics achievement.

The study was delimited to selected public secondary schools in Delta North Senatorial District.

Limitations of the Study

The researcher was faced with many problems in the course of this study. Some of the students, especially in the rural schools, were unable to read and understand the questionnaire, hence the researcher had to spend more time explaining the contents to their understanding.

Also, some of the teachers were reluctant to provide the results of the students while others were asking for money before they could release them.

Operational Definition of Terms

The terms and concepts that was commonly used in this study were defined operationally thus:

Achievement: This is the performance of the students in mathematics measured in an interval scale of 1-100.

Attitude: This is a mental state involving beliefs, feelings, values and dispositions to act in certain ways.

Environment: In this study, environment is referred to as the physical manifestation of social interactions that exist in the school system.

Learning: This is the act of acquiring new, or modifying and reinforcing existing, knowledge, behaviours, skills, values, or preferences which may lead to a potential change in synthesizing information, depth of the knowledge, attitude or behaviour relative to the type and range of experience.

Classroom Learning Environment: This is used in this study to mean the social and physical environment of the students especially in the classroom.

School Location: This is referred to as the physical location of the school, e.g. rural or urban schools.

Social Interaction: This is referred to interaction and relationship that exists between students and teachers and among students.

Gender: As used in this study, gender is the state of being a male or female.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In this chapter, the review of related literature is organized under the following sub-headings:

- Conceptual Framework of the Study
- Concept of Classroom Social Learning Environment
- The Dimension of Classroom Social Learning Environment
- Classroom Social Learning Environment and Achievement
- Concept of Attitude

- Students' Attitude towards Mathematics
- Gender and Academic Achievement
- School Location and Academic Achievement
- Empirical Studies on Students' Social Classroom Learning Environment and Attitude as Correlates of Mathematics Achievement
- Appraisal of Reviewed Literature

Conceptual Framework of the Study

The conceptual model adopted in this study was Social Cognitive Theory of Albert Bandura (1967, 1977). The model represented the variables used in the study. From the model, the independent variables were classroom social learning environment and attitude towards Mathematics. The moderating variables were gender (which is measured in a dichotomous variable of male and female) and school location (measured in a categorical variable of urban and rural) while the dependent variable was the mathematics achievement of the students.

It was the assumption of the researcher that the independent variables of social learning and attitudes towards mathematics would influence the achievement of the students in Mathematics. This relationship could be influenced by the moderating variables of gender and school location. This was because, gender could influence the way

students responded to various teaching methods adopted by the teacher. Gender can also affect motivation to learn. Again, school location could influence the outcome of the study in the sense that students from urban areas have access to instructional materials such as books, videos, etc. needed to facilitate learning. On the other hand, those in the rural areas may not have access to these facilities. The conceptual model was represented in fig 1 below:

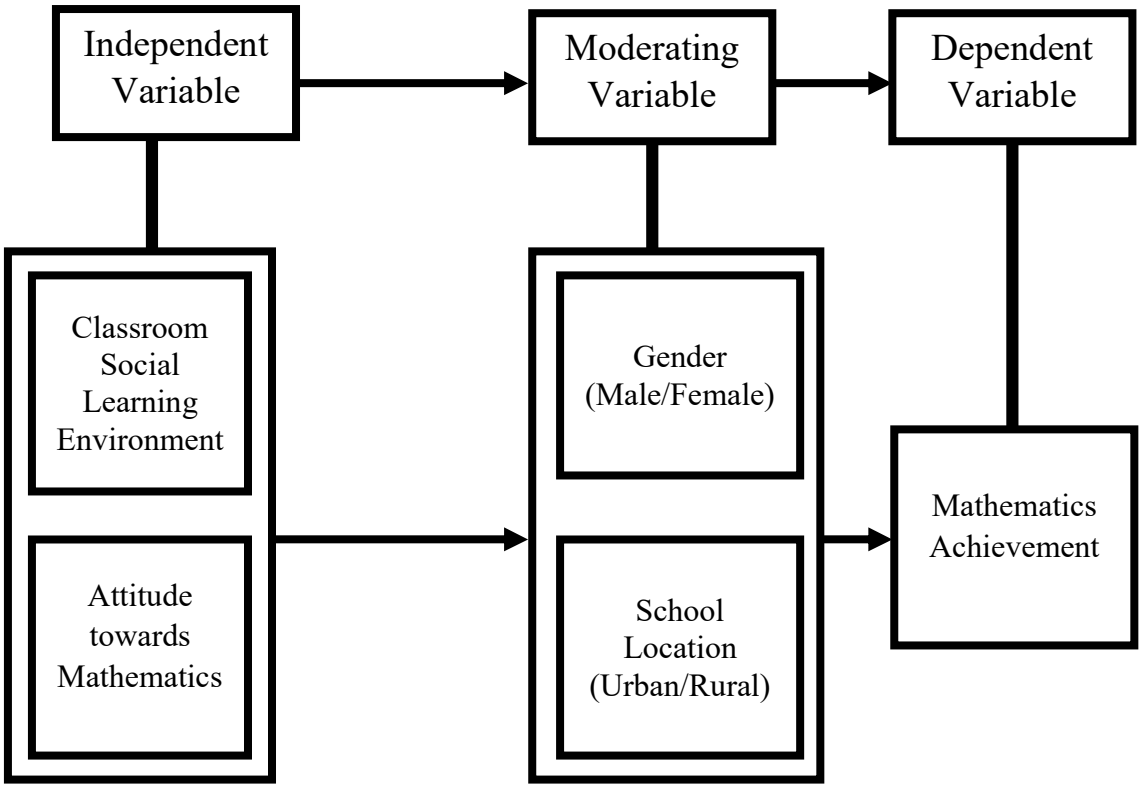

Fig 1: Conceptual Model on Students' Classroom Social Learning, Attitude towards Mathematics and Mathematics Achievement
Source: Social Cognitive Theory by Albert Bandura (1969, 1977)

Concept of Classroom Social Learning Environment

Classroom is an important place in the operation of a school. It holds students together and offers them the opportunities of achieving the purpose of education. A greater part of educational activities of any school occurs in this room. Learning experience is coordinated in the classroom and various types of instructional efforts are housed here. Akubue, (2001) described the classroom as a base for all types of activities. In addition, the classroom is a place for interaction among teachers, materials and students. These interactions create an environment known as classroom environment.

There are different aspects of classroom learning environment. They are the physical environment, the sociological environment, the psychological environment, and the psychosocial environment. The physical classroom environment has to do with the age of the classroom building, colour, level of available furniture, desks and seats, ventilation, lightening, roof, ceiling and smooth floor (Akubue, 2001). The psychological classroom refers to the level of cohesiveness, distractions, interests, motivating, anxieties, confusion and difficulty of the classroom learning activities.

According to Akubue (2001), the sociological environment which includes the level of classroom interactions between students and

teachers, students and learning materials, teachers and teaching aids. It also refers to the feeling which the teacher and the learner are able to generate in making the classroom moral high or low Akubue (2001). The psycho-social classroom environment is the type which provides an area that may help to furnish a number of ideas, techniques and research findings that could be valuable in the school psychology (Falses, 1990). It also refers to the extent the teachers and the students perceive the classroom environment and how they want it to look like.

Currently, there is a growing recognition of the value of young people's views about education and more especially in relation to the school and classroom environment (Rudduck, Chaplain & Wallace as cited in Iloba, 2009). Children ofdifferent ages can be perceptive, forthright and imaginative in describing theirclassrooms giving their impressions about their classrooms for instance, whetherthey like their classrooms and what they would like their classroom to be like.

Children need to understand their classroom and to participate in decisionmaking about its organization since this will have some educational relevance within the curriculum.Kreshner, and Pointon, (2004) revealed that children know a lot aboutclassroom work both individually and as a group. To them, the subtle variationsof children's responses shows that the understanding of their classroom has tosupport

different aspects of their experience and development. They also foundthat groups of children and individuals have different beliefs about a classroom.

Teachers need to develop a range of strategies to draw out children'sopinion and take account of individual difference if the classroom environmentis intended to facilitate children's learning, social and personal development.According to Pollard and Filer (2006), an understanding of children'sperceptions of their classroom environment will help us see how they view theirtask as students.For instance, in social term (like getting on with each other),emotional terms (such as being secure and confident) and learning terms(remembering, understanding and developing ideas).

According to Falses (1990), the learning environment should promotesensory comfort and high auditory and visual activity. The physical layout ofsuch an environment should accommodate scheduled activities, allow for people's sense of personal space and promote desirable patterns of socialinteraction and communication as well as psychological comfort and stability.Apart from supporting human functioning, the learning environment must alsoaccommodate the equipment, tools and materials that are used in education andtraining Fales, (1990). For instance, introduction of media such as

chalkboard,video computer terminal or film display will inevitably alter the nature of theenvironment. In designing the learning environment, the facility designeraccording to Fales, (1990) needs to create learning environment that recognizesboth how the human senses function and how instructional media operates. Theeducators need to be aware of ways of managing both the equipment and thephysical surrounding to effectively promote his educational objectives. Thefacility designer through prudent design and the educator, through effectivemedia utilization creates the learning environment. As Falses (1990) noted thatthe environment should be designed so that it complements the way peoplefunctions. However, the summary of the findings of the above studies hasrevealed that the nature of classroom environment of a student is an embodimentof the physical, psychological, sociological and psychosocial conditions. Also itrevealed that classroom learning environment does not only support humanfunctioning, but also accommodate the equipment, tools and materials that areused in education and training.

The Dimension of Classroom Social Learning Environment

Anderson, and Walbeg (2000) designed fifteen dimensions of theclassroom environment. They are: cohesiveness, diversity, formality, speed, material environment, friction, goal direction, favouritism, difficulty, apathy,democracy, cliqueness, satisfaction, disorganization,

and competiveness. Thesedimensions measure the interpersonal relationship between students and theirteachers, relationship between method of learning and finally students'perception of their classroom structures and characteristics. In the same view,Subergeld, Kvening and Manderschield (2005), identified twelve dimensions ofthe environment of secondary school classroom. They include; spontaneity,affiliation, support, involvement, practicality, insight, autonomy, variety, order,aggression, submission and clarity.

Adara (2004) has identified three general categories of humanenvironment. These three basic dimensions are:

- Relationship Dimensions
- Personal Development Dimensions
- System maintenance and system change dimension

Relationship Dimension: This relationship identified the nature and intensity ofpersonal relationship within the environment, the extent to which peopleare involved in the environment, support and help each other.

Personal Development Dimensions: This dimension assess basic directionsalong which personal growth and self-enhancement tend to occur.

System Maintenance and System Change Dimension: This dimensioninvolve the extent to which the environment is orderly, clear in expectations,maintains, control and is responsible to change.

Also, Reyna and Winner (2004) developed nine different classroomenvironment dimensions which relates to personal affective, teacher-studentrelationship, or student-student relationship. A second group of dimensionsassessed the degree to which the class is task-oriented and focused oncompetition. The last four dimension of order and organization, rule clarity,teacher control and innovation gives information about maintenance andauthority of function relevant to the structure and organization of classroom aswell as about the processes and potential changes in classroom functioning.

Moos and Trickett (2004) published a version of classroomenvironment dimensions, which contains nine scales. They include: involvementwhich measures the extent to which students pay attention to and show interestin the activities of the class, affiliation which measure the extent to whichstudents work with and come to know each other, teacher support whichmeasures the extent to which the teacher expresses a personal interest in thestudents, task orientation which measures the extent to which the activities of theclass are centred around the accomplishment of specified academic objectives,competition

dimension which measures the amount of emphasis on academic competitionwithin the class, order and organization dimension which measures the emphasis within theclassroom and maintenance of order and the degree to which the activities of theclass are organized, rule clarity dimension which measures the degree to which the rules forconduct in the classroom are explicitly stated and clearly understood. Teachercontrol dimension measures the amount and extent of rules governing students conduct in the classroomand invocation dimension which measures the extent to whichdifferent modes of teaching and classroom interaction take place in the class.

Taltom, and Simpson (2005) classified the classroom environment intofive dimensions. They are; emotional climate of the classroom dimension which measuresthe classroom atmosphere and morale, the teacher factor dimension which deals with theteacher's support and control, the physical environment dimension which is concerned withthe availability and quantity of the classroom facilities, other students in theclassroom dimension which deals with the extent of interaction and involvement that existbetween the students, and the curriculum.

Carpenters (2006) classified the classroom environment into twodimensions. They are: physical environment, which is made up of chairs, desks,tables, lightening, ventilation, space, acoustics and

instructional materials. Thesecond category is the social climate dimension, which refers to the feeling, which theteacher and the learner are able to generate in making the class morale high orlow.From the above classifications, one can derive some common elements ofthe classroom environment. They include the teacher support, teacher control,involvement, affiliation, satisfaction, task orientation, competition, innovation,order and organization (Carpenters, 2006).

Classroom Social Learning Environment and Achievement

Researchers have explored the classroom social learning environment as a potent mediator of various motivational variables, as well as an antecedent of academic performance outcome (Fraser, 1990; Dorman, Fraser & McRobbie, 1997). That the classroom environment is an important mediator and determinant of academic performance outcome is evident from the extensive research studies that have been conducted in Australia, the United States, the Netherlands, Singapore and Nigeria (Khine & Chiew, 2001; Iloba, 2009).

The classroom environment has also been referred to as a space or place where there is dynamic participation and interaction between teachers and students, and usage of tools and information resources to pursue and facilitate different learning activities (Wilson, 1996). Research

investigation into the classroom environment has resulted in the development of different classroom environment scales.For example, the learning Environment scale (Anderson & Walberg 2004), the classroom Environment scale (Moos & Trickett, 2004), the Individualized Classroom Environment Questionnaire Scale (Rentoul & Fraser, 1979), and the College and University Classroom Environment Inventory (Fraser, Treagust & Dennis, 1986).

The development of the various classroom environment inventories has resulted in studies that explored the contribution of the classroom climate in predicting students' academic success (Baek & Hye-Jeong, 2002; Lizzio, Wilson, & Simons, 2002; Wong & Watkins, 1998). Furthermore, the work of John Biggs (1989) as cited in Esiana (2012) in particular, involving the 3p theoretical model (presage, process, and producer) has made substantial ground in the study of Students' Approaches to their Learning (SAL) within the context of the classroom environment. Research has in general explored the concerted relations between SAL and academic performance, taking into account the importance of the classroom environment (Lizzio et al., 2002; Wong & Watkins, 1998). Research also investigating classroom environment shows that various components of the home environment contribute to the prediction of academic success. For example, Rhana and Akbar's (2007)

study of Pakistani university students showed various factors of classroom learning environment (including instructional effectiveness, teacher-student interaction, students' attraction for learning, task orientation and students' collaboration) predicted effective learning. In a study involving university students of different faculties (including humanities, business, commerce, environmental sciences, computer sciences, etc.) Lizzio et al (2002) found that positive perceptions of the teaching environment predicted both academic achievement and qualitative learning outcomes.

Resenthal and Jocabson (1968) concluded on the basis of their research that teachers should treat their students in a more pleasant, friendly and encouraging fashion when they expect greater intellectual gains of them. Such communication together with other positive changes in teaching techniques and physical conditions of the classroom may help the students to learn by changing their self-concept image.

The Concept of Attitude

Brehm, Kassin and Fein (2002) defined attitude as a positive, negative or mixed reaction to a person, object or an idea. For example, self-esteem is the attitude we hold about ourselves, attraction is a positive attitude towards another person, and prejudice is often a negative attitude towards a specific group. These positive or negative valuation forming is

a reflex reminding act that can even occur before the person consciously notices doing it (Brehm et al., 2002).

Triandis (1971) defined attitude as an idea charged with emotion, which predisposes a class of actions to a particular class of social actions. He identifies three main components attached to attitudes. First, a cognitive component, that is, the idea which is generally of the same category used by humans in thinking. These categories are inferred from consistencies in responses to discreditably different stimuli. Second, an affective component that is the emotion, which charges the ideas. Third, a behavioural component associated with a predisposition to action. However, it is difficult to separate these three components as they tend to interact and merge with one another.

From another perspective, Baker (1988) defined attitudes as inferred, conceptual inventions hopefully aiding the description and explanation of behaviour. Seen in this context, attitudes are learned predisposition, not inherited or genetically endowed, and are likely to be relatively stable over time. Lewis (1981) offered another important insight into the nature of attitudes. He sees attitudes as mental sets, which are a cluster of preconditions that determine the evaluation of a task, a situation, an institution, or an object before one actually faces it. Wenden

(1991) sums up attitude as learned motivations, valued beliefs, evaluations, or what one believes is acceptable.

It is generally true that attitudes of students towards learning of a subject have a significant impact on the outcome of their learning processes. It is equally important to note here that in any learning processes, attitude is not only a causal or input variable, it also needs to be thought of as output or outcome variable (Baker, 1988). Attitude conceived as an outcome of education is important because it may provide a complimentary or even alternative and more long-lasting effect than examination achievement. Thus, a positive attitude towards a subject may be a more enduring outcome than knowledge gained in passing examination.

Attitudes come in very different shapes and sizes, and they can be based on very different sets of information (Fazio & Petty, 2008). Attitudes are acquired through learning and interaction with the surrounding environment and they seem to play a huge role when behaviour for different situations is chosen. It is common sense that the brain is very much needed to have an attitude, which means, for example, that a computer cannot have attitudes (Eiser, 1995).

Attitudes can be based on three different types of information: (1) Cognitive, (2) Affective or (3) Behavioural (Millon, Lerner & Weiner, 2003).

Cognitive Process: One crucial source of attitude is cognitive information about the target. This is a belief about the attributes of the target. There are both direct and indirect sources to gain knowledge about an object. Direct sources means having direct experience with an object and by indirect sources it means sources such as parents, peers, and the media. The attitudes that are based on direct experience are usually stronger than the ones based on indirect information (Millon et al., 2003).

Affective Process: Some of our attitudes have a strong emotional basis. Sometimes things thrill us, which on the other hand, can lead to a positive attitude. Comments of a politician might sometimes cause anger making people vote against him. Sometimes seeing a picture of a starving child from a developing country might evoke feelings of empathy and pity encouraging us to donate to a charitable foundation that promises to help those in need (Fazio & Petty, 2008). According to Zanjonc (1979), affective reactions to stimuli are often the very first reactions of the organism, and for lower organisms they are the dominant reactions. They can even occur without extensive perceptual and cognitive encoding. Affective reactions are made with greater confidence, and can be made

fast. These reactions can occur in total absence of recognition memory. Zanjonc (1979) concluded that affection and cognition are under the control of separate and partially independent systems that influence each other both constituting independent sources of effects in information processing.

Behavioural Process: Attitudes can also be inferred from behaviour (Fazio & Petty, 2008). From this proposition Bern as cited in Fazio and Petty(2008) developed one of the most famous theories on attitudes called the self-perception theory. She argued that individuals come to know their own attitudes, emotions, and other internal states by inferring them from observation of their own over-behaviour and from the situations in which the behaviour occurs. An individual is functionally in the position of an outside observer, an observer who must necessarily rely upon those same external cues to infer the individual's inner states.

Students' Attitude towards Mathematics

Tourangeau and Rasinski (1988) come to the conclusion that attitudes are structures that are resident in long-term memory and are dependent on this memory when they are expressed in surveys or in any other way. Respondents to attitude surveys first read the question and decide what attitude it is about. They then go to their long term memory to retrieve beliefs and feelings that may be relevant to that attitude. The

next step is to apply those feelings and beliefs to the question at hand and make an appropriate judgment and then finally make their response. The steps are important to remember while reading this study because while the classroom learning environment inventory is collecting data on how students see the present climate of their classroom and how they would prefer it to be, the responses to the attitude survey are affected by the files the student has stored in their long term memory and may not be a property of the present classroom situation. Responses students make to specific questions on attitude surveys can also be dependent on previous questions. Previous questions can initiate some beliefs in the respondent making later question either easier to answer or even redundant.

Student attitudes in mathematics may be dependent on a whole range of factors. Some attitude stem from a 'Love/hate' relationship with mathematics in the community in general. What their peers, parents and family say about mathematics may have an influence on their attitude. What has happened in their previous classrooms may also have had an impact on their attitude. The current mathematics classroom a student is a member of will also be having an effect on their attitude to the subject. Much of the research in learning environments has shown that attitude to the academic subject and learning environments are connected. For example in a thesis by Rickards (1998) as cited in Esiana (2012), a

positive relationship between student attitude and student-teacher interpersonal behaviour as a measure of perceived learning environment was reported.

Boaler, Wiliam and Zevenbergen (2000) discussed the idea of success in mathematics classes as more an issue of the student having a feeling of 'belonging' rather than an issue of 'ability'. Students may want to succeed at mathematics as a means to an end but they may have no desire to become 'successful mathematicians'. Boaler et al. (2000) also casted light on the importance of nurturing learning environment in the mathematics classroom and how this learning environment can affect student attitude. The comment was made that the mathematics classroom becomes a "community of practice" where "learning is a social activity which encompasses the relations between people and knowing."

A group of trainee primary school teachers was interviewed on their feeling about mathematics. Cornell (1999) as cited in Esiama (2012) reported on the findings by saying that: "The students were nearly evenly divided between those who liked and those who disliked mathematics. In nearly all the cases, a correlation existed between attitude and success." Also, Cornell (1999) supported the theory that there are few neutral feelings about mathematics at school level. The study further highlighted some of the reasons for the negative attitudes towards mathematics which

includes: teachers were said to be uncaring about students' lack of ability to do what was to them simple problems. Sometimes students believed they did not get the full explanation for doing a problem, leaving them frustrated. Students felt frustration at not being able to keep up with the rest of the class. They felt they were expected to rote learn but not taught for understanding. Most of the students were very negative about tests and examinations and how they contributed to increasing stress, decreasing self-esteem and generally disliking the subject.

Carter and Norwood (1997) studied the relationship between teachers' attitudes to mathematics and their students' attitude to mathematics. They found that there was an obvious link between the two facilitated by the teaching and learning that went on in the classrooms. Given this link it seems that student attitudes to mathematics can improve if teachers' attitude improves. If teachers were able to move from a traditional approach to teaching mathematics which is better suited to the more able students, to a new and more constructivist approach to teaching, then students' attitudes across the ability range may improve. This philosophical move is an extremely difficult one for a teacher who has been teaching the same material in the same way for a long period of time.

According to Snow, Burns and Griffin (1998), parents can also have a significant impact on a student's attitude to mathematics. He says that seemingly innocent words parents use sometimes at home such as 'I hate mathematics' or 'I was never any good at mathematics' can contribute to the students negative feelings about mathematics. They may only hear complaints about bank accounts not adding up or shop-keepers giving the wrong change. Rather they need to hear positive things or have their parent pick out everyday things that may have a mathematical application and talk to the child about it.

Utsumi and Mendes (2000) made the point that negative feeling towards mathematics tends to increase as the student progresses through school. They suggested that these feelings are probably due to the fact that their understanding of the concepts and content taught is decreasing as they progress in school. Turner et al (1998) added to this point by reporting that students commonly feel negatively towards mathematics classes when they become confused with how complicated the subject can be and the accuracy required.

Another factor said to affect the attitude of students towards mathematics is their own fear of the subject. Gilroy (2002) said that: "One of the problems is the fear associated with mathematics. Society puts such emphasis on mathematics as an indicator of intelligence that if

students are not good at it, they feel a bigger sense of failure. They believe that they are not smart.

The relationship between attitude and achievement is a key issue for consideration permeating much of the literature since much of the generalized concern and interest in attitudes towards school science is based on a somewhat simplistic notion that the best milk comes from contented cows' (Fraser, 1982). However, Gardner's review of the research evidence offered little support for any strong relationship between attitude and achievement. Writing somewhat later, Schibeci (1984) drew a stronger link between the two, quoting studies that show a correlation of 0.3-0.5. However, he also cited studies that show no relationship. The current position is best articulated by Shrigley (1990), who argued that attitude and ability scores can be expected to correlate moderately. Likewise, the measures used in the TIMSS study, albeit somewhat unsophisticated, have found a consistent relationship between attitude and achievement (Beaton et al. 1996). Weinburgh's (1995) Meta-analysis of the research suggested that there is only a moderate correlation between attitude towards science and achievement, although this correlation is stronger for high and low ability girls indicating that, for these groups, 'doing well' in science is closely linked with 'liking science'. Similar findings have appeared in the major study conducted by

Simpson and Oliver (1990), by Jovanic and king (1998) as cited by Osborne and Collins (2003). These studies are related to the present study since the present study focuses on students social classroom learning environment and attitude as correlates of mathematics achievement.

Gender and Academic Achievement

Gender is a specially constructed phenomenon that is brought about as society ascribes different roles, duties, behaviours, and mannerisms to the two sexes (Mangvwat, 2006). It is a social connotation that has sound psychological background, and it is used to refer to specific cultural patterns of behaviour that are attributed to human sexes. Gender relates to cultural attributes of both males and females (Akpochafo, 2009). Gender according to Lebey (2003) is a psychological experience of being a male or female. It has to do with personality and central components of self-concept. Unlike sex, which is concerned with, only the distinction between male and female based on biological characteristics, gender encompasses other personality attributes as roles, orientation and identity based on individual's conceptualization of self. For instance, Singh (2010) opined that gender refers to a socio-cultural construct that connotes the differentiated roles and responsibilities of men and women in a particular society. This definition implies that gender determines the role, which one plays in relation to general political,

cultural, social and economic system of the society. According to Betiku (2002), gender refers to all the characteristics of male and female, which a particular society has determined and assigned each sex. Also, Onyeukwu (2000) saw gender as the dichotomy of roles culturally imposed on the sexes.

Avwata and Oniyama (1999) once described gender stereotype in school as "hidden curriculum" which send out messages to girls to conform to role expectation. In most societies, gender has roles based on the women folk, preventing their participating in, and benefiting from development efforts (UNESCO, 2000). This has created a big psychological alienation or depression in the minds of the female students (Joel and Aride, 2006). As a result, boys dominate Social Studies, Chemistry, Physics, Mathematics and Environmental studies classes while the girls go into reading languages and Arts.

Okeke (1997) affirmed that the proportion of girls in science classes in secondary and tertiary institutions or in employment as scientist, engineers, and technologists in Nigeria is quiet low. In line with the above claim, Akpochafo (2009) reported that in Nigeria as in many African societies, there is gender bias, a situation in which cultural beliefs and structural arrangement favour men over women. This can be witnessed in most of elective positions contestable by man and woman.

People always see women as not fit to govern or rule since men are involved. The idea that female should be under and submissive to men have created negative influence in the life women folk. Explaining further, Anele (2008) is of the view that the socio-cultural practices of the African societies have placed men on the position, which give them domineering influence on women folk. In an argument for, and attempt to debunk a belief that seems so general in Africa to create a kind of relief for gender equality, Okoye (1987) argued that because of various biological differences in human make-up such as those between male and female, people assume that one sex may have a learning edge over the other sex. Intrinsically, there is practically no significant difference in the intelligence between male and female that can be traceable to gender difference. He argued that, the fact that men are regarded as the dominant and even superior sex does not mean that they are artistically better than women are, (Okoye, 1987).

Okeke (2007) equally observed that, the Nigerian school curriculum is not gender fair since its contents reflect mainly the concerns of males; science careers portray masculine images in the curriculum; and more still, female suffer discrimination from teachers overtly & covertly, knowingly and unknowingly. These actions automatically put the girls in

a disadvantaged position for achievement in classroom interaction especially in Social Studies and science related subjects.

Okoro (2008) thus observed that males and females show great differences in their interest and career choice. These differences may be attributed to the psychological differences and cultural influences. Females' enrolment in vocations is quite different from those of males. Even parents generally encourage their daughters to opt for professions not masculine in nature. UNESCO (2000) has it that local customs, values have been developing in girls, and they are so deeply ingrained that some of them find it difficult to cope in areas that are believed to be male dominated professions. Lie and Syoberg (2004) observed that, invisible rules within the society have provided what is feminine and what is masculine. This could also be found in Social Studies classroom interaction as male students dominate the female folk in all sorts of curricula activities.

Achievement test results conducted by Onekutu (2002) has shown that boys and girls in the early ages perform equally in all subjects including English language, and as they grow to higher classes, the girls begin to get more interested in language Arts, while the boys take more to sciences and Social Sciences. This has resulted to a situation where there are more boys than girls offering Social Sciences. However, the issue of

gender and students' academic achievement has remained a controversial one. While some proposed that, males perform better than females in academics, others argued that, the reverse is the case. Veinon (2002) reported that, many comparisons show average scores of boys and girls to be the same on general intelligence test. He said that, girls do a little better on most verbal tests and on tests involving rote memory than boys. On tests of inductive reasoning and arithmetical ability, though with a great deal of overlapping, the average differences, he said, seldom exceeds about four points of intelligence quotient. He added that, the most marked difference occurs on spatial and mechanical tests, and wonders if such ability might be attributed to the cultural influences on our civilization, which encourages boys to develop physical, constructional and mechanical interests. He concluded that, many surveys demonstrate that the range or spread of ability is slightly more restricted in girls.

Gessell (2004) asserted that girls under the age of fourteen years usually perform better in English language than boys of the same age. In addition, after that age, the boys usually overtake the girls. The initial higher achievement by girls than boys, according to Okoye (2009) was as a result of girls over attachment to their mothers in household chores involving social interaction with their mothers and measuring out of food

items, quantities of water and other liquids, timing the period for which a particular food needs to boil on fire. In addition, cooking involves estimation of how much each person in the family needs and making allowance for necessary wastages. All these are practical interactions of English language which girls are exposed to as they under-study their mothers, hence, their initial higher achievements as asserted by Gersell(2004).

School Location and Academic Achievement

The disparity in students' academic achievement occasioned by the influence of school location (urban and rural), has been a matter of controversy to parents, educators and the general public. Ogunlade (1973), Lawin (1973), Anwana (1979) and Obot (1991) found that schools in the urban areas are well staffed and with good facilities. Hence these factors induce better performance in the urban than the rural areas. Kathleen (1996) reported that urban students outperformed rural students in all skill areas. The greatest difference according to him was in the vocabulary test where urban students' outperformed their rural peers by 20 percentile ranks. Again, he said that the smallest difference between urban and rural students' occurred in mathematics where urban students performed at the 57^{th} percentile, whereas rural students achieved a percentile rank of 47^{th}. The Human Resources and Skill Development

Centre-Canada (2002), research on Rural-Urban Reading Gap came up with the finding that the rural-urban difference in reading performance that exists in some provinces is best explained by the difference in the kinds of jobs in the communities where these schools were located. In the study, the researchers used the parents of 15-year-olds and controlling other factors, found that if the occupational status of the rural students' parents is the same with that of urban students' parents, they will perform academically the same. The centre further pointed out that rural students were more likely to come from lower socio-economic backgrounds where availability of textbooks and other materials are not guaranteed.

Goudie (2001) reported that Connecticut and Virginia (two states in USA) showed opposite patterns of rural versus non-rural achievement gaps. He discovered that interstate variations in rural students' mathematics achievement in relation to their non-rural counterparts were closely related to interstate variations in key schooling conditions e.g. instructional resources, professional training and safe/orderly climate. In the study, it was found that Connecticut and Virginia recorded 37% and 28% respectively which also represent rural and urban settings in that order. In Connecticut, though rural, students had relatively better schooling conditions and performed better compared with Virginia (urban) with a low achievement.

New Generation of Education Research Centre (2004) from its study on rural education stated that it is important to keep in mind that rural schools differ greatly from one another. But as a group, students in these schools generally score as well as or better than non-rural students on standardized test. The average scores of 4^{th} and 8^{th} grade students in rural schools perform at similar levels in reading and mathematics to students in sub- urban schools and slightly better than their urban peers. However, the report continued that the nationwide picture obscures achievement levels that, in fact, vary greatly from state to state. Rural students achieve significantly better than non-rural students in some states, but significantly poorer in others. Such differences seen to be linked to variance in a wide range of school factors such as instructional resources and advanced course offerings.

Akubuiro and Joshua (2004) in a study on the achievement of students in physics and chemistry in Southern Cross River State of Nigeria, found that above one thousand eight hundred and seventy (1870) students that took SSCE examination in the urban areas of Southern Cross River, about one thousand five hundred representing about eighty percent (80.2%) made credit. On the other hand, about one thousand three hundred and thirty-five (1335) students from the rural areas took the same

exams about six hundred representing forty-five percent (45%) making credit.

Bell (1971), Kostman (1977) and Simmelkjaer (1979) 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 schools as compared to schools in the rural areas.

Empirical Studieson Students' Classroom Social Learning Environment and Attitude as Correlates of Mathematics Achievement

Empirical Studies on Relationship between Students' Social Classroom Learning Environment and Students' Achievement in Mathematics

Igwebuike and Oriaifo (2012) examine the nature of classroom environment and achievement in integrated science: A test of efficacy of a constructivist instructional strategy. Two hypotheses guided the study, a non-equivalent control group design with random assignment of classes to experimental and control groups was employed and 100 junior secondary school students were used as the sample. The instruments used to obtain data were Cognitive Achievement Test, Affective Achievement Questionnaire, Individualised Classroom Environment Questionnaire and Interview-About-Instances. Descriptives, t-test and ANCOVA were used

to analyse the data obtained. The result revealed a strong association between the students' perceptions of their classroom environments and their cognitive and affective achievements.

In the same vein, a study was conducted by Iloba (2009) on relationship between students' perception of classroom psycho-social environment and achievement in Geography. The correlation survey research design was adopted, 395 secondary school students formed the sample for the study, while two instruments were used for data collection. The instruments are Geography Classroom Environment Scale Questionnaire (GCESQ) adapted from Classroom Environment Scale (CES) developed by Rudolf Moos at Stanford University (Fisher & Fraser, 1991), and cumulative scores of SS 2 Geography students. The data obtained was analysed using mean, standard deviation, Pearson Product Moment Correlation and stepwise analysis. The finding revealed that psycho-social classroom environmental factors correlated negatively with students' achievement in senior secondary geography. The finding also showed no significant difference in the achievement between urban and rural students in geography.

Busari (2005) carried out an investigation on the correlation of achievement and psychosocial factors of chemistry classroom environment. 1,200 SS II geography students with age range 16 – 19

years were used and were drawn from 10 States of Nigeria. Five States each in Northern and Southern parts of Nigeria. Three instruments were used namely; classroom environmental scale (CES), Group embedded figure Test (GEFT) and Chemistry Achievement Test (CAT). The CES was used to access the psychosocial factors. The scores of CES and GAT were correlated using the Parson's Product Correlation. This is to find out if there is any relationship in the psychosocial factors and students' performance in geography. The result showed that students with a conducive psychosocial classroom environment factors learn better than their counterparts who were not opportune to have a conducive psychosocial classroom environment factors.

Siti and Effandi (2010) conducted a study on learning environment, teacher's factor and students' attitude towards mathematics amongst engineering technology students in Malaysia with 102 sample. The analysis of data was done using descriptive statistics as well as t-test and Pearson correlation. The results of the study showed no significant difference in learning environment and the students' attitude towards mathematics. They further remarked that learning environment and teachers' factor are two factors that need the institutions' consideration in producing students with positive attitude towards mathematics.

Rana and Akbar (2005) conducted a study on the relationship between classroom learning environment and students' achievement in higher Education. The sample for the study was 2,360 master level students. Regression analysis and Pearson "r" was used to investigate the cause-effect relationship between classroom learning environment and students' achievement. The result of the study showed that different factors of classroom learning environment including instructional effectiveness, teacher-student's interaction, students' attraction for learning, task orientation and students' collaboration are major contributors for effective student learning at higher education level.

Onwuakpa and Akpan (2000) carried out a study on secondary school students' classroom learning environment in relation to their mathematics achievement in Imo State of Nigeria with 1,200 students as sample and using descriptive statistics (percentages and frequencies) and multiple regression analysis in analysing data. The results revealed that the students' classroom learning environment was not very adequate. The findings also showed that the entire indicators of students' classroom learning environment predicted students' mathematics achievement significantly and contributed about 35.81% to the total variations in mathematics achievement.

Esiana (2012) conducted a study on students' social classroom learning environment and attitude towards mathematics as correlates of their achievement in Mathematics. Six research questions and five hypotheses guided the study, the correlational survey research design was adopted, and 840 SS 2 students were used as samples for the study. Three instruments were used to collect data, they are Social Classroom Learning Environment Scale (SCLES), Student Attitude towards Mathematics Scale (SATMS), Students Sessional Achievement Scores. The data obtained was analysed using statistical mean scores, standard deviation, Pearson product moment correlation, multiple regression analysis and independent sample t-test. The finding of the study revealed that there is a significant relationship between students' social classroom learning environment and achievement in mathematics; no significant relationship exists in students' attitude towards mathematics and their achievement in mathematics; teacher support sub-scale was found to be the most prevailing factor in social classroom learning environment; significant difference exists in urban students' responses and rural students' responses to social classroom learning environment; no significant difference exists in urban students' responses and rural students' responses in attitude towards mathematics; and urban students' performed better in mathematics than rural students.

Empirical Studies on Relationship between Students' Attitude towards Mathematics and their Achievement in Mathematics

Ma and Xu (2004) conducted a study on determining the casual ordering between attitude towards mathematics and achievement in mathematics in America with 3,116 students (1,626 males and 1,490 females). The data analysis used three survey indicators for attitude towards mathematics and four indicators for mathematics achievement; it was found that poor attitude, by contrast, did not meaningfully predict later achievement in mathematics.

Yara (2009) in his study on students' attitude towards mathematics and academic achievement in some selected secondary schools in South-western Nigeria with 1,542 senior secondary two students and using simple frequency and percentages in analysing data. The results showed that the students' attitudes towards mathematics were positive and that many of them believed that mathematics is a worthwhile and necessary subject which can help them in their future career.

Empirical Studies on Interaction Effect between Social Classroom Learning Environment and Gender on Students' Achievement in Mathematics

Nnamani and Oyibe (2016) conducted a study on gender and academic achievement of secondary school students in social studies in Abakaliki urban of Ebonyi State. Two research questions and two

hypotheses serve as guides to the study, a quasi-experimental research design involving a pre-test and post-test design was adopted. The sample of size comprised 205 junior secondary school students, who were selected using simple random sampling techniques. The instrument used for data collection is social studies achievement test while the mean, standard deviation and ANCOVA were used for data analysis. The findings revealed that the mean achievement score of female secondary school students was higher than the mean achievement scores of male students.

Adeneye (2011) conducted a study on Gender a Factor in Mathematics Performance among Nigerian Senior Secondary Students with Varying School Organization and Location. The samples comprised 1,780 secondary school students. Mock results of senior secondary year three students in preparation for their external examinations were collected as the data for the study. T-test was used to analyse the data. Results showed a significant effect of gender in mathematics performance among the sample data. Also, there were significant differences in the mathematics performance of single-sex male and female students and rural male and female students, all in favour of male students.

In another study, Udousoro (2011) examined the Effects of Gender and Mathematics Ability on Academic Performance of Students in

Chemistry. A survey design was used in this study, the instruments used were the Chemistry Achievement Test (CAT) and the Mathematics Ability Test (MAT). Independent t-test statistic tool was used to analyse the data collected. The result of the test indicated that gender does not have any significant effect on the academic performance of students in Chemistry. It was also observed that students with high mathematics ability performed significantly better than those with low mathematics ability in chemistry.

Empirical Studies on Interaction Effect between Social Classroom Learning Environment and School Location on Students' Achievement in Mathematics

The effects of location of students in Kwara State, Nigeria were investigated by Jahun and Mom (2006). Data for the study was collected in six local government areas of Kwara State, 16 secondary schools and 876 students were randomly sampled. The instruments consist of two forms of 60-item achievement test; two parallel tests of the Ahmadu Bellow University achievement test (ABUMAT) which were already developed by the researcher in 2001 and standardized were used as research instrument. The study tested the null hypotheses of no significant differences in performance of students located in rural and urban area in each form of the ABUMAT. The result showed that the computed p-value 0.1651 was greater than the table value at 0.05 significance levels, hence the hypothesis was retained. That is to say that

location whether rural or urban does not affect performance in social studies.

Maliki, Ngban and Ibu (2009) conducted a study on analysis of students' performance in junior secondary school mathematics examination in Bayelsa State of Nigeria using data from J.S.S.C.E mathematics objective paper for 2006 with sample size of 600 and using means and standard deviations in analysing data, it was found that students from the rural school performed better than students from urban schools in mathematics examination.

Fan and Chen (1999) examined achievement differences among rural, suburban and urban school students using data from the National Education Longitudinal Study of 1988 with a sample of 24,500 students (8th – 12th grade level) and using MANCOVA for analysis. The results revealed that rural students performed as well as, if not better than, their peers in metropolitan schools.

Appraisal of the Reviewed Literature

From the review so far, it is evident that social classroom environment, attitude towards Mathematics, gender and location have a role to play in the achievement of secondary school students in Mathematics. For instance, several researchers agreed that social classroom learning environment significantly influenced academic

achievement in Mathematics.In the same vein, researchers were divided as to the relationship between location and academic achievement.

From the review, it is evident that all the researches were conducted outside Delta State;besides, none of them combined Social Classroom learning environment, attitude towards mathematics, gender and location. This is the gap that this study seeks to fill. Apart from the fact that the study will be carried out in Delta North Senatorial District of Delta State, the study will also combine all the variables stated above.

CHAPTER THREE

RESEARCH METHOD AND PROCEDURE

This chapter discussed the research method and procedure that were used for the study. The method and procedure were discussed under the following headings:

- Deign of the Study
- Population of the Study
- Sample and Sampling Technique
- Research Instruments
- Validity of the Instruments
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Design of the Study

The study adopted the ex-post facto research design, using the method of correlation. The correlation research, according to Akuezuilo and Agu (2003), is one which seeks to establish what relationship exists between two or more variables. This study was aimed to ascertain how

social classroom learning environment, student attitude towards mathematics and achievement in mathematics relate with one another.

Population of the Study

The population of the study comprised all the Senior Secondary Three (SS 2) students in public secondary schools in the nine Local Government Areas of Delta North Senatorial District of Delta State. There are approximately 159 secondary schools and 16,473 SS2 students in Delta North Senatorial District as shown in table 1.

Table 1: Population of secondary schools in Delta North Senatorial District

S/N	Local Government Area	No of School	No of Students
1	Aniocha North	18	962
2	Aniocha South	19	1,555
3	Ika North-East	19	2,140
4	Ika South	19	1,880
5	Ndokwa East	24	831
6	Ndokwa West	22	1,607
7	Oshimilli North	13	815
8	Oshimilli South	12	2,390
9	Ukwuani	13	4,294
	Total	**159**	**16,473.83**

Source: Ministry of Basic and Secondary Education, Asaba (2017)

Sample and Sampling Technique

The sample comprised 1,647 SS 2 students drawn from five schools each from the nine Local Government Areas of the Delta North Senatorial District by means of proportionate stratified random sampling. This represented 10% of the population. This is represented in Table 2.

Table 2: Summary of Sampled Schools and Students by Local Government Area

S/N	Local Government Area	No of Schools	No of Students	10% of Students
1	Aniocha North	5	962	96
2	Aniocha South	5	1,555	156
3	Ika North-East	5	2,140	214
4	Ika South	5	1,880	188
5	Ndokwa East	5	831	83
6	Ndokwa West	5	1,607	161
7	Oshimilli North	5	815	82
8	Oshimilli South	5	2,390	239
9	Ukwuani	5	4,294	429
	Total	45	16,473.83	1,647

Research Instruments

Three research instruments were used in this study. They were Students' Social Classroom Learning Environment Questionnaire (SSCLEQ), Students' Attitude towards Mathematics Scale (SAMS) and students' previous scores in Mathematics (see Appendix I and II). The instruments were described below:

Students' Social Classroom Learning Environment Questionnaire (SSCLEQ): The SSCLEQ contains 15 items measuring students' social classroom learning environment. The instrument was adapted from classroom environment research by Aldridge Fraser (2000) and Dorman

(2003). The instrument will be structured on a four-point scale of SA (4), A (3), D (2) and SD (1) (see Appendix I).

Students' Attitude towards Mathematics Scale (SAMS): The SAMS contains 14 items measuring Students' attitude towards Mathematics. It will be adapted from Fennema-Sherman mathematics attitude scales. The instrument will be structure on a 4-point scale of SA (4), A (3), D (2) and SD (1) (see Appendix I).

Students' Previous Scores in Mathematics: In order to ascertain the achievement of the students in Mathematics, their second term scores for 2016/2017 Session will be obtained from the schools.

Validity of Research Instrument

The research instruments were validated by three experts in Curriculum and Integrated Science and Measurement and Evaluation. These experts helped to ensure the face and content validity of the instruments. They were asked to check to the relevance and suitability of the instruments to the study based on the objectives of the study.

Drafts of the instruments were distributed to the experts who checked and made recommendations. The recommendations were effected before the final draft was produced for each of them. The instruments were, therefore, considered valid based on experts' judgement.

Reliability of Research Instrument

In order to ensure that the instruments are reliable the instruments were administered to 30 students from 2 schools in Ethiope East Local Government Area of Delta State, who are not part of the study area. The data was analysed using Cronbach alpha for Social Classroom Learning Environment Scale (SSCLES) and Students' Attitude towards Mathematics Scale (SAMS), which yielded a Coefficient of 0.83 and 0.80 respectively (see Appendix IV).

Method of Data Collection

The research instrument was administered directly to the students by the researcher with the help of the class teachers in charge of the various classes, who served as research assistants. Prior to the test, the researcher visited the schools to familiarise herself with the Mathematics Teachers as well as to obtain permission from the Principals of the various schools. The instruments were be administered to the students during break period to avoid distraction of normal classes. The instruments were retrieved immediately after filling to avoid loss. The previous scores of the students in Mathematics kept in the school were obtained on the same day of the test from the schools.

Method of Data Analysis

The Pearson coefficient of determination (r) was used to answer research questions 1 and 2 while hypotheses 1 and 2 were tested using Pearson correlation coefficient at 0.05 level of significance. Also, research questions 3-6 and hypotheses 3-6 were analysed using Two-Way Analysis of Variance (ANOVA), in order to determine the interaction effects of gender and location on the independent and dependent variables of the study.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION

In this chapter, the data obtained was presented and analysed based on the research questions and hypotheses raised.

Answering of Research Questions and Testing of Hypotheses

Research Question 1: Is there any relationship between students' social classroom learning environment and students' achievement in mathematics?

Table 3 was used to answer research question 1

Table 3: Analysis of the relationship between students' social classroom learning environment and students' achievement in mathematics

Variable	Mean	SD	r	r^2	r^2%	Decision
Social Classroom Learning Environment	2.53	0.46	0.16	0.03	3	Positive Relationship
Mathematics Achievement	45.91	17.73				

Table 3 showed that r = 0.16 which signified the extent of relationship between students' social classroom learning environment and students' achievement in mathematics, which portrayed a small positive relationship between the two variables. Students' social classroom learning environment therefore contributed 3% of students' achievement in mathematics.

Ho1: There is no significant relationship between students' social classroom learning environment and students' achievement in mathematics

Table 4 was used to test hypothesis 1

Table 4: Analysis of the relationship between students' social classroom learning environment and students' achievement in mathematics

Variable	**Mean**	**SD**	**r**	**P**	**Decision**
Social Classroom Learning Environment	2.53	0.46	0.16	0.000	Significant
Mathematics Achievement	45.91	17.73			

Table 4 shows a Pearson product moment correlation coefficient, which was conducted to examine the relationship between students' social classroom learning environment and students' achievement in mathematics. From the table, r = 0.16, $p<0.05$. The null hypothesis is therefore rejected.This means that there is a significant relationship

between students' social classroom learning environment and students' achievement in mathematics.

Research Question 2: Is there any relationship between students' attitude towards mathematics and their achievement in mathematics?

The result of table 5 was used to answer research question 2

Table 5: Analysis of the relationship between students' attitude towards mathematics and their achievement in mathematics

Variable	**Mean**	**SD**	**r**	**r^2**	**r^2%**	**Decision**
Students' Attitude towards Mathematics	2.45	0.47	0.11	0.01	1	Positive Relationship
Mathematics Achievement	45.91	17.73				

Table 5 shows that r = 0.11 which signified the extent of relationship between students' attitude towards mathematics and their achievement in mathematics, which portrayed a low positive relationship between the two variables. Students' attitude towards mathematics therefore contributed 1% of their achievement in mathematics.

Ho2: There is no significant relationship between students' attitude towards mathematics and their achievement in mathematics

Hypothesis 2 was tested using the result of table 6 below:

Table 6: Analysis of the relationship between students' attitude towards mathematics and their achievement in mathematics

Variable	Mean	SD	r	P	Decision
Students' Attitude towards Mathematics	2.45	0.47	0.11	0.000	Significant
Mathematics Achievement	45.91	17.73			

Table 6 shows an analysis of the relationship between students' attitude towards mathematics and their achievement in mathematics. The result shows r= 0.11, p<0.05. Hence, the null hypothesis is rejected. This implied that there is a significant relationship between students' attitude towards mathematics and their achievement in mathematics.

Research Question 3: Is there any interaction effect between social classroom learning environment and gender on students' achievement in mathematics?

Ho3: There is no significant interaction effect between social classroom learning environment and gender on students' achievement in mathematics

Table 7 was used to analyse research question 3 and hypothesis 3

Table 7: Analysis of the interaction effect between social classroom learning environment and gender on students' achievement in mathematics

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33626.270[a]	72	467.032	1.530	.004
Intercept	578866.415	1	578866.415	1896.777	.000
Social Classroom Learning Environment	24506.281	39	628.366	2.059	.000
Gender	584.825	1	584.825	1.916	.167
Social Classroom Learning Environment * Gender	**7922.650**	**32**	**247.583**	**.811**	**.763**
Error	361338.209	1184	305.184		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .085 (Adjusted R Squared = .030)

Table 7 shows a two-way ANOVA, was used to assess the interaction effect between social classroom learning environment and gender on students' achievement in mathematics. The result shows that (F = 0.81, p > 0.05). Since the p-value is greater than 0.05, the null hypothesis is, therefore, accepted. This means that there is no interaction effect between social classroom learning environment and gender on students' achievement in mathematics.

Research Question 4: Is there any interaction effect between social classroom learning environment and school location on students' achievement in mathematics?

Ho4: There is no significant interaction effect between social classroom learning environment and school location on students' achievement in mathematics

In answering the research question 4 and testing the hypothesis 4, table 8 was used

Table 8: Analysis of the interaction effect between social classroom learning environment and school location on students' achievement in mathematics

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	38554.270[a]	74	521.004	1.728	.000
Intercept	554225.466	1	554225.466	1838.035	.000
Social Classroom Learning Environment	25096.387	39	643.497	2.134	.000
Location	190.008	1	190.008	.630	.427
Social Classroom Learning Environment * Location	**12316.727**	**34**	**362.257**	**1.201**	**.199**
Error	356410.209	1182	301.531		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .098 (Adjusted R Squared = .041)

In table 8, a two-way ANOVA was used to determine the interaction effect between social classroom learning environment and location on students' achievement in mathematics. The table shows F = 1.20, p > 0.05). Hence, the null hypothesis is therefore retained, an indication that there is no interaction effect between social classroom learning environment and location on students' achievement in mathematics.

Research Question 5: Is there any interaction effect between attitude towards mathematics and gender on students' achievement in mathematics?

Ho5: There is no significant interaction effect between attitude towards mathematics and gender on students' achievement in mathematics

In order to answer research question 5 and test hypothesis 5, the result of table 9 was used

Table 9: Analysis of the interaction effect between attitude towards mathematics and gender on students' achievement in mathematics

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	29949.072[a]	72	415.959	1.349	.030
Intercept	630065.001	1	630065.001	2043.741	.000
Attitude towards Mathematics	16110.122	37	435.409	1.412	.053
Gender	401.401	1	401.401	1.302	.254
Attitude towards Mathematics * Gender	**11941.061**	**34**	**351.208**	**1.139**	**.268**
Error	365015.407	1184	308.290		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .076 (Adjusted R Squared = .020)

Table 9 shows a Two-way ANOVA analysis of the interaction effect between attitude towards mathematics and gender on students' achievement in mathematics. The result shows that ($F = 1.14$, $p > 0.05$). Since the p-value is greater than 0.05, the null hypothesis is therefore accepted. This implied that there is no interaction effect between attitude towards mathematics and gender on students' achievement in mathematics.

Research Question 6: Is there any interaction effect between attitude towards mathematics and school location on students' achievement in mathematics?

Ho6: There is no significant interaction effect between attitude towards mathematics and school location on students' achievement in mathematics

The result of table 10 was used to answer and test research question 6 and hypothesis 6 respectively

Table 10: Analysis of the interaction effect between attitude towards mathematics and school location on students' achievement in mathematics

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	31739.704[a]	72	440.829	1.437	.011
Intercept	642347.093	1	642347.093	2093.852	.000
Attitude towards Mathematics	16711.400	37	451.659	1.472	.035
Location	549.669	1	549.669	1.792	.181
Attitude towards Mathematics * Location	**12987.643**	**34**	**381.989**	**1.245**	**.159**
Error	363224.775	1184	306.778		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .080 (Adjusted R Squared = .024)

Table 10 shows a Two-way ANOVA which analyses the interaction effect between attitude towards mathematics and school location on students' achievement in mathematics. The result shows that $F = 1.25$, $p > 0.05$. Since the p-value is greater than 0.05, the null hypothesis is therefore retained. This means that there is no interaction effect between attitude towards mathematics and school location on students' achievement in mathematics.

Discussion of Results

Relationship between Students' Social Classroom Learning Environment and Students' Achievement in Mathematics

The first result shows that there was a significant relationship between students' social classroom learning environment and students' achievement in mathematics. This result of table 2 showed a positive relationship, which implied that an increase in students' social classroom learning environment will result in an increase in students' achievement in mathematics. This finding is consistent with the finding of Igwebuike and Oriaifo (2012), who studied the nature of classroom environment and achievement in integrated science and found a strong association between the perceptions of their classroom environments and their cognitive and affective achievements. The finding also agrees with the finding of Busari (2005). He carried out an investigation on the correlation of achievement and psychosocial factors of chemistry classroom environment. 1200 SS II geography students with age range 16 – 19 years were used and were drawn from 10 States of Nigeria. His study revealed that students with a conducive psychosocial classroom environment factors learn better than their counterparts who were not opportune to have a conducive psychosocial classroom environment factors.

Relationship between Students' Attitude towards Mathematics and their Achievement in Mathematics

The second result shows that there was a significant relationship between students' attitude towards mathematics and their achievement in mathematics. The result of table shows a positive relationship between the two variables, which suggests that as the students' attitude towards mathematics increase, so will their achievement in mathematics. This finding is in line with the finding of Ma and Xu (2004), who studied casual ordering between attitude towards mathematics and achievement in mathematics in America with 3,116 students (1,626 males and 1,490 females) and found that poor attitude, by contrast, did not meaningfully predict later achievement in mathematics. The finding is however, at variance with the finding of Esiana (2012), who found no significant relationship between students' attitude towards mathematics and their achievement in mathematics.

Interaction Effect between Social Classroom Learning Environment and Gender on Students' Achievement in Mathematics

The third result shows that there was no interaction effect between social classroom learning environment and gender on students' achievement in mathematics. This finding has shown that gender will not moderate the effect of social classroom learning environment on the achievement of the students in mathematics. This means that whether male or female, the effect will of social classroom learning environment will remain the same. This finding is consistent with the finding of

Udousoro (2011), who examined the Effects of Gender and Mathematics Ability on Academic Performance of Students in Chemistry and found that gender does not have any significant effect on the academic performance of students in Chemistry. The finding however disagrees with the finding of Nnamani and Oyibe (2016) who investigated gender and academic achievement of secondary school students in social studies in Abakaliki urban of Ebonyi State. Their result showed that the mean achievement score of female secondary school students was higher than the mean achievement scores of male students.

Interaction Effect between Social Classroom Learning Environment and School Location on Students' Achievement in Mathematics

The fourth result shows that there was no interaction effect between social classroom learning environment and location on students' achievement in mathematics. The result of table 7 suggests that location does not moderate the effect of social classroom learning environment on the academic performance of the students in mathematics. This finding is in line with the finding of Iloba (2009). He studied the relationship between students' perception of classroom psycho-social environment and achievement in Geography. The study found no significant difference in the achievement between urban and rural students in geography. The finding also agrees with the finding of Jahun and Mom (2006), who studied effects of location of students in Kwara State, Nigeria and found

that location whether rural or urban does not affect performance in social studies.

Interaction Effect between Attitude towards Mathematics and Gender on Students' Achievement in Mathematics

The fifth result shows that there was no interaction effect between attitude towards mathematics and gender on students' achievement in mathematics. The result of table 8 shows that gender does not moderate the effect of attitude towards mathematics on students' achievement mathematics. The could have been because, both gender, having been taught in the same learning environment and habours similar attitude towards mathematics are likely to get similar scores in mathematics achievement. This finding is in line with Okoye (1987), who argues that there is practically no significant difference in the intelligence between male and female that can be traceable to gender difference. He argued further that the fact that men are regarded as the dominant and even superior sex does not mean that they are artistically better than women are.

Interaction Effect between Attitude towards Mathematics and School Location on Students' Achievement in Mathematics

The sixth result shows that there was no interaction effect between attitude towards mathematics and school location on students' achievement in mathematics. The result of this finding, which can be found in table 9 suggests that location cannot moderate the effect of

attitude towards mathematics on students' achievement in mathematics. This implied that the effect of attitude towards mathematics on students' achievement in mathematics in urban schools will be the same with rural schools. This finding agrees with New Generation of Education Research Centre (2004), which stated that students from rural schools generally score as well as or better than non-rural students on standardized test.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the following sub-headings:

- Summary of the Research
- Major Findings
- Conclusions
- Recommendations
- Contributions to Knowledge
- Suggestions for Further Research

Summary of the Research

The purpose of this study was to examine students' social classroom learning environment and attitudes as correlates of their achievement in mathematics. Six research questions and six hypotheses guided the study. The study was delimited to selected public secondary schools in Delta North Senatorial District. Literatures was reviewed in line with the variables of the study. The study adopted the ex-post facto research design, using the method of correlation survey. The population of the study comprised all the Senior Secondary two (SS 2) students in public secondary schools in the nine Local Government Areas of Delta North Senatorial District of Delta State. The sample comprised 1,647 SS 2 students drawn from five schools each from the nine Local Government Areas of the Delta North Senatorial District by means of proportionate stratified random sampling. The instrument used for data collection are

Students' Social Classroom Learning Environment Questionnaire (SSCLEQ), Students' Attitude towards Mathematics Scale (SAMS) and students' previous scores in Mathematics which were validated by means of experts' judgement with a reliability coefficient of 0.83 and 0.80 for Social Classroom Learning Environment Scale (SSCLES) and Students' Attitude towards Mathematics Scale (SAMS) respectively. The research instrument was administered directly to the students by the researcher with the help of the class teachers in charge of the various classes, who served as research assistants. The data obtained were analysed using Pearson coefficient of determination and Pearson correlation coefficient for research questions 1 and 2 and hypotheses 1 and 2 respectively as well as a Two-Way Analysis of Variance (ANOVA) for research questions 3-6 and hypotheses 3-6 respectively.

Major Findings

The findings of the study showed that:

1 there was a significant relationship between students' social classroom learning environment and students' achievement in mathematics;

2 there was a significant relationship between students' attitude towards mathematics and their achievement in mathematics;

3 there was no significant interaction effect between social classroom learning environment and gender on students' achievement in mathematics;

4 there was no significant interaction effect between social classroom learning environment and school location on students' achievement in mathematics;

5 there was no significant interaction effect between attitude towards mathematics and gender on students' achievement in mathematics and

6 there was no significant interaction effect between attitude towards mathematics and school location on students' achievement in mathematics.

Conclusions

Based on the findings of the study, the following conclusions are drawn:

1. Since there is a significant relationship between students' social classroom learning environment and students' achievement in mathematics, it could be concluded that an increase in students' social classroom learning environment will result in an increase in students' achievement in mathematics.

2. There is a significant relationship between students' attitude towards mathematics and their achievement in mathematics. Therefore, as the students' attitude towards mathematics increase, so will their achievement in mathematics
3. Since there is no interaction effect between social classroom learning environment and gender on students' achievement in mathematics, it is concluded that whether male or female, the effect will of social classroom learning environment will remain the same.
4. There is no interaction effect between social classroom learning environment and location on students' achievement in mathematics. Hence, location does not moderate the effect of social classroom learning environment on the academic performance of the students in mathematics.
5. Since there is no interaction effect between attitude towards mathematics and gender on students' achievement in mathematics, it is concluded that gender does not moderate the effect of attitude towards mathematics on students' achievement mathematics.
6. There is no interaction effect between attitude towards mathematics and school location on students' achievement in mathematics. Hence, it is concluded that the effect of attitude

towards mathematics on students' achievement in mathematics in urban schools will be the same with rural schools.

Recommendations

Based on the findings of the study, and the conclusion drawn, the following recommendations are made:

1. Teachers should develop positive relationship with students and encourage classroom activities which will involve active teaching learning process and students' participation in the class;
2. Teachers should make effort to attend workshops, seminars, conferences and in-service training to acquaint themselves with appropriate method of teaching, classroom management, communication and good use of instructional materials. This will go a long way in reducing the tension of students during the mathematics class;
3. Teachers should endeavour to create conducive and stimulating atmosphere for all the classes, irrespective of school location.
4. Students should be made to develop positive attitude towards mathematics

5. Educational policy-makers should focus on social classroom learning environment for the improvement of the students' achievement and attitude towards Mathematics.
6. The welfare of the teachers should be enhanced by way of better conditions of service as one of the many ways of motivating them to perform at their best in the classroom.

Contributions to Knowledge

The study has contributed to knowledge in the following ways:

1. The study has shown that gender does not moderate the effect of social classroom learning environment on the achievement of the students in mathematics;
2. The study has shown that location and gender do not moderate the effect of social classroom learning environment on the academic performance of the students in mathematics.
3. The study has shown that location does not affect the effect of attitude towards mathematics on students' achievement.

Suggestions for Further Research

The researcher suggests the following areas for further research:

1. The study was limited to one senatorial district in Delta State, it is suggested that same study be extended to cover the entire senatorial districts in Delta State

2. The study should be carried out to include other classroom environment, like the psycho-socio, physical and the psychological environment
3. Another study should be carried out to find out the relationship between classroom social learning environment and students attitude towards mathematics

REFERENCES

Adara, O.U. (2004). Environmental education in peace education at the senior secondary level. *Journal of the world council for curriculum and instruction region,* **2**(2), 1990-1997.

Adeneye, O.A.A. (2011). Is Gender a Factor in Mathematics Performance among Nigerian Senior Secondary Students with Varying School Organization and Location? *International Journal of Mathematics Trends and Technology,* **2**(3), 17-21.

Akpan, B.B. (2008). *Nigerian the future of science education.* Science Teachers Association of Nigeria (STAN). Ibadan, Nigeria: Oluseyi Press limited.

Akpochafo, W.P. (2009). *Social Studies and Feminist Issues for teacher Education.* Benin City: Justice Jeco Press and Publishing Ltd.

Akubue, A.U. (2001). *Classroom organization and management: A 5-points strategy.* Ibadan: Wisdom Publishers.

Akubuiro, I.M.,& Joshua, M.T. (2004). Self-concept, attitude and achievement of secondary school students in science in Southern Cross River State, Nigeria. *The African Symposium*,**4**(1), 1-2.

Akuezuilo, E.O. & Agu, N. (2003). Self-concept, attitude and achievement of secondary school students in science in Southern Cross River State, Nigeria. *The African Symposium,* **4**(1), 1-2.

Allen, J. (2004). *Movement music drama and arts in the British primary school.* London: Collier-Macmillan.

Anafulude, J. (2006).*Foundations of psychology.* Enugu: Advance Publishers

Anderson, G.J. & Walbeg, H.J. (2000). A study of Indonesia students' perceptions of classroom environment; *International Review of Education,* 28, 52-91.

Anele, D. (2008). The place woman in human existence: A critical inquiry. In Sunday Vanguard of August 31,21.

Anwana, E.E. (1979). The deprived cross riverians. *The Nigerian Chronicle*, August, 13.

Aremu, A. (1998). Motivating Learners for more effective achievement in mathematics. *Nigerian Journal of Applied Psychology,* **4**(1), 27-34.

Avwata, B. & Oniyama (1999). Cultural prejudice and women education in a Nigerian rural community: Implications for Counselling. *The Counsellor,* **14**(2), 124-130.

Baek, S.G.,& Hye-Jeong, C. (2002). The relationship between students' perceptions of classroom environment and their academic achievement in Korea. *Asia PacificEducation*, **3**(1), 135-139.

Baker, C.(1988). *Key Issues in Bilingualism and Bilingual Education.*Clevedon: Multilingual Matters.

Bature, I.J. (2006). Surveys of causes of Maths-phobia among secondary school students in Ogun State. *Journal of Educational Studies, University of Jos,* **12**(1), 7-12.

Beaton, A., Martin, M.O., Mullis, I., Gonzalez, E.J., Smith, T.A., & Kelley, D.L. (1996). *Science achievement in the middle school years: IEA's Third International Mathematics and Science Study*. Boston: Chestnut Hill.

Bell, D. (1971). The corporation and society in 1970s. *The Public Interest*24, summer.

Betiku, O.F. (2002). Factors responsible for poor performance of students in school mathematics. The 43rd STAN Annual Conference Proceedings, 342-348.

Block, J.H. (2006). Debatable conclusions about sex differences. *Contemporary Psychology about Sex Differences,***21**(4), 517-523.

Brehm, S.S., Kassin, S.M., & Fein, S. (2002). *Social Psychology* (5th. Edition). Boston: CENGAGE Learning

Broussard, S.C. & Garrison, M.E. (2004).The relationship between classroom motivation and academic achievement in elementary school-aged children. *Family Consumer Science Research Journal,***33**(2), 106-120.

Busari, O.O. (2005).A correlation of achievement and psychosocial factors of chemistry classroom environment of the field-teachers' association of Nigeria, *Nigeria Journal of Education,* 2001 – 2006 Volume 28 page 86-92.

Carpenters, B.O. (2006). *Foundation of education.* Benin: Ethiopia.

Carter, G.,&Norwood S.K.(1997). "The Relationship between Teacher and Student Beliefs about Mathematics", School Science and Mathematics, **97**(2), 62-67.

Choudhury, R., & Kumar, D. (2009). Influence of Attitude towards mathematics and study habit on the achievement in mathematics at the secondary stage. *International Journal of Engineering Research and Applications,***2**(6), 92-196.

Dewey, T.O. (2006).*Infant and child in the culture of today.* New York: Harper and Row.

Dorman, J.P., Fraser, B.J.,& McRobbie, C.J. (1997). Relationship between School-Level and Classroom-Level Environments in Secondary Schools. *Journal of Educational Administration,***35**(1), 74-91.

Eiser, J.R. (1995). *Attitudes, Chaos & the Connectionist Mind.* Cambridge: Blackwell

Esiana, A.C. (2012). Student's social classroom learning environment and attitude towards mathematics as correlates of their achievement in mathematics. Unpublished M.Sc. Dissertation, Nnamdi Azikiwe University, Awka.

Ezike, B.U. (2001). The effect of resources distribution and utilization on the performance of students in chemistry. M.Ed. Dissertation, University of Ibadan, Nigeria.

Falses, A.W. (1990). Learning environment.*The International Encyclopaedia of education research and Studies.*

Fan, H. &Chen, K. (1999). Achievement differences among rural, suburban and urban school students using data from the National Education Longitudinal Study of 1988 with a sample of 24,500 students (8th – 12th grade level)

Fazio, R.H., & Petty, R.E. (2008). *Attitudes, Their Structure, Function, and Consequences.* New York: Psychology Press.

Fraser, B.J. (1990). *Classroom environment*. London: Croom Helm.

Fraser, B.J., Treagust, D.F.,& Dennis, N.C. (1986). Development of an instrument for assessing classroom psychosocial environment at universities and colleges. *Studies in Higher Education*, 11, 43-54.

Gessell, N.R. (2004). *Classroom management: Principles and practice.* London: George Allen and Unwin.

Gilroy, M. (2002). Waking up students' Math/Science attitudes and achievement. *The Education Digest,***68**(4), 39-44.

Goudie, A. (2001). Interstate variations in rural school conditions. Memorial university of Newfoundland.

Hart, K.M. (1995). Mathematics achievement and attitude of nine and ten years olds, effects of mathematical games and puzzles. *Ref in Dissertation Abstract International,* **37**(7-8), 4932.

Human Resources and Skill Development Centre (2002). Understanding the rural-urban reading http://gap.www//hrsdc.gcca/en/cs/sp/arb/publications/research/2002-00114/page08.shtml

Idowu, A.I. (2006). Overview of total environment of the adolescent and its effect on his/her total behaviour. text of a guest lecture delivered at the occasion of a training workshop for guidance counsellors and youth workers at Abeokuta, Ogun State, February, 2005.

Igwebuike, T.B., & Oriaifo, S.O. (2012). Nature of classroom environment and achievement in integrated science: A test of efficacy of a constructivist instructional strategy. *International Journal of Research Studies in Educational Technology,* **1**(2), 17-29.

Iloba, O.J. (2009). Relationship between students' perception of classroom psycho-social environment and achievement in Geography. Unpublished M.Ed. Dissertation, University of Nigeria, Nsukka.

Turner, J.C., Thorpe, P.K., & Meyer, D.K. (1998). Students' reports of motivation and negative affect: a theoretical and empirical analysis. *Journal of Educational Psychology,* 90, 758–771.

Jahun, I.U., & Mom, H.J.S. (2006). The effects of location of students in Kwara State Secondary Schools, Doctorate Degree Thesis of Amadu Bello University.

Joel, A., & Aride, U. (2006). Social interaction and social relationship in School children. New York: Harcourt-brace and Jovanovich Inc.

Khine, M.S., & Chiew, G.S. (2001). Investigation of tertiary classroom learning environment in Singapore. *Paper Presented at the International Educational Research Conference, Australian Association for Educational Research (AARE).* University of Notre Dame, Fremantle, Western Australia, 2nd-6th December, 2001.

Kostman, S. (1977). The EDC school partnership project and the school self-renewal project. A collaborative model between New York

City high schools and the business community. *High Points,* **12**(1), 5-12.

Kreshner, R.S. & Pointon, P. (2004). Children's views of primary class room as environment for working and learning. *Journal of Research in Education,*64, 64-177.

Lawin, S.D. (1973). Environmental background and students learning behaviours. Student's research project, Unpublished. University of Uyo, Faculty of Education.

Lebey, H. (2003). *Discipline for self-control.* Upper Sadle River, NJ: Prentice Hall.

Lewis, G.E. (1981).*Bilingualism and Bilingual Education.*Oxford: Pergamon Press.

Lizzio, A., Wilson, K.,& Simos, R. (2002). University students' perceptions of the learning environment and academic outcomes: implication for theory and practice. Studies in higher education.

Ma, X.,& Xu, J. (2004). Determining the causal ordering between attitude towards mathematics and achievement in mathematics. *American Journal of Education,* 110, 256-280.

Maduabum, M.A.& Odili, G.A. (2006). Analysis of Students' performance in general mathematics at SSCE level in Nigeria 1991-2002. *Journal of Research in Curriculum and Teaching,* **1**(10), 64-68.

Maliki, N., & Ibu, J. (2009). Analysis of students' performance in junior secondary school mathematics examination in Bayelsa State of Nigeria using data from J.S.S.C.E mathematics objective paper for 2006

Mangvwat, C. (2006). Gender difference in cognition: A function of maturation role. *Science,* **193**(190), 157-163.

Mensah, J.K., Okyere, M., & Kuranchie, A. (2013). Student attitude towards Mathematics and performance: Does the teacher attitude matter? *Journal of Education and Practice,* **4**(3), 132-139.

Mgboro, U.U., & Omeba, V.O. (2005). *Society, school and progress in Nigeria.*Oxford Publishers Ltd.

Millon, T., Lerner, M.J., & Weiner, I.B. (2003). *Handbook of Psychology: Volume 5 Personality and Social Psychology.* New Jersey: John Wiley & Sons.

Moos, R.H., & Tricket, E.J. (2004). *Classroom environment scale manual* (2nd Ed). Palo alto, California: Consulting Psychologist Press.

National Examination Council. (2009). 2009 NECO result. The nation newspaper page 24 vol.5, Thursday July 8, 2010.

New Generation of Education Research Center Report (September, 22 2004). Retrieved from www.devilfinder.com.

Nnamani, S.C., & Oyibe, O.A. (2016). Gender and academic achievement of secondary school students in social studies in Abakaliki urban of Ebonyi State. *British Journal of Education,* **4**(8), 72-83.

Obot, C.S. (1991). Influence of School Factors and Quality of Education in Nigeria: A Case Study of Akwa Ibom State. M.Ed. Thesis, Unpublished. University of Uyo. Faculty of Education.

Odual, N.N. (2013). Relationship between mathematical ability and achievement in mathematics among female secondary school students in Bayelsa State Nigeria. *Social and Behavioural Sciences,* 106, 2230-2240.

Odunnuga, J.B. (2005). *Understanding primary mathematics methods and curriculum.* Abeokuta: Satellite Publication.

Ogunlade, J.O.(1973). Environmental Effects and Students Performance – Urban Cities in Western Nigeria. Senior Research Project, Unpublished. University of Ibadan. Faculty of Education.

Okeke, E.A.C. (1997). Women and girls participation in Science, Technology and Mathematics Education as facilitators. In G. A. Badmus and L. O. Ocho (eds). Science, Mathematics and Technology Education in Nigeria. Lagos: Evearled Press. Pp 25-42

Okeke, E.A.C. (2007). Sex difference in the understanding of some important biology concepts. *Nigeria Journal of Education,***2**(1), 125-132.

Okoro, O.N (2008). Effect of emotional pictures on students, concept attainment in Primary Science. *Journal of Primary and teachers' education Association of Nigeria,***9**(2), 56-62.

Okoye, N.N.C. (1987). *Learner characteristics and human learning in school.* Onitsha: Lead way Books.

Okoye, U. (2009). *Fundamentals of teaching practice.* Enugu: Fourth Dimension Publication Co. Ltd.

Onabanjo, C.F. (2007). Cognitive and attitudes as correlates of senior secondary school female students' achievement in mathematics. Unpublished Ph.D. Theses, University of Ibadan, Nigeria.

Onah, E.F. (2011). Influence of sex and school location on students' achievement in agricultural science. *African journal of science, Technology and Mathematics Education (AJSTME),* **1**(1), 96-102.

Onekutu, P.O. (2002). Gender differences in achievements in junior secondary school examination in integrated science: Implications for national development. *Review of Gender Studies in Nigeria,* **1**(3), 4-12.

Onwuakpa, F.I.W.& Akpan, B.B. (2000). A study of secondary school students' classroom learning environment in relation to their mathematics achievement. *Journal of the science teachers association of Nigeria,* **35**(1), 55-62.

Onyehalu, A.S. (2004). Psychological foundations of MEKS-UNIQUE (NIG) Publishers.

Onyeukwu, D. (2000). Psychological analysis of juvenile delinquency. *Nigeria Journal of Applied Psychology,* **1**(3), 228 - 237.

Osafehinti, I.O. (1990). Formula and algebra equations: skill taught, teachers techniques and emphasis-Abacus. *Journal of Mathematical Association of Nigeria.*

Owoeye, J.S. (2002). The effect of integration of location, facilities and class size on academic achievement of secondary school students in Ekiti State University, Nigeria. Unpublished Ph. D Dissertation, University of Ibadan, Nigeria.

Owoeye, J.S., & Yara, P.O. (2011). School location and academic achievement of secondary school in Ekiti State, Nigeria. *Asian social science (ASS)*,**7**(5), 170-173.

Rentoul, A.J. & Fraser, B.J. (1979). Conceptualization of enquiry-based or open classroom learning environments. *Journal of Curriculum Studies,* 11, 233-245.

Reyna L.G., & Winner, B. (2004). *Educational issues: school settings and environmental psychology.* London: Academic Press.

Rhana, R.A. & Akbar, R.A. (2005). Relationship between classroom learning environment and students' achievement in higher education. Institute of education and research, University of Punjab, Lahore.

Schibeci, R.A. (1984). Attitudes to science: an update. *Studies in Science Education,* 11, 26–59.

Segars, J.E. (1995). Selected factors associated with eight-grade mathematics achievement. Ed.D. Mississippi state University, 106 pp, ref. in Dissertation Abstract International,Vol.56 no.3 Sept.

Shrigley, R.L. (1990). Attitude and behaviour are correlates. *Journal of Research in Science Teaching,* 27, 97–113.

Simmelkjaer, R.T. (1979). Evolution of an urban educational reform. *The Educational Forum,* **4**(2), 460-483.

Simpson, R.D., & Oliver, J.S. (1990). "A summary of major influences on attitudes toward and achievement in science among adolescent students", *Science Education,* 74, 1–18.

Singh, Y.K. (2010). *Dictionary of Education.* New Delhi: A.P.H. Publishing Corporation

Snow, C.E., Burns, M.S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children.* Washington: National Academy Press.

Sriniwasan, U. (1999). A study of achievement in mathematics standard XIII students of TamilNadu as related to certain selected variables. Ph.D (Edu.). Annamalai Univ.

Subergeld, U.O., Kuening. O.O., & Manderschield, O.O. (2005). Relationship between maladjustment problems and academic achievement among urban and rural adolescents. Amazing Grace Publishers.

Tella, A. (2007). The Impact of Motivation on Students' Academic Achievement and Learning Outcomes in Mathematics among Secondary School Students in Nigeria. *Eurasia Journal of Mathematics, Science and Technology Education,* **3**(2), 149-156.

Thomous, K.J., &Wangu, R.S. (1995). Attitude towards and achievement in mathematics among high school students of tribal town of Aizawl. Indian *Journal of Psychometry and Education,* **26**(1), 31-36.

Tourangeau, R., & Rasinski, K.A. (1988). Cognitive Processes Underlying Context Effects in Attitude Measurement. *Psychological Bulletin,* **103**(3), 299-314.

Triandis, H.C. (1971). *Attitude and attitudes change*. New York: John Wiley & Sons.

Udousoro, J. (2011). The Effects of Gender and Mathematics Ability on Academic Performance of Students in Chemistry. *An International Multidisciplinary Journal, Ethiopia,* **5**(4), 201-213.

UNESCO. (2000). Nigerian educational research and development council. (NERDC) Yaba, Lagos.

Utsumi, M.C., & Mendes, C.R. (2000). Researching the attitudes towards mathematics in basic education. *Educational Psychology,* **20**(2), 237-243.

Weinburgh, M. (1995). Gender differences in student attitudes toward science: a meta-analysis of the literature from 1970 to 1991. *Journal of Research in Science Teaching,* 32, 387–398.

Wenden, A. (1991). *Learner strategies for learner autonomy.* Cambridge: Prentice Hall International.

West Africa Examination Council (2008). Chief examiner's report (Nigeria) SSCE, May/June Examination.

West Africa Examination Council (2011). Chief examiner's report (Nigeria) SSCE, May/June Examination.

Wilson, B.G. (1996). Introduction: What is a constructivist learning environment? In B. G. Wilson (Ed.).Constructivist Learning Environment (pp. 38). Englewood Cliffs, N.J: Educational Technology Publications.

Wong, N.Y. & Watkins, S.D. (1998). A longitudinal study of the psychosocial environmental and learning approaches in the Hong Kong classroom. *Journal of Educational Research*, **91**(4), 247-254.

Yara, P.O. (2009). Students' attitude towards mathematics and academic achievement in some selected secondary schools in south-western Nigeria. *European Journal of Scientific Research,* 36, 336-341.

Zanjonc, R.B. (1979). Feeling and Thinking: Preferences Need No Inferences. Research Centre for group dynamics. University of Michigan.

APPENDIX I

STUDENTS' SOCIAL CLASSROOM LEARNING ENVIRONMENT QUESTIONNAIRE (SSCLEQ)

Department of Curriculum and Integrated Science,
Delta State University,
Abraka.
15th January, 2017.

Dear Respondent,

I am a Post-graduate student of the Department of Curriculum and Integrated Science. I am currently investigating Students' Social Classroom Learning Environment and Attitude towards Mathematics as Correlates of their Achievement in Mathematics.

I am hereby using this medium to solicit your assistance in responding to this questionnaire. Your responses will go a long way to ensure the success of the research. I promise to keep your responses confidential.

Thank you for your anticipated cooperation.

Yours faithfully,

Osaduwa Onyeka
Researcher

Instruction: Kindly tick (√) the option that best suit your opinion

Section A: Demographic Data of Respondents

Gender: Male [ ] Female [ ]

School Location: Urban [ ] Rural [ ]

Key:

SA: Strongly Agree (4)
A: Agree (3)
D: Disagree (2)
SD: Strongly Disagree (1)

S/N	Item	SA	A	D	SD
1	I work well with other class members				
2	I help other class members who are having trouble with their work				
3	The teacher goes out of his/her way to help me				
4	The teacher considers my feelings				
5	The teacher talks with me while moving about in the class				
6	The teacher is interested in my problems				
7	I discuss ideas in class				
8	I give my opinions during class discussions				
9	My ideas and suggestions are used during classroom discussions				
10	I explain my ideas to other students				
11	I am asked to explain how I solve problems				
12	I share my books and resources with other students when doing assignments				
13	I like working in groups in the class because it encourages teamwork				
14	I learn from other students in the class				
15	I work with other students in the class				

APPENDIX II

STUDENTS' ATTITUDE TOWARDS MATHEMATICS QUESTIONNAIRE (SAMQ)

S/N	ITEM	SA	A	D	SD
1	I like solving mathematics				
2	Knowing mathematics will help me earn a living				
3	I don't think I can do well in mathematics				
4	Mathematics is a very difficult subject				
5	Attending mathematics class is a waste of time				
6	Mathematics should not be made compulsory in schools				
7	Mathematics helps/enables us to find out why things happen				
8	I will prefer to work in a mathematics related establishment				
9	Mathematical knowledge is applicable to solving human and natural problems				
10	Only brilliant students can understand mathematics				
11	I am very interested in reading mathematics textbooks				
12	I will use mathematics in many ways in life				
13	Mathematics is my worst subject				
14	Mathematics has many technical terms that are difficult to remember				

APPENDIX III

RELIABILITY COEFFICIENT OF SSCLEC AND SAMS

```
RELIABILITY

  /VARIABLES=SSCLEC1 SSCLEC2 SSCLEC3 SSCLEC4 SSCLEC5 SSCLEC6
SSCLEC7 SSCLEC8 SSCLEC9 SSCLEC10 SSCLEC11 SSCLEC12 SSCLEC13
SSCLEC14 SSCLEC15

  /SCALE('STUDENTS' SOCIAL CLASSROOM LEARNING ENVIRONMENT
SCALE (SSCLEC)') ALL

  /MODEL=ALPHA

  /STATISTICS=DESCRIPTIVE SCALE CORR

  /SUMMARY=TOTAL.
```

Reliability

Scale: STUDENTS' SOCIAL CLASSROOM LEARNING ENVIRONMENT SCALE (SSCLEC)

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.831	.838	15

Item Statistics

	Mean	Std. Deviation	N
SSCLEC1	2.90	.712	30
SSCLEC2	3.20	.805	30
SSCLEC3	3.47	.629	30
SSCLEC4	3.40	.724	30
SSCLEC5	3.33	.606	30
SSCLEC6	3.03	.718	30
SSCLEC7	3.03	.890	30
SSCLEC8	3.13	.730	30
SSCLEC9	3.03	.718	30
SSCLEC10	2.70	.794	30
SSCLEC11	2.40	.894	30
SSCLEC12	2.40	.932	30
SSCLEC13	3.33	.711	30
SSCLEC14	3.47	.507	30
SSCLEC15	3.50	.509	30

Inter-Item Correlation Matrix

	SSCLEC1	SSCLEC2	SSCLEC3	SSCLEC4	SSCLEC5	SSCLEC6	SSCLEC7
SSCLEC1	1.000	.277	.262	.147	.240	.546	.386
SSCLEC2	.277	1.000	.014	.390	.424	.167	.087
SSCLEC3	.262	.014	1.000	.182	-.060	.270	.341
SSCLEC4	.147	.390	.182	1.000	.550	.106	-.182
SSCLEC5	.240	.424	-.060	.550	1.000	.369	.043
SSCLEC6	.546	.167	.270	.106	.369	1.000	.430
SSCLEC7	.386	.087	.341	-.182	.043	.430	1.000

SSCLEC8	.623	.364	.310	.287	.285	.583	.577
SSCLEC9	.007	.227	.346	.172	.132	.065	-.056
SSCLEC10	.128	.205	.428	.096	-.072	.018	.259
SSCLEC11	.011	.077	.331	.224	.191	.301	.373
SSCLEC12	.010	.211	.141	.368	.366	.031	.233
SSCLEC13	.068	.181	.411	.536	.293	.180	.200
SSCLEC14	.229	.186	.375	.601	.374	.240	.041
SSCLEC15	.333	.168	.323	.281	.000	.425	.190

Inter-Item Correlation Matrix

	SSCLEC8	SSCLEC9	SSCLEC10	SSCLEC11	SSCLEC12	SSCLEC13
SSCLEC1	.623	.007	.128	.011	.010	.068
SSCLEC2	.364	.227	.205	.077	.211	.181
SSCLEC3	.310	.346	.428	.331	.141	.411
SSCLEC4	.287	.172	.096	.224	.368	.536
SSCLEC5	.285	.132	-.072	.191	.366	.293
SSCLEC6	.583	.065	.018	.301	.031	.180
SSCLEC7	.577	-.056	.259	.373	.233	.200
SSCLEC8	1.000	.057	.071	.285	.274	.243
SSCLEC9	.057	1.000	.562	.140	.288	.382
SSCLEC10	.071	.562	1.000	.417	.400	.366
SSCLEC11	.285	.140	.417	1.000	.629	.434
SSCLEC12	.274	.288	.400	.629	1.000	.416
SSCLEC13	.243	.382	.366	.434	.416	1.000
SSCLEC14	.199	.240	.274	.258	.175	.510
SSCLEC15	.279	.236	.299	.227	-.145	.286

Inter-Item Correlation Matrix

	SSCLEC14	SSCLEC15
SSCLEC1	.229	.333
SSCLEC2	.186	.168
SSCLEC3	.375	.323
SSCLEC4	.601	.281
SSCLEC5	.374	.000
SSCLEC6	.240	.425
SSCLEC7	.041	.190
SSCLEC8	.199	.279
SSCLEC9	.240	.236
SSCLEC10	.274	.299
SSCLEC11	.258	.227
SSCLEC12	.175	-.145
SSCLEC13	.510	.286
SSCLEC14	1.000	.668
SSCLEC15	.668	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SSCLEC1	43.43	32.392	.403	.581	.824
SSCLEC2	43.13	32.120	.372	.404	.826
SSCLEC3	42.87	32.395	.471	.542	.820
SSCLEC4	42.93	31.926	.454	.759	.821
SSCLEC5	43.00	32.966	.406	.720	.824
SSCLEC6	43.30	31.872	.465	.655	.820
SSCLEC7	43.30	31.528	.384	.689	.827
SSCLEC8	43.20	30.855	.588	.724	.812

SSCLEC9	43.30	32.769	.350	.616	.827
SSCLEC10	43.63	31.482	.454	.647	.821
SSCLEC11	43.93	30.202	.525	.681	.816
SSCLEC12	43.93	30.478	.468	.734	.821
SSCLEC13	43.00	31.034	.583	.559	.813
SSCLEC14	42.87	32.809	.532	.763	.819
SSCLEC15	42.83	33.385	.428	.794	.823

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
46.33	36.161	6.013	15

```
RELIABILITY
  /VARIABLES=SAMS1 SAMS2 SAMS3 SAMS4 SAMS5 SAMS6 SAMS7 SAMS8
SAMS9 SAMS10 SAMS11 SAMS12 SAMS13 SAMS14
  /SCALE('STUDENTS' ATTITUDE TOWARDS MATHEMATICS SCALE
(SAMS)') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
```

Reliability

Scale: STUDENTS' ATTITUDE TOWARDS MATHEMATICS SCALE (SAMS)

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.803	.813	14

Item Statistics

	Mean	Std. Deviation	N
SAMS1	3.07	.980	30
SAMS2	3.07	.640	30
SAMS3	2.60	1.037	30
SAMS4	3.17	.592	30
SAMS5	3.53	.571	30
SAMS6	2.83	.791	30
SAMS7	3.10	.607	30
SAMS8	2.77	.679	30
SAMS9	3.43	.568	30
SAMS10	3.13	.681	30
SAMS11	3.37	.490	30
SAMS12	3.17	.791	30
SAMS13	3.23	.626	30
SAMS14	3.07	.583	30

Inter-Item Correlation Matrix

	SAMS1	SAMS2	SAMS3	SAMS4	SAMS5	SAMS6	SAMS7	SAMS8

SAMS1	1.000	.323	.434	.337	.242	.370	.510	.128
SAMS2	.323	1.000	.146	.243	.088	.091	.248	.434
SAMS3	.434	.146	1.000	.000	-.035	.252	.230	.059
SAMS4	.337	.243	.000	1.000	.340	.356	.240	.443
SAMS5	.242	.088	-.035	.340	1.000	-.102	.338	.243
SAMS6	.370	.091	.252	.356	-.102	1.000	-.036	.118
SAMS7	.510	.248	.230	.240	.338	-.036	1.000	.309
SAMS8	.128	.434	.059	.443	.243	.118	.309	1.000
SAMS9	-.116	-.272	-.047	.085	.219	-.447	-.030	.092
SAMS10	.141	.374	.078	.456	-.012	.043	-.117	.517
SAMS11	.234	-.191	.027	.139	.386	-.193	.336	.059
SAMS12	.341	.250	.210	.527	.102	.046	.179	.524
SAMS13	.311	.476	.308	.357	.122	.081	.209	.700
SAMS14	.233	.357	.160	.266	-.007	.249	.273	.563

Inter-Item Correlation Matrix

	SAMS9	SAMS10	SAMS11	SAMS12	SAMS13	SAMS14
SAMS1	-.116	.141	.234	.341	.311	.233
SAMS2	-.272	.374	-.191	.250	.476	.357
SAMS3	-.047	.078	.027	.210	.308	.160
SAMS4	.085	.456	.139	.527	.357	.266
SAMS5	.219	-.012	.386	.102	.122	-.007
SAMS6	-.447	.043	-.193	.046	.081	.249
SAMS7	-.030	-.117	.336	.179	.209	.273
SAMS8	.092	.517	.059	.524	.700	.563
SAMS9	1.000	.291	.648	.524	.384	-.090
SAMS10	.291	1.000	.158	.725	.733	.497
SAMS11	.648	.158	1.000	.459	.273	.153

SAMS12	.524	.725	.459	1.000	.754	.498
SAMS13	.384	.733	.273	.754	1.000	.617
SAMS14	-.090	.497	.153	.498	.617	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SAMS1	40.47	21.637	.522	.652	.783
SAMS2	40.47	24.533	.382	.602	.794
SAMS3	40.93	23.444	.283	.384	.811
SAMS4	40.37	23.895	.538	.660	.783
SAMS5	40.00	25.655	.238	.483	.803
SAMS6	40.70	25.459	.160	.641	.814
SAMS7	40.43	24.668	.385	.673	.794
SAMS8	40.77	23.151	.574	.715	.779
SAMS9	40.10	26.300	.127	.869	.810
SAMS10	40.40	23.352	.538	.772	.782
SAMS11	40.17	25.523	.323	.706	.798
SAMS12	40.37	21.413	.727	.830	.763
SAMS13	40.30	22.355	.779	.888	.765
SAMS14	40.47	23.913	.545	.678	.783

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
43.53	27.361	5.231	14

APPENDIX IV

SPSS RESULT OUTPUT

```
CORRELATIONS
  /VARIABLES=Social_Classroom_Learning_Environment Scores
  /PRINT=TWOTAIL NOSIG
  /STATISTICS DESCRIPTIVES
  /MISSING=PAIRWISE.
```

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
Social Classroom Learning Environment	2.5315	.45893	1257
Students' Achievement	45.91	17.733	1257

Correlations

		Social Classroom Learning Environment	Students' Achievement
Social Classroom Learning Environment	Pearson Correlation	1	.156**
	Sig. (2-tailed)		.000
	N	1257	1257
Students' Achievement	Pearson Correlation	.156**	1
	Sig. (2-tailed)	.000	
	N	1257	1257

**. Correlation is significant at the 0.01 level (2-tailed).

```
CORRELATIONS
  /VARIABLES=Attitude_towards_Mathematics Scores
  /PRINT=TWOTAIL NOSIG
  /STATISTICS DESCRIPTIVES
  /MISSING=PAIRWISE.
```

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
Attitude towards Mathematics	2.4518	.47158	1257
Students' Achievement	45.91	17.733	1257

Correlations

		Attitude towards Mathematics	Students' Achievement
Attitude towards Mathematics	Pearson Correlation	1	.112**
	Sig. (2-tailed)		.000
	N	1257	1257
Students' Achievement	Pearson Correlation	.112**	1
	Sig. (2-tailed)	.000	
	N	1257	1257

**. Correlation is significant at the 0.01 level (2-tailed).

```
UNIANOVA Scores BY Social_Classroom_Learning_Environment
Gender
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=HOMOGENEITY DESCRIPTIVE
  /CRITERIA=ALPHA(.05)
  /DESIGN=Social_Classroom_Learning_Environment Gender
Social_Classroom_Learning_Environment*Gender.
```

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Social Classroom Learning Environment	1.07		1
	1.13		1
	1.27		2
	1.33		2
	1.40		5
	1.47		5
	1.53		11
	1.60		10
	1.67		15
	1.73		26
	1.80		21
	1.87		32
	1.93		34
	2.00		25
	2.07		44
	2.13		37
	2.20		44
	2.27		55
	2.33		62
	2.40		67
	2.47		63
	2.53		71
	2.60		69
	2.67		64
	2.73		79
	2.80		85

	2.87		65
	2.93		39
	3.00		50
	3.07		50
	3.13		35
	3.20		26
	3.27		14
	3.33		11
	3.40		16
	3.47		9
	3.53		3
	3.60		7
	3.67		1
	3.73		1
Gender	1	Male	534
	2	Female	723

Descriptive Statistics

Dependent Variable: Students' Achievement

Social Classroom Learning Environment	Gender	Mean	Std. Deviation	N
1.07	Male	35.00	.	1
	Total	35.00	.	1
1.13	Female	75.00	.	1
	Total	75.00	.	1
1.27	Male	26.00	11.314	2
	Total	26.00	11.314	2
1.33	Female	26.50	.707	2
	Total	26.50	.707	2
1.40	Male	47.50	5.745	4
	Female	28.00	.	1
	Total	43.60	10.040	5

1.47	Male	25.00	7.071	2
	Female	47.00	25.710	3
	Total	38.20	22.095	5
1.53	Male	41.63	12.983	8
	Female	36.00	20.785	3
	Total	40.09	14.536	11
1.60	Male	34.00	16.371	3
	Female	47.00	15.022	7
	Total	43.10	15.793	10
1.67	Male	33.63	14.638	8
	Female	48.43	14.070	7
	Total	40.53	15.824	15
1.73	Male	42.37	16.058	16
	Female	40.00	17.003	10
	Total	41.46	16.130	26
1.80	Male	47.00	15.937	8
	Female	37.00	10.360	13
	Total	40.81	13.344	21
1.87	Male	41.63	14.701	16
	Female	40.56	14.301	16
	Total	41.09	14.277	32
1.93	Male	41.00	13.808	13
	Female	38.52	16.027	21
	Total	39.47	15.050	34
2.00	Male	39.30	16.680	10
	Female	41.60	17.872	15
	Total	40.68	17.087	25
2.07	Male	39.59	16.359	17
	Female	45.63	17.456	27
	Total	43.30	17.108	44
2.13	Male	46.33	16.284	18
	Female	41.16	18.264	19
	Total	43.68	17.288	37
2.20	Male	46.20	14.381	20
	Female	47.37	19.549	24
	Total	46.84	17.209	44

2.27	Male	42.44	15.514	25
	Female	42.77	16.341	30
	Total	42.62	15.824	55
2.33	Male	42.00	14.489	26
	Female	41.47	16.708	36
	Total	41.69	15.693	62
2.40	Male	42.90	16.552	29
	Female	43.39	18.402	38
	Total	43.18	17.496	67
2.47	Male	45.66	17.455	29
	Female	50.03	17.290	34
	Total	48.02	17.365	63
2.53	Male	41.18	15.765	28
	Female	43.07	16.059	43
	Total	42.32	15.857	71
2.60	Male	48.41	22.154	27
	Female	48.43	18.637	42
	Total	48.42	19.927	69
2.67	Male	46.29	17.020	24
	Female	47.90	17.838	40
	Total	47.30	17.417	64
2.73	Male	46.88	18.532	33
	Female	48.52	19.384	46
	Total	47.84	18.929	79
2.80	Male	51.83	18.414	42
	Female	52.05	18.721	43
	Total	51.94	18.459	85
2.87	Male	46.46	16.345	28
	Female	52.68	20.385	37
	Total	50.00	18.870	65
2.93	Male	51.00	21.505	10
	Female	45.21	20.562	29
	Total	46.69	20.679	39
3.00	Male	56.82	24.524	17
	Female	56.97	15.727	33
	Total	56.92	18.919	50

3.07	Male	43.06	19.851	17
	Female	47.42	18.737	33
	Total	45.94	19.034	50
3.13	Male	52.42	19.561	12
	Female	39.91	14.039	23
	Total	44.20	16.958	35
3.20	Male	51.29	13.909	14
	Female	49.00	16.426	12
	Total	50.23	14.855	26
3.27	Male	39.20	16.362	5
	Female	47.44	15.915	9
	Total	44.50	15.970	14
3.33	Male	44.29	17.490	7
	Female	59.25	16.520	4
	Total	49.73	17.956	11
3.40	Male	44.14	19.326	7
	Female	61.44	17.096	9
	Total	53.88	19.592	16
3.47	Male	44.60	14.484	5
	Female	51.50	20.207	4
	Total	47.67	16.470	9
3.53	Female	45.33	5.033	3
	Total	45.33	5.033	3
3.60	Male	31.50	4.950	2
	Female	37.80	10.257	5
	Total	36.00	9.147	7
3.67	Male	34.00	.	1
	Total	34.00	.	1
3.73	Female	48.00	.	1
	Total	48.00	.	1
Total	Male	45.16	17.371	534
	Female	46.46	17.988	723
	Total	45.91	17.733	1257

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Students' Achievement

F	df1	df2	Sig.
1.767	72	1184	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a]

a. Design: Intercept + Social_Classroom_Learning_Environment + Gender + Social_Classroom_Learning_Environment * Gender

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	33626.270[a]	72	467.032	1.530	.004
Intercept	578866.415	1	578866.415	1896.777	.000
Social_Classroom_Learning_Environment	24506.281	39	628.366	2.059	.000
Gender	584.825	1	584.825	1.916	.167
Social_Classroom_Learning_Environment * Gender	7922.650	32	247.583	.811	.763
Error	361338.209	1184	305.184		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .085 (Adjusted R Squared = .030)

```
UNIANOVA Scores BY Social_Classroom_Learning_Environment Location
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=HOMOGENEITY DESCRIPTIVE
  /CRITERIA=ALPHA(.05)
  /DESIGN=Social_Classroom_Learning_Environment Location
Social_Classroom_Learning_Environment*Location.
```

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Social Classroom Learning Environment	1.07		1
	1.13		1
	1.27		2
	1.33		2
	1.40		5
	1.47		5
	1.53		11
	1.60		10
	1.67		15
	1.73		26
	1.80		21
	1.87		32
	1.93		34
	2.00		25
	2.07		44
	2.13		37
	2.20		44
	2.27		55
	2.33		62
	2.40		67
	2.47		63
	2.53		71
	2.60		69
	2.67		64
	2.73		79
	2.80		85

	2.87		65
	2.93		39
	3.00		50
	3.07		50
	3.13		35
	3.20		26
	3.27		14
	3.33		11
	3.40		16
	3.47		9
	3.53		3
	3.60		7
	3.67		1
	3.73		1
School Location	1	Urban	595
	2	Rural	662

Descriptive Statistics

Dependent Variable: Students' Achievement

Social Classroom Learning Environment	School Location	Mean	Std. Deviation	N
1.07	Urban	35.00	.	1
	Total	35.00	.	1
1.13	Urban	75.00	.	1
	Total	75.00	.	1
1.27	Urban	34.00	.	1
	Rural	18.00	.	1
	Total	26.00	11.314	2
1.33	Rural	26.50	.707	2
	Total	26.50	.707	2
1.40	Urban	50.00	3.464	3
	Rural	34.00	8.485	2
	Total	43.60	10.040	5
1.47	Urban	44.67	28.589	3

	Rural	28.50	2.121	2
	Total	38.20	22.095	5
1.53	Urban	42.60	15.614	5
	Rural	38.00	14.697	6
	Total	40.09	14.536	11
1.60	Urban	38.29	16.347	7
	Rural	54.33	7.095	3
	Total	43.10	15.793	10
1.67	Urban	39.20	16.437	10
	Rural	43.20	15.975	5
	Total	40.53	15.824	15
1.73	Urban	42.61	16.600	18
	Rural	38.88	15.779	8
	Total	41.46	16.130	26
1.80	Urban	41.38	11.479	13
	Rural	39.88	16.771	8
	Total	40.81	13.344	21
1.87	Urban	37.21	10.871	19
	Rural	46.77	17.045	13
	Total	41.09	14.277	32
1.93	Urban	42.33	16.415	24
	Rural	32.60	8.222	10
	Total	39.47	15.050	34
2.00	Urban	40.00	17.790	13
	Rural	41.42	17.048	12
	Total	40.68	17.087	25
2.07	Urban	47.74	18.405	19
	Rural	39.92	15.583	25
	Total	43.30	17.108	44
2.13	Urban	41.80	16.450	20
	Rural	45.88	18.483	17
	Total	43.68	17.288	37
2.20	Urban	45.89	15.240	27
	Rural	48.35	20.359	17
	Total	46.84	17.209	44
2.27	Urban	38.48	15.353	23

	Rural	45.59	15.717	32
	Total	42.62	15.824	55
2.33	Urban	38.38	12.543	29
	Rural	44.61	17.695	33
	Total	41.69	15.693	62
2.40	Urban	41.42	16.429	31
	Rural	44.69	18.460	36
	Total	43.18	17.496	67
2.47	Urban	42.45	15.797	29
	Rural	52.76	17.444	34
	Total	48.02	17.365	63
2.53	Urban	42.09	16.961	34
	Rural	42.54	15.005	37
	Total	42.32	15.857	71
2.60	Urban	43.59	19.114	34
	Rural	53.11	19.837	35
	Total	48.42	19.927	69
2.67	Urban	51.08	17.363	37
	Rural	42.11	16.411	27
	Total	47.30	17.417	64
2.73	Urban	42.91	17.395	33
	Rural	51.37	19.374	46
	Total	47.84	18.929	79
2.80	Urban	54.34	19.606	41
	Rural	49.70	17.247	44
	Total	51.94	18.459	85
2.87	Urban	50.77	20.756	26
	Rural	49.49	17.764	39
	Total	50.00	18.870	65
2.93	Urban	49.63	22.867	16
	Rural	44.65	19.275	23
	Total	46.69	20.679	39
3.00	Urban	55.62	20.733	21
	Rural	57.86	17.808	29
	Total	56.92	18.919	50
3.07	Urban	47.25	23.271	16

	Rural	45.32	17.047	34
	Total	45.94	19.034	50
3.13	Urban	43.00	17.746	14
	Rural	45.00	16.808	21
	Total	44.20	16.958	35
3.20	Urban	48.00	18.338	8
	Rural	51.22	13.515	18
	Total	50.23	14.855	26
3.27	Urban	36.75	10.436	4
	Rural	47.60	17.167	10
	Total	44.50	15.970	14
3.33	Urban	40.67	21.939	3
	Rural	53.13	16.574	8
	Total	49.73	17.956	11
3.40	Urban	54.80	27.608	5
	Rural	53.45	16.440	11
	Total	53.88	19.592	16
3.47	Urban	37.33	5.132	3
	Rural	52.83	18.093	6
	Total	47.67	16.470	9
3.53	Urban	40.00	.	1
	Rural	48.00	2.828	2
	Total	45.33	5.033	3
3.60	Urban	31.00	5.657	2
	Rural	38.00	10.000	5
	Total	36.00	9.147	7
3.67	Urban	34.00	.	1
	Total	34.00	.	1
3.73	Rural	48.00	.	1
	Total	48.00	.	1
Total	Urban	44.72	17.809	595
	Rural	46.98	17.610	662
	Total	45.91	17.733	1257

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Students' Achievement

F	df1	df2	Sig.
2.145	74	1182	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a]

a. Design: Intercept + Social_Classroom_Learning_Environment + Location + Social_Classroom_Learning_Environment * Location

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	38554.270[a]	74	521.004	1.728	.000
Intercept	554225.466	1	554225.466	1838.035	.000
Social_Classroom_Learning_Environment	25096.387	39	643.497	2.134	.000
Location	190.008	1	190.008	.630	.427
Social_Classroom_Learning_Environment * Location	12316.727	34	362.257	1.201	.199
Error	356410.209	1182	301.531		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .098 (Adjusted R Squared = .041)

```
UNIANOVA Scores BY Attitude_towards_Mathematics Gender
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=HOMOGENEITY DESCRIPTIVE
  /CRITERIA=ALPHA(.05)
  /DESIGN=Attitude_towards_Mathematics Gender
Attitude_towards_Mathematics*Gender.
```

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Attitude towards	1.00		1

Mathematics	1.14		3
	1.21		1
	1.29		6
	1.36		3
	1.43		4
	1.50		13
	1.57		11
	1.64		20
	1.71		20
	1.79		39
	1.86		33
	1.93		37
	2.00		39
	2.07		62
	2.14		71
	2.21		59
	2.29		64
	2.36		86
	2.43		78
	2.50		63
	2.57		86
	2.64		73
	2.71		74
	2.79		47
	2.86		40
	2.93		42
	3.00		30
	3.07		42
	3.14		28

	3.21		17
	3.29		21
	3.36		13
	3.43		9
	3.50		8
	3.57		5
	3.64		3
	3.71		6
Gender	1	Male	534
	2	Female	723

Descriptive Statistics

Dependent Variable: Students' Achievement

Attitude towards Mathematics	Gender	Mean	Std. Deviation	N
1.00	Female	20.00	.	1
	Total	20.00	.	1
1.14	Male	34.00	5.657	2
	Female	52.00	.	1
	Total	40.00	11.136	3
1.21	Female	62.00	.	1
	Total	62.00	.	1
1.29	Male	39.00	1.155	4
	Female	30.00	.000	2
	Total	36.00	4.733	6
1.36	Male	45.00	18.385	2
	Female	40.00	.	1
	Total	43.33	13.317	3
1.43	Male	26.00	5.657	2
	Female	30.00	5.657	2
	Total	28.00	5.164	4
1.50	Male	39.40	21.138	5
	Female	42.63	11.476	8
	Total	41.38	15.114	13
1.57	Male	44.00	13.367	4

	Female	41.71	15.808	7
	Total	42.55	14.313	11
1.64	Male	34.50	10.889	8
	Female	47.58	18.880	12
	Total	42.35	17.126	20
1.71	Male	38.44	15.420	9
	Female	47.27	13.484	11
	Total	43.30	14.701	20
1.79	Male	42.65	15.445	20
	Female	44.37	19.027	19
	Total	43.49	17.074	39
1.86	Male	38.69	17.509	13
	Female	44.75	13.814	20
	Total	42.36	15.405	33
1.93	Male	42.00	18.587	16
	Female	41.24	15.620	21
	Total	41.57	16.722	37
2.00	Male	47.33	13.896	15
	Female	39.38	18.575	24
	Total	42.44	17.186	39
2.07	Male	41.35	17.204	23
	Female	42.64	14.278	39
	Total	42.16	15.302	62
2.14	Male	42.23	14.449	31
	Female	43.57	17.890	40
	Total	42.99	16.378	71
2.21	Male	45.96	16.802	24
	Female	48.37	18.649	35
	Total	47.39	17.811	59
2.29	Male	40.77	16.804	31
	Female	44.88	16.393	33
	Total	42.89	16.590	64
2.36	Male	52.12	17.017	34
	Female	46.31	17.537	52
	Total	48.60	17.467	86
2.43	Male	46.03	18.343	34

	Female	51.43	17.827	44
	Total	49.08	18.136	78
2.50	Male	51.77	18.498	31
	Female	44.34	18.639	32
	Total	48.00	18.796	63
2.57	Male	47.78	15.665	49
	Female	47.81	19.930	37
	Total	47.79	17.516	86
2.64	Male	38.70	15.689	27
	Female	49.35	19.153	46
	Total	45.41	18.573	73
2.71	Male	47.34	18.466	32
	Female	43.64	16.114	42
	Total	45.24	17.148	74
2.79	Male	50.85	22.584	20
	Female	45.19	21.215	27
	Total	47.60	21.750	47
2.86	Male	50.46	15.257	13
	Female	47.00	19.729	27
	Total	48.12	18.270	40
2.93	Male	43.08	19.780	13
	Female	58.62	19.232	29
	Total	53.81	20.494	42
3.00	Male	39.15	15.231	13
	Female	49.53	18.208	17
	Total	45.03	17.500	30
3.07	Male	50.22	25.274	18
	Female	53.13	19.751	24
	Total	51.88	22.041	42
3.14	Male	55.50	15.205	12
	Female	46.13	18.319	16
	Total	50.14	17.405	28
3.21	Male	40.40	6.229	5
	Female	36.75	13.451	12
	Total	37.82	11.706	17
3.29	Male	40.80	16.199	10

	Female	51.64	19.444	11
	Total	46.48	18.381	21
3.36	Male	39.80	14.533	5
	Female	46.25	15.773	8
	Total	43.77	15.040	13
3.43	Male	57.25	18.209	4
	Female	49.20	21.707	5
	Total	52.78	19.441	9
3.50	Male	42.67	7.506	3
	Female	46.60	18.298	5
	Total	45.13	14.545	8
3.57	Female	54.60	17.981	5
	Total	54.60	17.981	5
3.64	Male	28.00	.	1
	Female	30.00	.000	2
	Total	29.33	1.155	3
3.71	Male	40.00	.	1
	Female	49.60	18.147	5
	Total	48.00	16.697	6
Total	Male	45.16	17.371	534
	Female	46.46	17.988	723
	Total	45.91	17.733	1257

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Students' Achievement

F	df1	df2	Sig.
2.004	72	1184	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a]

a. Design: Intercept + Attitude_towards_Mathematics + Gender + Attitude_towards_Mathematics * Gender

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.

Corrected Model	29949.072[a]	72	415.959	1.349	.030
Intercept	630065.001	1	630065.001	2043.741	.000
Attitude_towards_Mathematics	16110.122	37	435.409	1.412	.053
Gender	401.401	1	401.401	1.302	.254
Attitude_towards_Mathematics * Gender	11941.061	34	351.208	1.139	.268
Error	365015.407	1184	308.290		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .076 (Adjusted R Squared = .020)

```
UNIANOVA Scores BY Attitude_towards_Mathematics Location
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PRINT=HOMOGENEITY DESCRIPTIVE
  /CRITERIA=ALPHA(.05)
  /DESIGN=Attitude_towards_Mathematics Location
Attitude_towards_Mathematics*Location.
```

Univariate Analysis of Variance

Between-Subjects Factors

		Value Label	N
Attitude towards Mathematics	1.00		1
	1.14		3
	1.21		1
	1.29		6
	1.36		3
	1.43		4
	1.50		13
	1.57		11
	1.64		20

1.71		20
1.79		39
1.86		33
1.93		37
2.00		39
2.07		62
2.14		71
2.21		59
2.29		64
2.36		86
2.43		78
2.50		63
2.57		86
2.64		73
2.71		74
2.79		47
2.86		40
2.93		42
3.00		30
3.07		42
3.14		28
3.21		17
3.29		21
3.36		13
3.43		9
3.50		8
3.57		5
3.64		3
3.71		6

School Location	1	Urban	595
	2	Rural	662

Descriptive Statistics

Dependent Variable: Students' Achievement

Attitude towards Mathematics	School Location	Mean	Std. Deviation	N
1.00	Urban	20.00	.	1
	Total	20.00	.	1
1.14	Urban	45.00	9.899	2
	Rural	30.00	.	1
	Total	40.00	11.136	3
1.21	Rural	62.00	.	1
	Total	62.00	.	1
1.29	Urban	38.67	1.155	3
	Rural	33.33	5.774	3
	Total	36.00	4.733	6
1.36	Urban	40.00	.	1
	Rural	45.00	18.385	2
	Total	43.33	13.317	3
1.43	Urban	34.00	.	1
	Rural	26.00	4.000	3
	Total	28.00	5.164	4
1.50	Urban	41.67	13.472	9
	Rural	40.75	20.710	4
	Total	41.38	15.114	13
1.57	Urban	37.00	12.946	6
	Rural	49.20	14.184	5
	Total	42.55	14.313	11
1.64	Urban	43.45	19.023	11
	Rural	41.00	15.508	9
	Total	42.35	17.126	20
1.71	Urban	37.33	13.856	9
	Rural	48.18	14.098	11
	Total	43.30	14.701	20

1.79	Urban	43.19	18.392	21
	Rural	43.83	15.920	18
	Total	43.49	17.074	39
1.86	Urban	36.00	11.412	18
	Rural	50.00	16.423	15
	Total	42.36	15.405	33
1.93	Urban	40.11	16.452	19
	Rural	43.11	17.340	18
	Total	41.57	16.722	37
2.00	Urban	38.29	17.530	21
	Rural	47.28	15.892	18
	Total	42.44	17.186	39
2.07	Urban	42.38	15.448	26
	Rural	42.00	15.412	36
	Total	42.16	15.302	62
2.14	Urban	39.89	15.641	38
	Rural	46.55	16.718	33
	Total	42.99	16.378	71
2.21	Urban	42.71	18.139	28
	Rural	51.61	16.685	31
	Total	47.39	17.811	59
2.29	Urban	44.03	16.103	29
	Rural	41.94	17.158	35
	Total	42.89	16.590	64
2.36	Urban	43.70	17.330	40
	Rural	52.87	16.615	46
	Total	48.60	17.467	86
2.43	Urban	53.22	18.917	36
	Rural	45.52	16.860	42
	Total	49.08	18.136	78
2.50	Urban	45.90	18.810	29
	Rural	49.79	18.877	34
	Total	48.00	18.796	63
2.57	Urban	52.64	16.470	36
	Rural	44.30	17.571	50
	Total	47.79	17.516	86

2.64	Urban	44.00	20.829	27
	Rural	46.24	17.301	46
	Total	45.41	18.573	73
2.71	Urban	45.12	15.443	32
	Rural	45.33	18.526	42
	Total	45.24	17.148	74
2.79	Urban	46.65	22.063	26
	Rural	48.76	21.840	21
	Total	47.60	21.750	47
2.86	Urban	52.55	18.842	22
	Rural	42.72	16.463	18
	Total	48.12	18.270	40
2.93	Urban	52.44	23.108	16
	Rural	54.65	19.144	26
	Total	53.81	20.494	42
3.00	Urban	37.58	15.270	12
	Rural	50.00	17.500	18
	Total	45.03	17.500	30
3.07	Urban	53.00	23.051	16
	Rural	51.19	21.832	26
	Total	51.88	22.041	42
3.14	Urban	46.33	17.819	12
	Rural	53.00	17.092	16
	Total	50.14	17.405	28
3.21	Urban	38.00	10.029	8
	Rural	37.67	13.638	9
	Total	37.82	11.706	17
3.29	Urban	46.00	16.223	11
	Rural	47.00	21.396	10
	Total	46.48	18.381	21
3.36	Urban	42.57	14.998	7
	Rural	45.17	16.388	6
	Total	43.77	15.040	13
3.43	Urban	46.00	20.707	6
	Rural	66.33	5.132	3
	Total	52.78	19.441	9

3.50	Urban	46.00	16.432	6
	Rural	42.50	10.607	2
	Total	45.13	14.545	8
3.57	Urban	45.00	21.213	2
	Rural	61.00	16.371	3
	Total	54.60	17.981	5
3.64	Urban	30.00	.000	2
	Rural	28.00	.	1
	Total	29.33	1.155	3
3.71	Urban	48.00	16.697	6
	Total	48.00	16.697	6
Total	Urban	44.72	17.809	595
	Rural	46.98	17.610	662
	Total	45.91	17.733	1257

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Students' Achievement

F	df1	df2	Sig.
1.772	72	1184	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.[a]

a. Design: Intercept + Attitude_towards_Mathematics + Location + Attitude_towards_Mathematics * Location

Tests of Between-Subjects Effects

Dependent Variable: Students' Achievement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	31739.704[a]	72	440.829	1.437	.011
Intercept	642347.093	1	642347.093	2093.852	.000
Attitude_towards_Mathematics	16711.400	37	451.659	1.472	.035
Location	549.669	1	549.669	1.792	.181
Attitude_towards_Mathematics * Location	12987.643	34	381.989	1.245	.159
Error	363224.775	1184	306.778		
Total	3044207.000	1257			
Corrected Total	394964.479	1256			

a. R Squared = .080 (Adjusted R Squared = .024)

APPENDIX V

MATHEMATICS ACHIEVEMENT SCORES

Gender	Location	Scores
Female	Urban	32
Male	Urban	30
Male	Urban	27
Female	Rural	33
Male	Urban	40
Male	Rural	26
Female	Urban	30
Male	Rural	34
Male	Urban	43
Female	Urban	37
Male	Urban	27
Female	Urban	30
Male	Urban	36
Female	Urban	22
Female	Urban	20
Male	Urban	34
Male	Rural	36
Male	Urban	27
Female	Rural	30
Male	Rural	38
Male	Urban	30
Male	Rural	28
Female	Urban	24
Female	Urban	32
Female	Rural	30
Male	Rural	34
Male	Urban	36
Male	Rural	35
Male	Urban	62
Male	Urban	64
Female	Urban	52
Female	Rural	60
Male	Rural	74
Female	Rural	50
Female	Urban	58

Male	Urban	64
Female	Rural	75
Female	Rural	72
Female	Rural	62
Female	Rural	60
Female	Rural	70
Female	Rural	52
Male	Rural	62
Female	Rural	60
Female	Urban	58
Female	Rural	66
Male	Urban	68
Male	Rural	78
Female	Rural	72
Female	Rural	65
Female	Rural	62
Female	Rural	65
Male	Urban	66
Male	Urban	63
Female	Urban	70
Male	Urban	80
Female	Urban	62
Female	Rural	82
Female	Rural	30
Female	Urban	20
Female	Rural	28
Female	Urban	30
Male	Rural	24
Female	Urban	30
Female	Urban	36
Female	Rural	35
Male	Urban	40
Male	Urban	38
Female	Urban	36
Female	Rural	32
Female	Rural	22
Female	Urban	28
Female	Urban	28
Male	Urban	32

Female	Urban	38
Male	Urban	40
Male	Urban	35
Female	Urban	33
Female	Urban	32
Female	Urban	24
Female	Urban	60
Female	Urban	62
Male	Urban	58
Male	Urban	62
Female	Rural	50
Female	Rural	60
Female	Rural	68
Female	Rural	62
Male	Urban	64
Female	Rural	72
Female	Rural	65
Female	Rural	62
Female	Rural	52
Female	Rural	50
Female	Rural	70
Female	Urban	65
Male	Urban	70
Female	Urban	65
Female	Urban	63
Female	Urban	64
Female	Urban	68
Female	Rural	53
Female	Rural	62
Female	Urban	65
Female	Rural	63
Female	Rural	28
Female	Rural	30
Male	Rural	32
Female	Urban	25
Male	Rural	26
Female	Urban	30
Female	Urban	33
Female	Rural	38

Female	Rural	40
Female	Rural	36
Female	Urban	38
Female	Rural	40
Female	Urban	32
Female	Urban	28
Female	Rural	26
Female	Urban	24
Female	Urban	30
Female	Urban	36
Female	Rural	42
Female	Urban	38
Male	Rural	22
Male	Rural	26
Male	Urban	32
Male	Rural	60
Female	Urban	52
Female	Urban	54
Female	Rural	62
Female	Urban	75
Female	Urban	60
Female	Rural	65
Male	Urban	55
Male	Urban	62
Male	Rural	50
Female	Urban	68
Female	Urban	74
Female	Rural	60
Female	Rural	52
Female	Rural	60
Female	Urban	58
Female	Urban	72
Male	Rural	56
Female	Rural	62
Female	Urban	70
Female	Rural	67
Female	Urban	76
Male	Urban	67
Female	Urban	30

Female	Urban	25
Male	Rural	30
Female	Urban	22
Male	Urban	30
Female	Urban	35
Male	Rural	28
Female	Urban	34
Female	Urban	42
Female	Rural	28
Female	Rural	32
Female	Urban	36
Female	Urban	44
Male	Urban	34
Male	Rural	32
Male	Rural	36
Male	Urban	42
Male	Urban	22
Male	Urban	38
Male	Urban	30
Male	Urban	36
Male	Urban	42
Male	Rural	62
Male	Urban	54
Male	Urban	48
Female	Urban	60
Male	Urban	64
Male	Urban	70
Male	Urban	66
Male	Urban	75
Male	Rural	70
Male	Rural	68
Male	Urban	50
Female	Rural	52
Male	Rural	62
Male	Urban	54
Male	Rural	50
Male	Rural	60
Male	Rural	74
Female	Rural	68

Female	Rural	65
Female	Rural	72
Female	Urban	76
Female	Urban	70
Female	Rural	25
Female	Rural	20
Female	Rural	18
Female	Rural	30
Female	Urban	24
Female	Urban	26
Female	Rural	32
Male	Rural	30
Female	Urban	24
Female	Rural	28
Female	Urban	22
Female	Urban	26
Female	Rural	30
Female	Rural	27
Female	Rural	28
Female	Urban	32
Female	Urban	30
Female	Rural	28
Female	Urban	34
Female	Rural	26
Female	Rural	30
Female	Urban	34
Female	Rural	32
Female	Rural	24
Female	Rural	20
Female	Urban	50
Female	Rural	58
Female	Urban	60
Female	Rural	64
Female	Urban	54
Female	Urban	60
Female	Urban	50
Female	Rural	48
Female	Rural	56
Female	Rural	50

Female	Urban	64
Female	Urban	60
Female	Urban	66
Female	Urban	52
Male	Urban	50
Female	Rural	48
Female	Rural	52
Female	Rural	56
Female	Urban	66
Male	Urban	68
Male	Rural	64
Male	Urban	50
Male	Urban	48
Male	Urban	54
Male	Rural	64
Male	Urban	20
Male	Rural	20
Male	Rural	24
Male	Urban	30
Male	Rural	22
Male	Urban	16
Male	Urban	20
Male	Urban	24
Female	Rural	22
Male	Rural	32
Male	Rural	26
Male	Rural	24
Female	Rural	30
Female	Urban	15
Female	Urban	16
Female	Urban	20
Male	Rural	24
Male	Rural	18
Male	Rural	25
Male	Urban	30
Male	Rural	26
Female	Urban	32
Female	Rural	48
Male	Rural	50

Male	Rural	52
Male	Urban	54
Male	Urban	60
Male	Rural	60
Male	Urban	52
Male	Urban	50
Male	Urban	50
Male	Urban	45
Male	Urban	40
Male	Urban	48
Female	Urban	62
Male	Urban	50
Male	Rural	60
Male	Urban	48
Male	Urban	50
Male	Rural	52
Male	Rural	46
Male	Urban	50
Male	Rural	62
Male	Urban	57
Male	Rural	33
Female	Rural	26
Female	Urban	24
Male	Rural	20
Female	Urban	18
Female	Urban	30
Female	Urban	22
Female	Rural	30
Male	Urban	34
Male	Rural	20
Female	Urban	28
Female	Urban	30
Male	Urban	32
Female	Urban	26
Male	Rural	18
Female	Rural	28
Female	Rural	28
Female	Urban	30
Female	Rural	32

Male	Urban	24
Male	Rural	30
Male	Urban	52
Female	Rural	64
Female	Urban	50
Male	Rural	50
Female	Urban	64
Female	Rural	63
Female	Rural	48
Female	Urban	58
Male	Urban	60
Male	Rural	62
Female	Rural	66
Male	Rural	60
Female	Rural	56
Female	Urban	64
Female	Rural	46
Female	Rural	62
Female	Urban	50
Female	Urban	60
Male	Urban	48
Female	Rural	50
Female	Urban	58
Male	Urban	28
Female	Urban	20
Female	Urban	18
Female	Urban	16
Female	Rural	22
Female	Urban	24
Female	Rural	30
Female	Rural	32
Female	Urban	26
Female	Rural	28
Female	Rural	30
Female	Rural	33
Male	Rural	22
Male	Rural	30
Female	Rural	32
Female	Rural	28

Female	Rural	32
Female	Urban	23
Male	Urban	22
Male	Rural	30
Male	Rural	55
Female	Urban	60
Female	Urban	48
Female	Rural	64
Male	Urban	60
Female	Rural	48
Female	Rural	47
Female	Rural	52
Female	Rural	64
Female	Rural	68
Female	Rural	55
Male	Urban	48
Female	Rural	46
Female	Rural	50
Male	Rural	66
Male	Rural	58
Female	Rural	68
Female	Rural	54
Male	Urban	50
Male	Urban	54
Female	Rural	62
Female	Urban	64
Female	Urban	52
Male	Urban	60
Male	Urban	74
Male	Urban	50
Male	Rural	58
Male	Urban	64
Female	Rural	75
Female	Urban	72
Male	Urban	62
Female	Rural	60
Female	Rural	70
Female	Rural	52
Female	Rural	62

Female	Rural	60
Female	Rural	58
Male	Rural	66
Female	Rural	68
Male	Rural	78
Female	Rural	72
Female	Rural	65
Female	Urban	62
Male	Rural	65
Male	Urban	66
Female	Rural	63
Male	Rural	70
Female	Urban	80
Female	Urban	62
Female	Rural	82
Male	Urban	60
Male	Rural	62
Male	Urban	58
Male	Urban	62
Male	Rural	50
Male	Urban	60
Female	Urban	68
Female	Rural	62
Male	Rural	64
Male	Rural	72
Male	Urban	65
Female	Urban	62
Female	Urban	52
Female	Urban	50
Male	Rural	70
Female	Urban	65
Male	Urban	70
Female	Urban	65
Male	Urban	63
Female	Rural	64
Female	Rural	68
Male	Urban	53
Female	Rural	62
Female	Rural	65

Female	Urban	63
Female	Rural	60
Female	Rural	52
Male	Urban	54
Male	Rural	62
Male	Rural	75
Female	Rural	60
Female	Urban	65
Male	Urban	55
Male	Rural	62
Male	Urban	50
Male	Rural	68
Male	Urban	74
Female	Urban	60
Female	Urban	52
Male	Urban	60
Male	Urban	58
Male	Urban	72
Male	Rural	56
Female	Rural	62
Male	Rural	70
Male	Rural	67
Female	Rural	76
Male	Rural	67
Female	Urban	62
Male	Urban	54
Male	Urban	48
Male	Urban	60
Female	Urban	64
Female	Rural	70
Male	Urban	66
Female	Urban	75
Male	Rural	70
Female	Urban	68
Female	Rural	50
Male	Rural	52
Male	Urban	62
Female	Urban	54
Male	Urban	50

Male	Rural	60
Male	Urban	74
Female	Rural	68
Female	Rural	65
Female	Urban	72
Female	Rural	76
Female	Rural	70
Male	Rural	50
Female	Urban	58
Female	Rural	60
Male	Rural	64
Male	Rural	54
Male	Urban	60
Male	Rural	50
Female	Urban	48
Male	Rural	56
Male	Urban	50
Female	Rural	64
Male	Rural	60
Male	Rural	66
Male	Rural	52
Female	Urban	50
Female	Rural	48
Female	Rural	52
Female	Rural	42
Male	Rural	40
Female	Rural	37
Female	Rural	43
Female	Rural	40
Female	Rural	36
Female	Rural	40
Female	Rural	44
Female	Rural	43
Female	Rural	47
Female	Rural	37
Female	Urban	40
Female	Urban	46
Female	Rural	32
Female	Urban	30

Male	Urban	44
Male	Urban	46
Female	Rural	37
Female	Rural	40
Female	Rural	48
Female	Urban	40
Female	Rural	38
Female	Rural	34
Female	Rural	42
Female	Urban	40
Female	Rural	44
Female	Rural	46
Male	Rural	45
Female	Rural	38
Female	Rural	40
Female	Urban	42
Female	Rural	35
Female	Rural	36
Female	Urban	40
Female	Rural	43
Female	Rural	48
Female	Urban	50
Female	Rural	46
Male	Urban	48
Male	Rural	50
Female	Rural	42
Female	Rural	38
Male	Rural	36
Male	Urban	34
Male	Rural	40
Female	Rural	46
Male	Rural	52
Male	Rural	48
Female	Rural	32
Male	Urban	36
Female	Rural	42
Female	Rural	40
Female	Rural	35
Female	Rural	40

Male	Rural	32
Female	Rural	40
Male	Rural	45
Male	Rural	38
Male	Urban	44
Male	Rural	52
Female	Urban	38
Female	Rural	42
Male	Rural	46
Female	Rural	54
Male	Urban	44
Male	Urban	42
Female	Rural	46
Female	Rural	52
Male	Rural	42
Female	Rural	48
Female	Rural	40
Female	Rural	46
Male	Rural	52
Female	Rural	35
Female	Rural	30
Male	Urban	28
Female	Urban	40
Female	Rural	34
Female	Rural	36
Female	Rural	42
Female	Urban	40
Male	Rural	34
Female	Urban	38
Female	Rural	32
Female	Rural	36
Male	Rural	40
Female	Urban	37
Male	Rural	38
Female	Rural	42
Male	Rural	40
Female	Rural	38
Male	Rural	44
Female	Urban	36

Male	Rural	40
Female	Rural	44
Male	Urban	42
Male	Rural	34
Female	Urban	30
Female	Urban	30
Female	Rural	30
Male	Urban	34
Male	Rural	40
Female	Urban	32
Male	Rural	26
Male	Rural	30
Male	Urban	34
Male	Urban	32
Female	Urban	42
Male	Rural	36
Female	Urban	34
Male	Urban	40
Male	Urban	25
Male	Rural	26
Male	Rural	30
Male	Rural	34
Male	Urban	28
Male	Rural	35
Female	Rural	30
Male	Rural	34
Female	Urban	28
Female	Urban	36
Male	Rural	40
Female	Urban	20
Female	Rural	30
Female	Urban	36
Female	Urban	42
Male	Urban	38
Male	Urban	30
Male	Urban	26
Female	Urban	36
Male	Urban	20
Female	Urban	32

Male	Rural	30
Female	Urban	24
Female	Rural	36
Female	Urban	37
Female	Urban	41
Male	Urban	37
Male	Urban	33
Male	Rural	32
Female	Urban	34
Female	Urban	35
Male	Urban	32
Female	Urban	38
Female	Urban	40
Female	Urban	33
Female	Urban	42
Male	Rural	28
Male	Urban	30
Female	Rural	27
Female	Rural	28
Male	Urban	20
Female	Urban	30
Male	Urban	34
Female	Urban	33
Female	Urban	34
Male	Urban	40
Male	Urban	38
Male	Rural	34
Female	Urban	20
Male	Urban	18
Female	Rural	35
Male	Urban	32
Female	Urban	40
Female	Urban	30
Male	Urban	28
Female	Urban	32
Male	Urban	36
Male	Urban	25
Male	Urban	30
Female	Urban	33

Female	Urban	36
Male	Urban	30
Female	Urban	25
Male	Urban	26
Female	Urban	32
Female	Urban	40
Male	Urban	33
Male	Urban	38
Female	Rural	26
Male	Urban	36
Female	Urban	28
Male	Rural	38
Female	Urban	40
Female	Urban	30
Male	Rural	32
Female	Urban	32
Male	Urban	28
Female	Rural	35
Female	Urban	26
Male	Rural	30
Female	Urban	40
Male	Urban	38
Female	Urban	42
Female	Rural	38
Male	Urban	30
Female	Urban	24
Male	Urban	22
Female	Rural	30
Female	Rural	32
Male	Rural	38
Female	Rural	32
Male	Urban	40
Male	Urban	36
Female	Rural	34
Male	Urban	28
Female	Urban	30
Female	Urban	32
Male	Urban	24
Female	Rural	22

Male	Rural	30
Female	Urban	46
Male	Urban	36
Male	Rural	34
Male	Rural	38
Male	Urban	42
Male	Rural	38
Female	Urban	26
Male	Rural	25
Male	Rural	30
Female	Urban	32
Male	Urban	26
Male	Rural	28
Male	Urban	20
Female	Urban	18
Male	Rural	30
Female	Rural	22
Female	Urban	30
Male	Rural	30
Female	Urban	33
Female	Rural	24
Male	Urban	26
Female	Urban	18
Female	Rural	23
Female	Urban	32
Male	Urban	30
Female	Rural	27
Female	Urban	33
Male	Urban	40
Female	Urban	26
Female	Rural	30
Female	Rural	34
Male	Urban	43
Male	Rural	37
Female	Urban	27
Male	Rural	30
Female	Urban	36
Female	Rural	22
Male	Rural	20

Female	Urban	34
Female	Urban	36
Male	Rural	27
Female	Rural	30
Female	Urban	38
Male	Rural	30
Female	Rural	28
Female	Rural	24
Male	Urban	32
Female	Rural	30
Female	Rural	34
Male	Urban	36
Female	Urban	35
Female	Urban	30
Female	Rural	20
Male	Rural	28
Male	Rural	30
Male	Urban	24
Female	Rural	30
Female	Urban	36
Male	Urban	35
Male	Urban	40
Male	Urban	38
Female	Urban	36
Male	Urban	32
Male	Urban	22
Female	Rural	28
Male	Urban	28
Female	Rural	32
Female	Rural	38
Female	Rural	40
Female	Rural	35
Male	Urban	33
Female	Urban	32
Male	Rural	24
Male	Urban	28
Male	Urban	30
Male	Urban	32
Female	Rural	25

Female	Rural	26
Male	Rural	30
Female	Rural	33
Female	Urban	38
Male	Urban	40
Female	Urban	36
Female	Rural	38
Male	Rural	40
Female	Rural	32
Female	Rural	28
Female	Urban	26
Male	Rural	24
Female	Rural	30
Female	Rural	36
Male	Urban	42
Female	Rural	38
Female	Rural	22
Female	Urban	26
Female	Urban	32
Female	Urban	30
Male	Urban	25
Female	Rural	30
Female	Rural	22
Female	Rural	30
Male	Urban	35
Female	Urban	28
Male	Urban	34
Female	Rural	42
Male	Urban	28
Female	Rural	32
Male	Rural	36
Female	Rural	44
Male	Rural	34
Female	Urban	32
Male	Urban	36
Male	Urban	42
Female	Urban	22
Male	Rural	38
Female	Urban	30

Male	Rural	36
Male	Urban	42
Female	Rural	25
Male	Urban	20
Female	Rural	18
Male	Rural	30
Male	Urban	24
Female	Urban	26
Male	Urban	32
Female	Urban	30
Male	Urban	24
Male	Urban	28
Male	Urban	22
Male	Rural	26
Male	Urban	30
Male	Urban	27
Male	Rural	28
Female	Rural	32
Male	Rural	30
Female	Urban	28
Male	Urban	34
Female	Urban	26
Female	Urban	30
Male	Urban	34
Female	Urban	89
Male	Rural	75
Male	Urban	71
Female	Urban	54
Male	Rural	95
Male	Rural	72
Female	Urban	80
Male	Urban	57
Female	Rural	90
Male	Rural	64
Female	Rural	68
Female	Rural	70
Male	Rural	68
Female	Urban	90
Male	Urban	87

Female	Rural	55
Female	Urban	51
Female	Rural	69
Male	Rural	72
Female	Urban	78
Female	Urban	70
Male	Urban	88
Female	Rural	58
Female	Rural	70
Male	Urban	62
Female	Urban	92
Male	Urban	76
Female	Rural	60
Male	Rural	68
Male	Urban	75
Female	Urban	70
Female	Urban	82
Male	Rural	90
Male	Rural	70
Female	Urban	68
Male	Urban	49
Female	Urban	50
Female	Urban	75
Male	Urban	60
Female	Urban	72
Female	Urban	95
Female	Rural	75
Female	Urban	89
Male	Rural	68
Female	Urban	90
Female	Urban	94
Female	Rural	70
Male	Urban	63
Male	Rural	82
Female	Urban	67
Male	Rural	80
Female	Rural	75
Female	Urban	75
Male	Urban	90

Male	Rural	56
Female	Rural	75
Male	Rural	75
Male	Urban	56
Female	Urban	64
Female	Urban	80
Male	Rural	50
Male	Urban	66
Male	Rural	74
Male	Rural	58
Female	Urban	60
Male	Rural	59
Male	Rural	63
Male	Urban	75
Male	Rural	63
Female	Urban	80
Female	Rural	55
Female	Rural	68
Male	Rural	70
Female	Rural	82
Male	Urban	100
Male	Rural	80
Male	Urban	63
Male	Rural	43
Female	Rural	57
Male	Rural	70
Male	Rural	55
Female	Rural	53
Female	Rural	75
Female	Rural	61
Female	Rural	82
Female	Rural	67
Female	Rural	84
Female	Urban	65
Male	Rural	50
Female	Urban	47
Male	Rural	88
Female	Urban	48
Female	Rural	75

Female	Rural	53
Female	Rural	75
Female	Rural	85
Male	Rural	67
Female	Rural	60
Female	Rural	76
Female	Rural	76
Male	Rural	75
Female	Urban	77
Female	Rural	78
Female	Rural	67
Female	Rural	60
Female	Urban	70
Female	Rural	79
Male	Rural	80
Female	Urban	79
Female	Rural	52
Male	Rural	94
Male	Urban	82
Female	Rural	68
Female	Rural	58
Female	Rural	95
Male	Rural	63
Female	Rural	65
Female	Rural	75
Male	Rural	65
Male	Rural	77
Female	Rural	80
Female	Urban	73
Male	Rural	62
Male	Rural	70
Female	Rural	70
Female	Rural	75
Female	Rural	76
Male	Rural	70
Female	Rural	68
Female	Rural	66
Male	Urban	64
Male	Rural	62

Male	Urban	65
Male	Rural	68
Female	Urban	70
Male	Rural	70
Male	Rural	72
Female	Rural	68
Male	Rural	70
Male	Rural	70
Male	Rural	65
Female	Rural	68
Female	Urban	70
Female	Rural	70
Female	Rural	68
Male	Rural	66
Female	Rural	65
Female	Urban	75
Female	Rural	70
Female	Rural	74
Female	Rural	72
Female	Urban	60
Female	Rural	64
Female	Rural	50
Female	Urban	45
Female	Rural	42
Female	Urban	45
Female	Urban	42
Female	Urban	46
Male	Rural	48
Male	Rural	45
Female	Rural	50
Female	Rural	50
Female	Rural	48
Female	Rural	44
Female	Rural	42
Female	Rural	45
Female	Urban	40
Female	Rural	42
Female	Rural	45
Female	Urban	46

Male	Urban	48
Female	Rural	48
Female	Rural	52
Female	Urban	50
Female	Urban	52
Female	Rural	48
Female	Urban	46
Female	Rural	45
Female	Urban	44
Female	Rural	35
Female	Urban	34
Male	Urban	40
Male	Rural	42
Female	Rural	40
Female	Rural	42
Male	Urban	40
Male	Rural	46
Male	Rural	48
Female	Urban	52
Male	Rural	52
Male	Rural	46
Female	Urban	48
Male	Rural	50
Female	Urban	48
Female	Urban	45
Female	Urban	52
Female	Urban	50
Male	Urban	46
Female	Rural	45
Male	Rural	45
Male	Urban	42
Male	Rural	45
Male	Rural	40
Female	Rural	44
Female	Urban	50
Male	Rural	44
Female	Rural	45
Male	Urban	48
Male	Rural	50

Female	Rural	35
Female	Rural	45
Male	Rural	50
Female	Rural	36
Female	Rural	48
Female	Urban	44
Male	Urban	38
Female	Rural	34
Female	Urban	38
Male	Urban	44
Female	Rural	42
Female	Rural	45
Female	Urban	48
Female	Rural	40
Female	Rural	42
Male	Rural	48
Female	Urban	45
Female	Rural	46
Female	Rural	50
Male	Urban	48
Female	Rural	50
Male	Rural	48
Female	Urban	46
Male	Urban	45
Female	Rural	50
Male	Rural	48
Female	Rural	45
Male	Rural	48
Female	Urban	50
Male	Urban	44
Male	Urban	45
Female	Rural	48
Female	Rural	46
Female	Rural	44
Male	Rural	46
Male	Urban	46
Female	Rural	52
Male	Rural	44
Male	Rural	48

Male	Rural	45
Male	Rural	44
Female	Urban	34
Male	Rural	38
Female	Rural	45
Male	Rural	38
Male	Rural	50
Male	Rural	45
Male	Rural	38
Male	Rural	48
Male	Rural	50
Male	Rural	45
Female	Urban	48
Male	Rural	45
Female	Rural	48
Female	Urban	35
Male	Rural	42
Female	Rural	48
Female	Rural	45
Female	Urban	40
Female	Rural	35
Male	Urban	45
Male	Rural	43
Male	Rural	40
Female	Urban	45
Male	Rural	40
Female	Urban	45
Male	Rural	40
Female	Rural	46
Female	Rural	42
Female	Rural	50
Female	Rural	46
Male	Urban	42
Male	Rural	35
Male	Rural	38
Female	Urban	42
Female	Urban	48
Male	Rural	42
Female	Urban	40

Female	Urban	48
Female	Rural	46
Female	Rural	50
Male	Rural	36
Male	Urban	45
Female	Rural	42
Male	Urban	40
Female	Rural	48
Female	Rural	50
Female	Urban	48
Female	Rural	46
Female	Rural	40
Female	Urban	45
Male	Rural	48
Female	Rural	48
Female	Rural	40
Male	Rural	50
Female	Rural	36
Female	Urban	45
Female	Rural	36
Female	Rural	45
Female	Urban	50
Female	Rural	42
Female	Urban	48
Female	Urban	35
Female	Urban	50
Female	Urban	36
Female	Urban	48
Male	Rural	50
Male	Rural	48
Female	Urban	45
Female	Rural	48
Female	Urban	35
Female	Urban	40
Male	Rural	50
Male	Urban	45
Male	Rural	45
Female	Urban	48
Female	Rural	45

Female	Urban	40
Male	Rural	45
Female	Urban	35
Female	Urban	40
Female	Urban	45
Female	Rural	40
Female	Urban	45
Female	Urban	50
Male	Rural	45
Female	Urban	38
Female	Urban	50
Male	Rural	68
Male	Urban	70
Female	Rural	70
Male	Urban	68
Male	Urban	68
Male	Rural	60
Female	Rural	76
Female	Urban	76
Female	Rural	60
Male	Urban	70
Male	Urban	74
Male	Rural	73
Male	Urban	68
Male	Rural	72
Female	Urban	70
Female	Urban	72
Male	Rural	60
Female	Rural	70
Female	Rural	60
Female	Rural	62
Female	Urban	70
Female	Rural	68
Female	Rural	66
Male	Rural	70
Female	Urban	70
Male	Rural	70
Male	Rural	60
Female	Rural	60

Female	Urban	64
Male	Rural	64
Male	Urban	68
Female	Rural	70
Male	Urban	68
Female	Rural	75
Female	Rural	75
Female	Rural	66
Male	Urban	66
Male	Rural	68
Male	Urban	68
Male	Urban	70
Male	Urban	66
Male	Rural	68
Female	Urban	58
Female	Rural	70
Male	Urban	72
Male	Urban	72
Male	Urban	66
Female	Rural	70
Male	Urban	70
Male	Rural	70
Female	Urban	70
Male	Rural	68
Male	Urban	70
Female	Urban	60
Male	Urban	60
Female	Urban	68
Male	Urban	66
Female	Urban	75
Female	Urban	75
Male	Urban	78
Male	Rural	78
Male	Urban	70
Female	Rural	70
Male	Rural	75
Male	Urban	75
Male	Rural	68
Female	Urban	68

Female	Urban	70
Female	Rural	75
Male	Rural	74
Male	Urban	70
Male	Rural	70
Male	Urban	70
Male	Urban	74
Female	Urban	72
Female	Rural	68
Male	Rural	64
Female	Rural	68
Female	Urban	68
Male	Urban	70