

TITLE PAGE

**EMOTIONAL INTELLIGENCE, SELF ESTEEM, AND ACADEMIC SELF-
EFFICACY OF STUDENTS AS CORRELATES OF ACADEMIC
ACHIEVEMENTS IN MATHEMATICS**

BY

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DEDICATION

This project is dedicated to my Heavenly father, whose infinite mercy upon me saw me through.

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First and foremost, praises and thanks to the God Almighty, for His showers of Blessings throughout my research work. I would like to express my deep and sincere gratitude to my research Supervisor, Dr. C.S. Ugwuanyi for giving me the opportunity to do research and providing invaluable guidance to me throughout the research. It is a great privilege and honour to work and study under His guidance. I am extremely grateful for what he has offered to me. This work would not have been complete without his support and assistance.

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ABSTRACT

This research work was designed to study the emotional intelligence, self-esteem and academic self-efficacy of students as correlates of academic achievement in mathematics. Four research questions and four hypotheses were formulated to guide the study. The correlational survey research design was employed using a multistage sampling technique in choosing a total of 400 students from 16 secondary schools in Nnewi Education zone of Anambra State. The researcher used two standardized instruments. They are: a 30 item instrument titled – Emotional intelligence, Self-esteem and Academic Self-efficacy Questionnaire (ESAQ) and Students’ Academic Achievement Score Proforma (SAASP). Data generated from these instruments were analyzed using simple linear regression analysis. The coefficient of determination was used to analyze research questions and ANOVA was used to test the null hypotheses at 0.05 level of significance. The relationship between the emotional intelligence, self-esteem, and self-efficacy and student academic achievement in mathematics was established. Furthermore, result showed that students’ emotional intelligence, self-esteem and self-efficacy had high, direct and significant influence on student academic achievement in mathematics. It was recommended that students should be taught with methods and materials that will enhance their emotional intelligence, self-esteem and self-efficacy. Also the teachers should be equipped with emotional intelligence, self-esteem and self-efficacy skills to allow them to function effectively as educators. The role of parents in students’ academic achievement improvement should be emphasized; parents should be motivated to do more by the Government and teachers. Government should include curriculum in schools that helped promote and enhance students’ emotional intelligence, self-esteem and self-efficacy.

CHAPTER ONE

INTRODUCTION

Background of the Study

Mathematics is a core subject that influences the life of the individual as well as the development effort of a nation (Emoven, 2015). In addition, Mathematics is a very important school subject that affects all aspects of life at different categories. It is the bedrock of all science and technologically based subjects (Maliki, Nyban&Ibu, 2009). Mathematics is also the foundation of any technical development of any Nation (Azuka, 2009). Among all academic subjects studied at school, mathematics has distinctly contributed more to the objectives of general education of man than any other subject (Bradberry, & Greaves, 2016). The reason is that It provides an essential base for students to continue with advanced and undergraduate studies in different field of education like Science, Engineering, Economics, Business and Computer related fields etc. The proper teaching of well-designed and highly articulated Mathematics curricula is a something that is absolutely indispensable for the attainment of high academic performance. Academic achievement or academic performance is the extent to which a student, teacher or institution has achieved their short or long-term educational goals (Fam, & Yaacob, 2016). Simkins (2010) argues that the main outputs in education are expressed in terms of learning that is, changes in knowledge skills and attitudes of individual as a result of their experiences within the school system. Simkins argued that the student's academic performance is the outcome of mathematics tests which depend on how much interest the students have in the subjects. He also emphasized that without sound background and good adoption of application of relevant core subjects especially mathematics in the country there would be poor performance and zero progress technologically and equally no prospect of success in any career. Simkins is of the opinion that mathematics teaching can only be result-oriented, when student's shows interest in

mathematics and the teachers are favourably disposed, to use the appropriate methods and resources in teaching the students. With the current increase in scientific knowledge; all over the world; much emphasis is placed on students' inherent factors as it concerns gender and age (Adeyemi, 2011). Inherent factors are a permanent part of something belonging by nature as in age and gender.

Despite the importance of mathematics to the nation, a review of students' performance in both internal and external examinations has revealed a disturbing picture. Students are seen to perform poorly in most mathematics examinations (Iyi, 2016). This is giving great concern to educators, parents, students, school administrators and the general public. For instance, the West African Examination Council results of students in Nigeria show that students perform poorly. In the years 2008 to 2012, the percentage pass with credit and above in Nigeria were 23.0% in 2009, 31.0% in 2010, 24.94% in 2011 and 38.98% in 2012 respectively (Kurumeh & Imoko 2008; Moseri, Onwuka & Iweka 2010; Iyi 2016). According to the report on Punch (Punch Newspaper dated 17 July, 2017), 1,567,016 candidates registered for the May/June 2017 WAEC examination, out of which 1,559,162 candidates sat for the examination, 923,486 candidates, representing 59.22%, obtained a minimum of credits in 5 subjects & above, including English Language and Mathematics. This performance is better than for 2015 and 2016 where it was 38.68% and 52.97% respectively. The recent increase in achievement in mathematics believed to be as a result of changes in modern secondary schools due to Government funding, creating a more friendly atmosphere in school environment, regular payment, making teachers' educational improvement programmes available etc. this helps to boost student-teacher relationship which in turn increases student intelligence quotient and also reduces student emotional stress (Ademola, Akintunde & Yakassi 2010). One of the factors adduced to this is the Intelligence Quotient (IQ) of the student. The level of IQ has been shown to be a predictor of the level of

academic achievement of students in all subjects including mathematics (Ademola,Akintunde&Yakassi 2010).

Academic achievement is one of the most important indicators of learning and understanding in all educational systems. Academic achievement represents performance outcomes that indicate the extent to which a person has accomplished specific goals that were the focus of activities in instructional environments, specifically in school, college and university (Steinmayr, Meibner, Weidinger&Wirthwein, 2017).Academic achievement should be considered to be multifaceted construct that comprises different domain of learning. Because the field of academic achievement is very wide ranging and covers a broad variety of educational outcomes, the definition of academic achievement depends on the indicator used to measure it(Steinmayr, Meibner, Weidinger&Wirthwein, 2017). All criteria have in common that they represent intellectualsendeavours and thus, more or less, mirror the intellectual capacity of a person. In developed societies, academic achievement plays important role in every person'slife.In attempt to investigate what determines academic outcomes of learners, researchers have come with more questions than answers. Therefore, identifying factors affecting students' achievement in this course and determining the sizeof these effects can be critically important in helping students improve their academic achievement. The factors are emotional intelligence, self-esteem and academic self-efficacy.

Emotional Intelligence is the capability of individuals to recognize their own emotionsand those of others, discern between different feelings and label them appropriately, use emotional information to guide thinking and behavior, and manage and/ or adjust emotions to adapt to environments or achieve one's goals(Konstantin & Arian, 2001). Emotional intelligence is involved in the capacity to perceive emotions, assimilate emotion-related feelings, understand the information of those emotions, and manage them(Gardner, 2013). Emotional Intelligence (EI) is seen by researchers as to possess the ability to fully

explain performance outcomes (Gardner, 2013). Emotional Intelligence is defined as the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions (Salovey & Mayer 2015).

There is a connection between emotion and cognition. Mayer, Salovey and Caruso (2015) viewed emotion as one of the three fundamental classes of mental operations which include motivation, emotion and cognition. There is the notion that having positive quality emotions and feelings help students to achieve and give their best potential in the classroom (Fazura & Ghazali, 2003). As such teachers should understand that any stress on the affective domain of the learners would affect their cognitive domain in classroom. As such, teaching emotional and social skills at school is important as these skills have long term effects on student academic achievement in mathematics.

Also, research in brain based learning suggests that emotional intelligence is fundamental to effective learning. Hence, EI is being incorporated in the school curriculum and training programmes in some organizations to achieve their objectives (Funderstanding, 2008). According to Goleman (2015), IQ alone is no more a measure of success, it accounts for 20% and the rest (80%) goes for emotional, social intelligence and luck. These statements have attracted attention of educators and educational policy makers.

In Nigeria, not much attention has been focused on exploring EI in the school system and in the teaching of mathematics. Many teachers, educationists, schools and students in Nigeria have little or no idea of emotional intelligence and its effects on learning (Ogundokin & Adeyemo 2010). This is evident in the lack of literature on this subject in Nigeria. The consideration of factors affecting academic achievement in secondary schools in Nigeria often neglects the role of non-cognitive variables including emotional intelligence (EI). Hence, EI is not part of the curriculum of any subject including mathematics in Nigeria.

This gap in knowledge exists in the midst of poor performance of students in schools as revealed by WAEC results.

The status of one's E.I helps in shaping the person's self-esteem. Self-esteem has long been considered an essential component of good mental health. Self-esteem is defined as the extension of values which the information within self-imagination has for a person and it comes from a person's beliefs about all the attributes and features present in him. It is a widely used concept both in popular language and in psychology. It refers to an individual's sense of his or her value or worth, or the extent to which a person values, approves of, appreciates, prizes, or likes him or herself (Blascovich&Tomaka, 2011). In basic terms, self-esteem is an internal belief system that an individual possesses about one's self. Branden (2009) defined self-esteem as a standard by which a person judges her/himself, estimate feeling and emotion. This self-evaluation is the single most significant key to behavior, which affects the thinking processes, emotions, desires, values, and goals. Purky (2010) found that self-esteem is related to some components of success, either academic or verbal. Purky concluded that there is a continuous interaction between self-esteem and academic achievement.

Related to one self-esteem is the self-efficacy. Self-efficacy which is defined as people's judgments of their capabilities to organize and execute courses or action required to deal with prospective situations (Bandura, 2006). Self-efficacy also is an individual belief in his or her innate ability to achieve goals. Self-efficacy reflects confidence in the ability to exert control over one's own emotion, behavior and social environment (Johanian&Mahjoubi, 2013). Self-efficacy is one the most enabling psychology models to have been adopted into positive psychology. It is the optimistic self-belief in our competence or chances of successfully accomplishing a task and producing a favourable outcome (Johanian&Mahjoubi, 2013).In academic achievement,Johanian&Mahjoubi(2013) found a

positive relationship between self-efficacy and academic achievement. Due to the fact that the self-efficacy cannot be presumed as the direct reason for academic achievement, however, it will be the self-regulation that causes the academic achievements

Previous studies attribute causes of poor performance of student on mathematics to the environmental factors, lack of professional teachers, Parents related issues etc but only few studies were on emotional state of the student. Based on this, the researcher intends to interrogate emotional intelligence, self-esteem and self-efficacy as correlate of student academic achievement in mathematics.

Statement of the Problem

Formal education in Nigeria has over the years been concerned mainly with the development of the cognitive domain of learning as the precursor to academic achievement and success in life. Over the years, there have been series of reports of student's achievement in mathematics both local and international examinations with reportedly high rate of failure. The consideration of factors affecting student achievement in mathematics has often neglected the role of cognitive variables such as Emotional intelligence, self-esteem and self-efficacy. In Nigeria, there is perceived shortfall in the student academic achievement generally and the need to prevent and avoid such problems is deemed necessary. Researchers have blamed the failures on teachers, students and other student related variables. Others researchers have blamed the failures on parents, environment and locations of the school and socio-economic status of the student.

The issue of mass failure in mathematics, student lack of interest in mathematics and other related problems and challenges facing students in secondary schools today seem to have been no point of agreement between the researchers. These contradictions among the researchers occurs based on the fact of differences, from the result gotten using the same

variable. Some of the variables will be reported by some researchers as having an effect on student academic achievement while others reported the variables of not having effect.

However, the need to find the cause of this failure using factors differently from the common factors mentioned above necessitated the shift to studies using factors that considers student cognitive domain and emotions like student emotional intelligence, self-esteem and self-efficacy. With the introduction of these factors, the high rate of failure on student academic achievement can be studied compositely. This is the focus of this study. Hence, there is need to investigate these variables compositely and also their individual influence on student's academic achievement in mathematics.

Basically, researching on the possible link between emotional intelligence, self-esteem and self-efficacy of student and student academic achievement in mathematics will help finding the possible cause of this failure on student mathematics achievement. This study, therefore investigate emotional intelligence, self-esteem and academic self-efficacy of students as correlations of academic achievements in mathematics.

Purpose of the study

This study examined how emotional intelligence, self-esteem and self-efficacy of student can be used as correlates of their academic achievement in mathematics in Anambra State of Nigeria. Specifically, the research examined the following:

1. Amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence.
2. Amount of variation in students' academic achievement in mathematics that can be attributed to their self-esteem.
3. Amount of variation in students' academic achievement in mathematics that can be attributed to their self-efficacy.

4. Amount of variation in students' academic achievement in mathematics that can be jointly attributed to their emotional intelligence, self-esteem and self-efficacy.

Significance of the Study

The findings of this study have both theoretical and practical significance.

Theoretically, this work provided a theoretical framework, necessary evidence to support and confirm the existing theories in this study. The empirical evidence from this study help support the three theories used for this study.

Specifically, the empirical evidence from the students' emotional intelligence supported the Emotional intelligence theory propounded by Goleman which links human academic achievement with emotional intelligence. Emotional competencies are not innate talents, but rather learned capabilities that must be worked on and can be developed to achieve outstanding performance (Goleman, 2006). Goleman believes that individuals are born with a general emotional intelligence that determines their potential for learning emotional competencies. The theory believed that students with high EI have greater mental health, academic achievement job performance, and leadership skills. The empirical evidence from students' emotional intelligence supported and the effect on student academic achievement in mathematics also is supported.

The empirical evidence from students' self-esteem also provided the evidence to support the second theory, identity theory (Self-esteem theory) propounded by Sheldon Stryker (1980). Identity theory argues the effect of student self-esteem on their academic achievement. This theory has conceptualized self-esteem as an influential predictor of certain outcomes, such as academic achievement, happiness, satisfaction in marriage and relationships, and criminal behavior. The Empirical evidence from this study supported

identity theory. Also at end of this study, the researcher believes it help clears any pending doubts as regards self-esteem and student academic achievement in mathematics.

Finally, the empirical evidence from the students' self-efficacy supported Bandura's social cognitive theory propounded by Albert Bandura (1960), which emphasizes the role of observational learning and social experience in the development of personality. Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplish a task. The theory believed that those with high self-efficacy showed better academic performance than those with low self-efficacy. The empirical evidence supported Bandura's Social cognitive theory in its evidence that self-efficacy affects student academic achievement. Other variables that influence student academic achievement will be strongly supported by the empirical evidence of this study. Consequently, at end of the study, the need for continued investigations effect of these factors on student academic achievement and as well as an examination of the possible ways to improve on those factors provided.

Practically, the findings of the study are of immense importance and value to the students, education agencies and ministries, government and all its agencies, parents, and the society.

This study provided empirical data to the students. The student's understanding of the non-cognitive factors such as emotional intelligence, self-esteem, and self-efficacy will be improved and at the same time increase their academic achievement. This understanding also makes them adjust and adapt easily to academic effectiveness and performance. Empirical data from this study provided the needed data.

Education Agencies and ministries, Government and its agencies: The findings provided a blueprint for Education Agencies and ministries, Government and its agencies toward the addressing of students' mass failure in mathematics and other subjects, the nation witnesses every year in Nigeria. This would assist them to appreciate the problem from the

grassroots. The study makes the teaching of mathematics in line with modern technological devices effective. This also helped the school administrators awakened to their responsibilities and also provide a conducive atmosphere to display involvement in mathematics activities.

Society: Would benefit from the study because the study help to improve student academic achievement and positive attitude in mathematics and other subjects and allied courses would be studied by many students in institutions of higher learning. Also if students study mathematics and allied courses, our dream in the use of science and technology for capacity building and sustainable development will be fully realized.

Parents: This study helps the parents through academic achievement maximization of their children thereby assist in the training of their children effectively with less effort and energy. This study also helps prepare their children both mentally and physically in their future endeavors and careers.

Finally, this work is not only an educational study but also lays a good groundwork for further exploration on the theme in Anambra State.

Scope of the Study

The study was limited to Government Senior Secondary Schools in Nnewi Education Zone, in Anambra State. Senior Secondary II students (SS2) were used as subjects for the study. The impacts of emotional intelligence, self-esteem and self-efficacy on students' academic achievement in mathematics were explored.

Research Questions

1. What amount of variation in students' academic achievement in mathematics can be attributed to their emotional intelligence?
2. What amount of variation in students' academic achievement in mathematics can be attributed to their self-esteem?

3. What amount of variation in students' academic achievement in mathematics can be attributed to their self-efficacy?
4. What amount of variation in students' academic achievement in mathematics can be jointly attributed to their emotional intelligence, self-esteem and self-efficacy?

Research Hypotheses

The following null hypotheses will be tested at 0.05 level of significance

H₀₁: The amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence is not significant

H₀₂: The amount of variation in students' academic achievement in mathematics that can be attributed to their self-esteem is not significant

H₀₃: The amount of variation in students' academic achievement in mathematics that can be attributed to their self-efficacy is not significant

H₀₄: The amount of variation in students' academic achievement in mathematics that can be jointly attributed to their emotional intelligence, self-esteem and self-efficacy is not significant.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a review of relevant literature of this work under the following subheadings;

Conceptual framework

Theoretical framework

Review of related theories

Emotional intelligence theory by Goleman

Identity theory (A theory of self-esteem) by Stryker

Social cognitive theory (A theory of self-efficacy) by Albert Bandura

Review of related concept

Mathematics

Emotional intelligence

Self-esteem

Academic self-efficacy

Review of Empirical Studies

Study on student achievement in mathematics

Study on Emotional intelligence

Study on self-esteem

Study on self-efficacy

Summary of literature review

Conceptual Framework

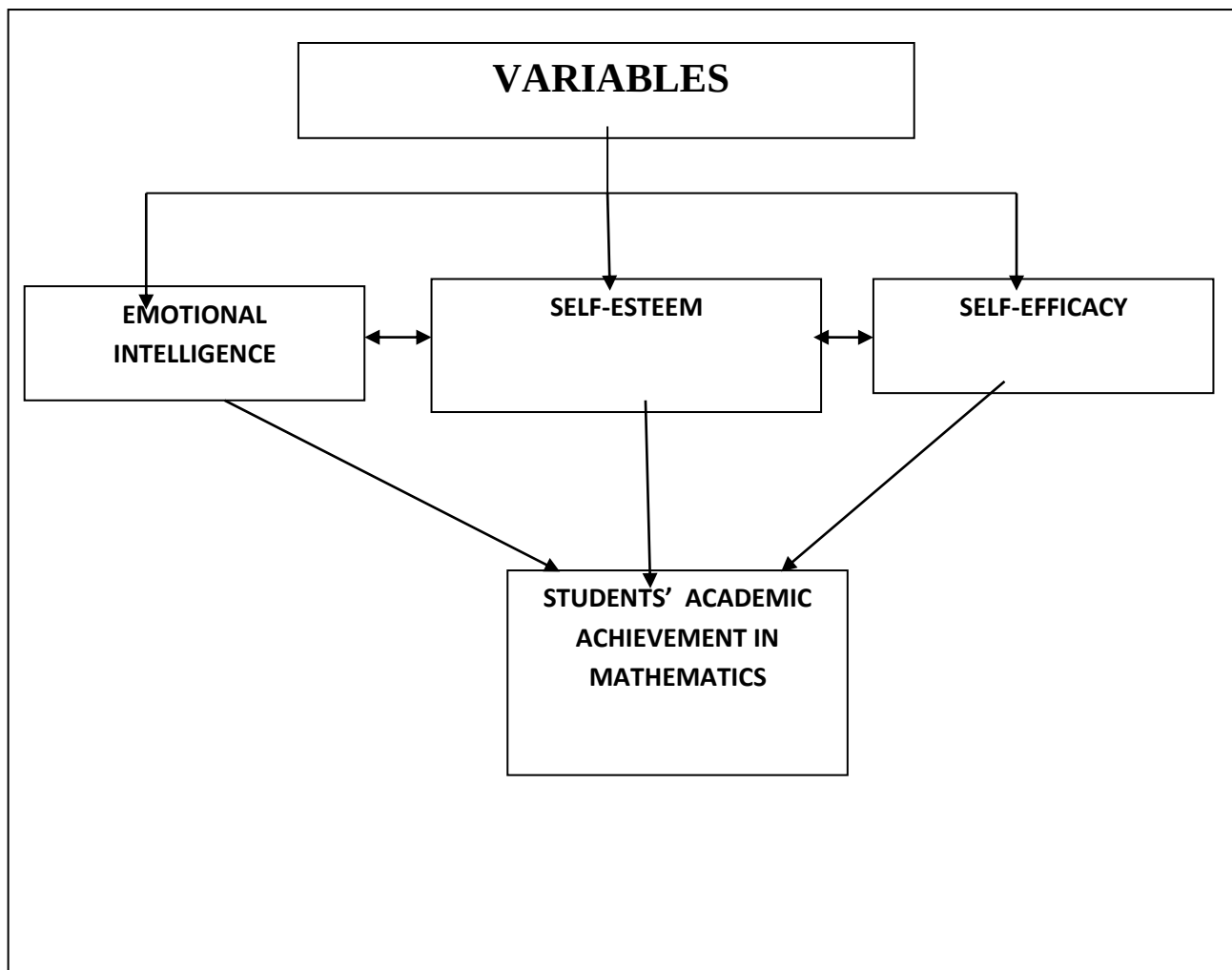


Figure 1: A schematic diagram showing relationships among studied variables

This is a review of related study. These include mathematics Subject, study on student academic achievement in mathematics, study on Emotional intelligence, study on self-esteem and study on self-efficacy.

The schema above showed that the student variables for the study are emotional intelligence (EI), self-esteem (SE) and academic self-efficacy (ASE). It shows that these variables influence the academic achievement of students in Mathematics. It illustrates explicitly the relationship between student emotional intelligence, self-esteem and self-efficacy and the student academic achievement in mathematics.

Theoretical framework

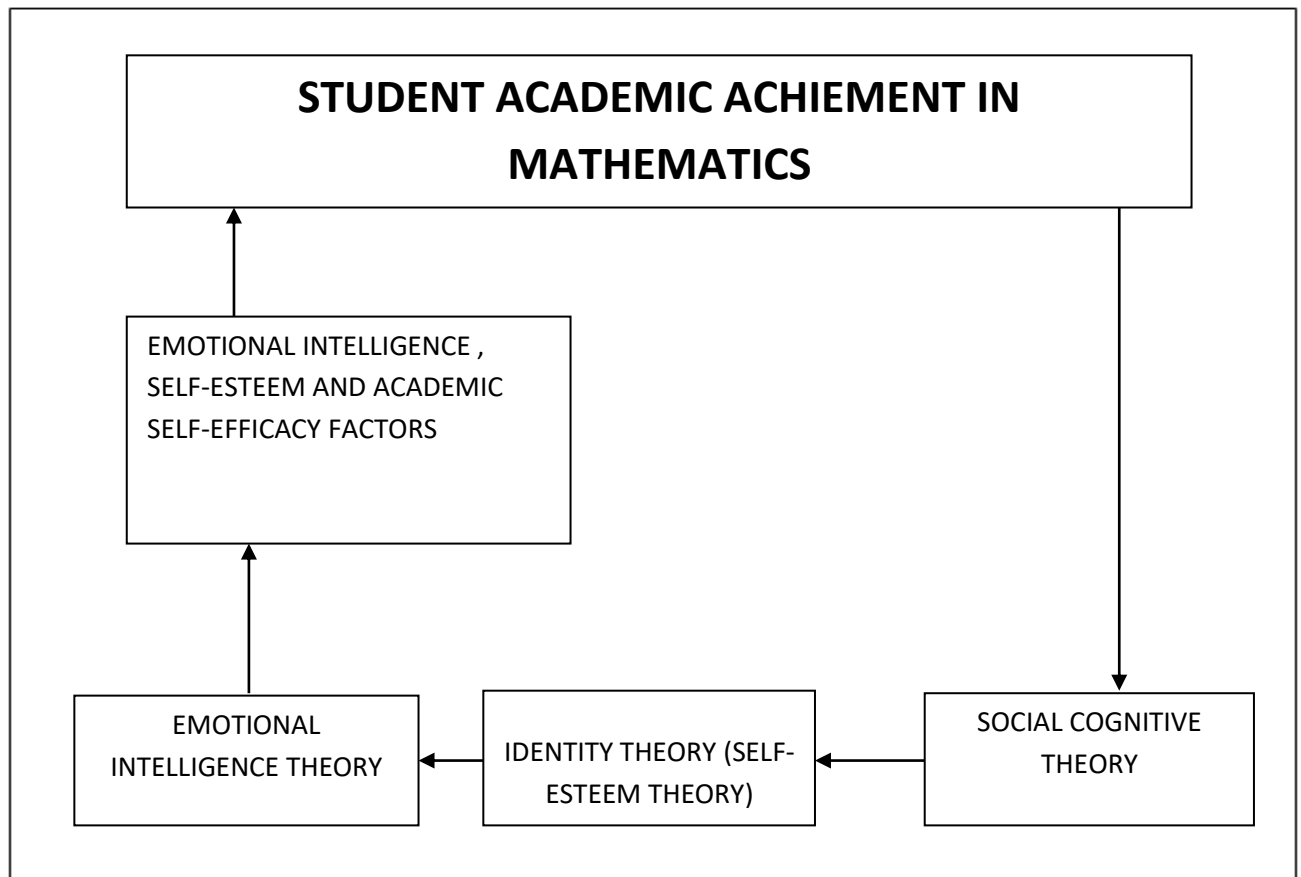


Figure 2: A schematic representation of the three theories used.

The above schematic shows the interrelationship between emotional intelligence, self-esteem, self-efficacy and student academic achievement in mathematics. The relationship is explained using these three theories emotional intelligence theory, self-esteem theory and Social cognitive theory.

Review of related Theories

The following theories were reviewed;

Emotional intelligence theory by Goleman

Identity theory (A theory of self-esteem) by Stryker

Social cognitive theory (A theory of self-efficacy) by Albert Bandura

Emotional intelligence theory (EI)

Emotional intelligence theory propounded by Daniel Goleman (1990) often referred to as EI, became widely known with the publication of Goleman's book: *Emotional Intelligence .Why it can matter more than IQ* (Goleman, 2006). To Goleman, emotional competencies are not innate talents, but rather learned capabilities that must be worked on and can be developed to achieve outstanding performance. Goleman believes that individuals are born with a general emotional intelligence that determines their potential for learning emotional competencies

Emotional Intelligence is not always widely accepted in the research community. Goleman's model of EI, for instance, has been criticized in the research literature as being merely "pop psychology." However, EI is still considered by many to be a useful framework especially in the field of education, business and leadership.

Studies have shown that student with high EI have greater mental health, academic achievement job performance, and leadership skills although no causal relationships have been shown and such findings are likely to be attributable to general intelligence and specific personality traits rather than emotional intelligence as a construct. For example, Goleman,(2006) indicated that EI accounted for 67% of the abilities deemed necessary for superior performance in student and leaders, and mattered twice as much as technical expertise or IQ Other research finds that the effect of EI on student, leadership and managerial performance is non-significant when ability and personality are controlled for, and that general intelligence correlates very closely with student academic achievement and leadership.

To date, tests measuring EI have not replaced IQ tests as a standard measure of intelligence. The role of emotional intelligence in leadership and business success has received criticism (Goleman, 2000).The distinction between trait emotional intelligence and

ability emotional intelligence was introduced in 2000. Emotional intelligence means the ability to understand and manage the emotions of yourself and also those around you. Remember, the objective of a leader is to complete the task successfully, keep the team together and manage the team on an individual basis to ensure everyone is happy and playing to their strengths. Goleman, (2002), presented the concept of Emotional Intelligence as being encapsulated by following elements:

Self-awareness:-Know one's emotions, strengths, weaknesses, drives, values and goals and recognize their impact on others while using gut feelings to guide decisions.

Self-regulation:-Manage or redirect one's disruptive emotions and impulses and adapt to changing circumstances.

Social skill:-Manage other's emotions to move people in the desired direction.

Empathy:-Recognize, understand, and consider other people's feelings especially when making decisions

Motivation:-Motivate oneself to achieve for the sake of achievement.

If these five abilities define emotional intelligence, we would expect some evidence that they are highly correlated. It has been noted that having EI as a skill can increase one's own wellbeing. In other words, individuals who are conscious of the emotions of themselves and others have the privilege of enhancing relationships. It also allows people to see the multiple perspectives of a given situation, and know others' feelings about the event.

Identity Theory (A Theory of Self-Esteem)

Self-esteem has been conceptualized as an outcome, motive, and buffer, but there is no overall theory of self-esteem. Identity theory propounded by Sheldon Stryker (1980) is used to provide a theoretical framework for the integration of the various conceptualizations of self-esteem. Sheldon Stryker (1980) is a social psychologist whose identity theory makes a valuable contribution to the study of self-esteem. Self-esteem is an outcome of, and necessary

ingredient in, the self-verification process that occurs within groups, maintaining both the individual and the group. Verification of role identities increases an individual's worth-based and efficacy-based self-esteem. The self-esteem built up by self-verification buffers the negative emotions that occur when self-verification is problematic, thus allowing continued interaction and continuity in structural arrangements during periods of disruption and change. Last, a desire for self-esteem, produced in part through self-verification, stabilizes the group because it motivates individuals to form and maintain relationships that verify identities.

As discussed, the basic motivation or “goal” in the identity model is to match perceived meanings in the situation with the internal meanings of the identity standard, implying an important relationship between goals and achievements. Others have similarly focused on the importance of the relationship between goals and achievements. Self-esteem is the ratio of “successes” to “pretensions” implying a relationship between what individuals accomplish and their goals. This pairing is similar to the pairing of self-relevant perceptions (“successes”) and the standard or goal (“pretensions”) in identity theory. Put simply, identity theory focuses on the degree to which individuals are able to achieve a match between an identity goal or “ideal” (the identity standard) and perceptions of the environment or the “actual” performance of the self, much like James’s focus on the degree to which successes match pretensions. Therefore, self-esteem can be thought of as a direct outcome of successful self-verification.

Self-esteem reflects a person's overall subjective emotional evaluation of his or her own worth. It is a judgment of oneself as well as an attitude toward the self. Self-esteem encompasses beliefs about oneself, (for example, "I am competent", "I am worthy"), as well as emotional states, such as triumph, despair, pride, and shame. Smith and Mackie (2007) defined it by saying "The self-concept is what we think about the self; self-esteem, is the positive or negative evaluations of the self, as in how we feel about it. Self-esteem is

attractive as a social psychological construct because researchers have conceptualized it as an influential predictor of certain outcomes, such as academic achievement, happiness, satisfaction in marriage and relationships, and criminal behaviour. Self-esteem can apply specifically to a particular dimension (for example, "I believe I am a good writer and feel happy about that") or a global extent (for example, "I believe I am a bad person, and feel bad about myself in general"). Psychologists usually regard self-esteem as an enduring personality characteristic ("trait" self-esteem), though normal, short-term variations ("state" self-esteem) also exist. Synonyms or near-synonyms of self-esteem include: self-worth, self-regard, self-respect, and self-integrity.

Social Cognitive Theory (A Theory of Self Efficacy)

The theory of self-efficacy lies at the center of Bandura's social cognitive theory propounded by Albert Bandura in the year 1960. The theory started as Social learning theory in the year 1960 and later developed into Social cognitive theory in the year 1986. The theory emphasizes the role of observational learning and social experience in the development of personal achievement. Psychologist Albert Bandura has defined self-efficacy as one's belief in one's ability to succeed in specific situations or one's ability to accomplish a task. Self-efficacy can play a major role in how one approaches goals, tasks, and challenges. The main concept in social cognitive theory is that an individual's actions and reactions, including social behaviors and cognitive processes, in almost every situation are influenced by the actions that individual has observed in others. Since self-efficacy is developed from external experiences and self-perception and is influential in determining the outcome of many events, it is an important aspect of social cognitive theory. Self-efficacy represents the personal perception of external social factors. According to Bandura's theory, people with high self-efficacy—that is, those who believe they can perform well—are more likely to view difficult tasks as something to be mastered rather than something to be avoided.

Bandura(1993) investigated the incremental effect of self-efficacy on academic performance over one semester, after taking personality traits, GPA, and general mental ability into account. He found that self-efficacy was the most consistent and powerful predictor of academic achievement. Similarly, research on Australian science students showed that those with high self-efficacy showed better academic performance than those with low self-efficacy. Confident individuals typically took control over their own learning experiences, were more likely to participate in class, and preferred hands-on learning experiences. Those with low self-efficacy typically shied away from academic interactions.

Bandura's (1993) social cognitive theory postulates that perceived self-efficacy affects an individual in all aspects of life, including educational experiences. Beliefs about one's competence to successfully perform a task can affect motivation, interest, and academic achievement. According to Bandura (1996),the higher the perceived efficacy, the higher the goal aspirations people adopt and the firmer their commitment to achieving those goals. Educational activities should foster self-efficacy through the use of social interaction. By doing so, the learning environment is structured to de-emphasize competition and highlight self-comparison of progress to build a sense of self-efficacy and promote academic achievement.” (Peer & McClendon, 2002).

Mathematics

Mathematics in all ramifications relates to real life and the application of its concept in our daily activities made life easier and interesting. Mathematics is one of the core subjects in the secondary school curriculum due to the key roles it plays in the achievement of the secondary school education, such as promoting of science and technology, provision of trained manpower in the applied sciences, technology and commerce, and the acquisition of appropriate skills, abilities and competence both mental and physical, as equipment for the individual to lie on and contribute to the development of his society (Federal Republic of

Nigeria, 2014). Mathematics plays a significant achievements in the national development of any country. Development here is conceived as the capacity of a nation to apply technology for the exploitation of the resources of nature. Such exploitation will rely heavily on mathematics for laying the foundation for political, governmental, military civility, scientific, technological advancement, economic development, socio-cultural environmental peace (Odili, 2006). According to Nwoke and Nnaji (2011), Mathematics is the study of quantity, structures, space and change. It is developed through the use of abstraction and logical reasoning, from counting, calculation, measurement and the study of the shapes and motion of physical objects. Mathematics is an excellent vehicle for the development and improvement of a person's intellectual competence in logical reasoning, spatial visualization, analysis and abstract thought (Curriculum Planning and Development Division (CPDD, 2007). Mathematics is the science of quantity and space. It is a systematized, organized and exact branch of science. It is the creation of the human mind, concerned primarily with ideas, processes and reasoning. Therefore, mathematics can be seen variously as a body of knowledge, a collection of techniques and methods, the product of human activity, and even the activity itself, namely, the solving of problems (Odili, 2006).

(Curriculum Planning and Development Division (CPDD, 2007) stipulated that the aims of Mathematics education are to enable students to:

1. Acquire the necessary mathematical concepts and skills for everyday life, and for continuous learning in mathematics and related disciplines.
2. Develop the necessary process skills for the acquisition and application of mathematical concepts and skills.
3. Develop the mathematical thinking and problem solving skills and apply these skills to formula and solve problems.
4. Recognize and use connections among mathematical ideas and develop Mathematical

tools including information and communication technology (ICT) in the learning and application of mathematics.

5. Provide imaginative and creative work arising from mathematical ideas and develop positive attitudes towards mathematics.

Mathematics prepares people for a useful living. Counting, addition, subtraction, multiplication, division, weighing, measuring, selling, buying are some simple and fundamental processes of mathematics which have got an immense practical value in life. Students who study Mathematics develop numeracy skill, reasoning, thinking skills and problem solving skills through the learning and application of mathematics. Mathematics helps man to sharpen his understanding and definition of religious concepts. Such concept as eternity, heaven, spirit, wisdom, hope, faith, righteousness, glory, blessing can reach be defined with mathematical rigor and precision (Osah-Ogulu and Odili, 2000). In government offices, a modest amount of mathematical knowledge is required for executing businesses, policies and decisions. In commercial sector, the daily running of businesses, modern developments and advances in commercial matters and business connections depend very heavily on expert use of mathematical knowledge and processes. The study of mathematics helps students to develop the habit of self-education. By solving a problem correctly, the student develops self-confidence.

Student academic achievement in mathematics is quite discouraging. In this modern world with ever growing competition in all spheres of activity, quality of performance has become the key factor for personal growth and progress. Parents of children and students always desire that their wards perform very well and achieve their very best which eventually adds pressure on students, teachers, schools, colleges and in general the education system by and large.

As such it appears that the whole system of education revolves round the academic achievements of student although various other outcomes are also expected from the system. Thus a lot of time and effort of the schools and colleges are used for helping students to achieve better in their scholastic endeavours. As such the importance of scholastic and academic achievement has raised important questions for educational researches who are struggling to analyse and identify factors which promote and contribute towards academic achievement. Researches done in the field of academic achievement have helped identify factors like intelligence, study habits, personality, attitudes of pupil towards school/college, socio-economic status etc. as variables that influence scholastic and academic achievement. Besides these, researchers have also helped to identify factors such as motivation, learning style, teaching methods, training, study habits, self-concept, emotional intelligence, self-esteem and self-efficacy as major contributors of academic achievement out of which the new concept of Emotional Intelligence, Self-Esteem and Self-Efficacy and its correlation with academic achievement is being researched with added significance and priority in the field of psycho pedagogy.

Emotional Intelligence

Academic achievement of students are affected by the Emotional intelligence of the students. Emotional intelligence (EI) is the capability of individuals to recognize their own emotions and those of others, discern between different feelings and label them appropriately, use emotional information to guide thinking and behavior, and manage and/or adjust emotions to adapt to environments or achieve one's goals. Emotional intelligence is a kind of emotional processing that includes paying attention to emotions, proper evaluation of them in oneself and others, systemic organization of them and appropriate instruments; in a way that improves life (Hashemi, 2009). According to Goleman, people's success depends on their emotional intelligence and this ability is learnable and could be reformed

(NorouziKouhdasht, Mahdian&AfzaliNaeini, 2013). Bradberry (2009) defines emotional intelligence as the ability, talent and skills to identify assess and manage the emotions of the person in dealing with people and groups (Bradberry& Greaves2011).

Components of emotional intelligence, according to Bradberry and Greaves are:

A. **self-awareness:** self-awareness includes recognition of the feeling at the moment of happening which comprises the most important part of emotional intelligence.

B. **Self-management:** self-management is the ability to use "awareness of Emotions" in order to remain flexible and conduct positive behaviors, is to be able to control emotional reactions in front of people and under different conditions.

C. **Social Awareness:** Social Awareness is the art of communicating with people and the skills to control and manage the feelings of others. This often means that you understand the thoughts and feelings of others.

D. **Relationship Management:** The ability to use “awareness of others' emotions” in order to succeed in controlling and managing interactions (Moghanyan, 2011).

Self-Esteem

Emotional intelligence of a student can help in shaping the student self-esteem. Self-esteem reflects a person's overall subjective emotional evaluation of his or her own worth. It is a judgment of oneself as well as an attitude toward the self. Self-esteem encompasses beliefs about oneself (for example, "I am competent", "I am worthy"), as well as emotional states, such as triumph, despair, pride, and shame. Smith and Mackie (2007) defined self-concept as what we think about the self; self-esteem is the positive or negative evaluations of the self, that is how we feel about it.

Self-esteem is attractive as a social psychological construct because researchers have conceptualized it as an influential predictor of certain outcomes, such as academic achievement, happiness, satisfaction in marriage and relationships, and criminal behaviour.

Self-esteem can apply specifically to a particular dimension (for example, "I believe I am a good writer and feel happy about that") or a global extent (for example, "I believe I am a bad person, and feel bad about myself in general"). Psychologists usually regard self-esteem as an enduring personality characteristic ("trait" self-esteem) though normal, short-term variations ("state" self-esteem) also exist. Synonyms or near-synonyms of self-esteem include: self-worth, self-regard, self-respect, and self-integrity.

Self-esteem has long been considered an essential component of good mental health and has drawn many researchers' attention in recent years. Self-esteem is composed of person's self-Assessment and a combination of his/her self- concept of characteristics and abilities. Our self-esteem develops and evolves throughout our lives as we build an image of ourselves through our experiences with different people and activities. Experiences during our childhood play a particular large role in the shaping of our basic self-esteem. When we were growing up our successes (and failures) and how we were treated by the members of our immediate family, by our teachers, coaches, religious authorities, and by our peers, all contributed to the creation of our basic self-esteem(Yaratan and Yucesoylu, 2010). These people believe that they are unsuccessful and unhelpful while they don't achieve their goals despite a lot of effort to improve the situation and this belief is as a result of poor self-esteem (Daglas, 2006).

Self-efficacy

To discuss one's self-esteem is to discuss one's self-efficacy. Self-efficacy, also referred as personal efficacy, is confidence in one's own ability to achieve intended results. Psychologists have studied self-efficacy from several perspectives, noting various paths in the development of self-efficacy; the dynamics of self-efficacy, and lack thereof, in many different settings; interactions between self-efficacy and self-concept; and habits of attribution that contribute to, or detract from, self-efficacy (Bandura & Locke, 2003).

Self-efficacy affects every area of human endeavor. By determining the beliefs a person holds regarding his or her power to affect situations, it strongly influences both the power a person actually has to face challenges competently and the choices a person is most likely to make. These effects are particularly apparent, and compelling, with regard to behaviors affecting health.

Judge (2002) argued the concepts of locus of control, neuroticism; generalized self-efficacy (which differs from Bandura's theory of self-efficacy) and self-esteem may be markers of the same higher order concept and demonstrated them to be related concepts.

The self-efficacy beliefs are important as through them the learning processes, motivations, passion and selectiveness regulates the individual's use in different areas (Bandura, 1986). Accordingly, Pour JafarDoust (2007), according to the definition of the self-efficacy for the self- regulation (Bandura 2006) considers the self-efficacy as a born capability that should be organized in behaviour, sensational, social and learning sub-skills including the selfbelieve (Self- confidence, problem- solving, positive thinks), self- control, regulating the thinks and behaviour to reach the goal, self-evaluation, self- monitoring, positive thinking, controlling the behaviour to reach the goal step by step, and self-simulation to overcome the losing

Review of Empirical Studies

This will review the related empirical studies on this topic

Studies on Achievement in Mathematics

Anigbo (2016) carried out research onFactors Affecting Students' Interest and Achievement in Mathematics in Secondary Schools in Enugu State. This study was performed to investigate the effect of these factors, student factor, teacher factor, government factor, infrastructural problem, instructional strategy, class size and mathematics anxiety to the student interest/achievement in mathematics. The researcher employed descriptive

correlation study. The area of the study was Enugu and Obollo-affor Education Zones. 210 Senior Secondary One (SS1) of five selected public schools were used. Two main instruments (FASMRI and MATHRET) constructed and face-validated were administered to 210 Senior Secondary School one (SSI) Students in the five selected public schools in Enugu and Obollo-Afor Education zones in Enugu State. The reliability coefficient for FASMRI is 0.83 and 0.89 for MATHRET using Split-Half and KR-20/21 procedures respectively. The data collected were analyzed using Pearson Product- moment correlation statistic and multiple regression analysis technique. Results showed that the seven factors were effective in predicting secondary school students' interest to learn mathematics which also improve their academic achievement in mathematics. More so, teacher factor, student factor, instructional strategy, Mathematics anxiety and infrastructural problem correlate positively with the dependent measure, while class size and government factor correlate negatively with the dependent measure. Nevertheless, the seven factors have significant relative effects on mathematics interest and academic achievement in mathematics. Hence there was a significant difference in students' interest in mathematics.

There are some similarities between the study of Anigbo and this present study. Firstly both are concerned with how some factors can affect the student attitude toward mathematics. Hence the study is of immense importance to this study. The major difference is on the factors, while Anigbo is interested on variables like student factor, teacher factor, government factor, infrastructural problem, instructional strategy, class size and mathematics anxiety, the present study is on student emotional intelligence, self-esteem and self-efficacy. In a study by Lazarides¹ and Ittel (2012) on Mathematics Interest and Achievement: What Role Do Perceived Parent and Teacher Support Play? A Longitudinal Analysis. The study aimed to investigate how student interest in mathematics influence their academic achievement in mathematics. The researcher employed descriptive survey research design.

The area of study was public schools in Berlin, Germany. 361 students in grades 8,9 and 10 attending ten public schools in Berlin. Questionnaire data were collected at two measurement points, mid-year and three months later, from 361 students in grades 8, 9, and 10 (41.3% female) attending ten public schools located in Berlin, Germany. The data was analysed using Mplus programme version 6.0. and Confirmatory factor analysis. Longitudinal structural equation modeling was used to test hypothesis. Results from structural equation modeling showed a positive effect of perceived parental school support on students' interest and a negative effect of perceived teacher support on students' grades. Multiple group analysis revealed that gender functioned as a moderator for these relationships.

The study is useful to the present study. Firstly, studied students' interest in mathematics. Secondly, though there factors variables differs but they both studied how some factors affect student achievement in mathematics.

However the study area, design of the study and method of analysis are different. Hence the two works are different.

Studies on student Emotional intelligence

Azuka (2012) carried out research on the Relationship between Emotional Intelligence and Academic Achievement of Senior Secondary School Students in the Federal Capital Territory, Abuja. To guide the study some research questions and hypotheses were generated. The research design for the study was correlation survey design. The area of the study was federal capital territory Abuja. The population for the study was the 1160 senior secondary school two students in public schools in the Federal Capital Territory, Abuja, Nigeria. Proportionate stratified sampling was used to select the sample (N=1160) for the study. The instruments used for the study were the Emotional Intelligence Inventory and Mathematics Achievement Test. The Emotional Intelligence Inventory has reliability coefficient of 0.79 while the Mathematics Achievement Test has reliability coefficient of 0.94.

The responses of the students to the instruments were scored and analyzed using mean and Pearson Product Moment Correlation. To test the level of significance of the correlation coefficient the t-test was used. The result showed that there was a significant low positive relationship between the emotional intelligence of SS2 students and their academic achievement in mathematics. The result also indicated that there was a significant low positive relationship between the emotional intelligence of SS2 male students, SS2 female students, urban school students, and rural school students, and their academic achievement in mathematics. It was therefore concluded that apart from cognitive factors, emotional intelligence of students also affects their academic achievement in mathematics. It is recommended that there is need to include emotional intelligence curriculum in schools.

The study is useful because it studied the relationship between emotional intelligence and student academic achievement which is a variable in this present study. The area of the studies and design vary for the two studies, hence there is gap that need to work on the present study.

Ogundokun and Adeyemo (2010) investigated the influence of emotional intelligence, age, and academic motivation on academic achievement of secondary school students. The study adopted a survey research design. The area of the study was Oyo state, Nigeria. The participants in the study were 1563 (male = 826, female = 737) secondary school students from Oyo state, Nigeria, their age ranged between years and 17 years with mean age of 15.96 years. Two valid and reliable instrument were used to assess emotional intelligence and academic motivation while achievement test on English language and mathematics were used as a measure of academic achievement. Descriptive statistics, Pearson's product moment correlation and hierarchical regression were used to analyse the data. The result revealed that emotional intelligence, age and academic motivation were potent predictors mildly associated

to academic achievement. The study has implications for the curriculum developers to integrate emotional intelligence into the school curriculum of secondary schools.

The study is similar to the present studies. Firstly, studied on the effect of emotional intelligence on the student academic achievement. Secondly, they both use mathematics as the subject to be tested. However other variables of interest like age and academic motivation were not included in the present study. Also the Area of the study and Design of the study differs.

Studies on student Self-esteem

Rahmani (2011) carried out research on relations between self-esteem, achievement goals and academic achievement among the primary school children. The study aimed at studying relations between self-esteem, achievement goals and academic achievement among the primary school children. Self-esteem and achievement goals orientation are the most important factors that effects on academic achievement among the students. The researcher employed descriptive correlation survey study. The area of study was Tabriz, Iran. The population of the study was 200 primary school students in Tabriz, Iran. 200 primary school students (100 male, 100 female) were chosen randomly and then for data collection two questionnaires were used: Eysenck self-esteem questionnaire and Students' Achievement Goal Orientations check list. The gold standard for academic achievement was their average academic marks during their academic years. Data were computer analyzed, using SPSS 15.1 and running a couple of descriptive and analytical tests including Pearson Correlation and t-student. Result of research showed that self-esteem, goal orientation components (mastery, approach performance and avoidance performance) and academic achievement are correlated ($p < 0.05$). In addition to, Results of t-student also show that there are significant differences between male and female students in scores of self-esteem and achievement goals orientation.

The results of this present research revealed that self-esteem and achievement goals are affecting factors on academic achievement among the primary school students.

The study is important because it studied the relationship between self-esteem and student academic achievement which is a variable interest in the present study. Method of analysis was not robust enough, therefore not suitable for the present study. Also the area of the study and design of the study differs.

Banafsheand Mohamad(2012) carried out research to examine the relationship of emotional intelligence with self-esteem and academic achievement. The study design used was descriptive correlation survey. The area of study was Payame High School in Samanday city. The population was 100 students of senior class selected using simple random sampling. The Ann-Bar questionnaire contains 90 questions about emotional intelligence and Cooper- Smit questionnaire contains 58 questions about self-esteem. For the analysis, the frequency, percentage, average, skew, Pearson –regression correlation and T-test were applied. The results showed: there is meaning positive relationship between the exciting intelligence, general self-esteem, social esteem, public esteem, educational self-esteem and academic achievement.

The study is of help to the present study. Firstly, both studied the effect of student Self-esteem to the student academic Achievement. Secondly, they also employed the same study design in the analysis. Though the study area is different but the study is very useful to the present study. However, apart from the fact that the current study used the same variables, they both also employed Pearson regression correlation for the analysis.

Studies on student self-efficacy

Motlagh , Amrai , Yazdani ,Abderahim and Sourie (2011) carried out research on the relation between self-efficacy and academic achievement in high school students. The research aimed at investigate the relation between self-efficacy and academic achievement in

high school students. This study design used was descriptive correlation survey. The study area was girls' high schools in Tehran. The population was 250 high school students from girls high schools in Tehran. In this study, 250 students in the academic year 2010/2011 were selected by means of multistage cluster sampling and completed self-efficacy scale. To measure achievement score grade point average in classes was used. To analyze data correlation coefficient and regression analysis was used. Results: analysis of data revealed that self-evaluation, self-directing and self-regulation are correlated with academic achievement. Among all variables entered in the equation model only self-evaluation and self-regulation entered the regression model explaining 10 percent variance of academic achievement in 2 steps. According to the results, self-efficacy is a considerable factor in academic achievement.

The study provide a useful understanding to the variables of the study. The study investigated the relationship between student self-efficacy and student academic achievement. However the study was carried out in Tehran whereas the current study was carried in Nnewi, Anambra State.

Jahanian and Mahjoubi (2013) conducted with the aim of investigating the rate of self-efficacy's impact on students' academic achievements in universities and higher education centers which is run on the basis of descriptive correlation method. The study area was students in Islamic Azad University, Karaj Branch. The population contains all students in Islamic Azad University, Karaj branch (30000 participants) and 379 subjects are selected according to systematic random sampling on the basis of Morgan's table. The data collection tools are two questionnaires: self-efficacy scale by Sherer and the other is related to students' personal and educational qualifications. The data was analyzed by Pearson Correlation Coefficient test and the gained results indicated that there is a positive and meaningful relationship between students' self-efficacy and their academic achievements at very high,

high, middle, low and very low level. It was then suggested that students' academic achievements can be enhanced by increasing their self-efficacy through applying appropriate training methods and enriching educational environments.

Result of this study provided useful insight on the influence of student self-efficacy on student academic achievement. The study did not however include the other variables of the present study in theirs. The study areas also differ between the two studies. Hence there were differences and need for the present study

Summary of Literature Review

The chapter was organized under the following subheadings: conceptual framework, theoretical framework, mathematics subject in secondary school, achievement in mathematics, emotional intelligence, self-esteem, academic self-efficacy, empirical studies and summary of literature review.

The study drew a conceptual framework to explain the relationship between variables of the study. All variables in the study were defined. The study also drew a theoretical framework to explain the Emotional intelligence Emotional intelligence theory by Goleman, Identity theory (A theory of self-esteem) by Stryker and Social cognitive theory (A theory of self-efficacy) by Albert Bandura.

Goleman Emotional intelligence stipulates the influence of student emotional intelligence to the student academic achievement. Identity theory by Sheldon Stryker established the relationship between student self-esteem and student academic achievement. The third and final theory, Bandura Social Cognitive theory also explained the relationship between self-efficacy and student academic achievement.

The concept of mathematics which defined mathematics as one of the core subjects in

the secondary school curriculum due to the key roles it plays in the achievement of the secondary school education, such as promoting of science and technology, provision of trained manpower in the applied sciences, technology and commerce, and the acquisition of appropriate skills, abilities and competence both mental and physical, as equipment for the individual to lie on and contribute to the development of his society.

Achievement in Mathematics defined student overall academic performance. Student academic achievement is influence by many factors including the student Emotional intelligence, self-esteem and self-efficacy.

Emotional intelligence is defined as the capability of individuals to recognize their own emotions and those of others, discern between different feelings and label them appropriately, use emotional information to guide thinking and behavior, and manage and/or adjust emotions to adapt to environments or achieve one's goals.

Self- esteem is defined as what we think about the individual person as the object of his or her own reflective consciousness. Psychologists usually regard self-esteem as an enduring personality characteristic ("trait" self-esteem) though normal, short-term variations ("state" self-esteem) also exist. Synonyms or near-synonyms of self-esteem include: self-worth, self-regard, self-respect, and self-integrity.

Academic self-efficacy is defined as confidence in one's own ability to achieve intended results.

Studies on student academic achievement in mathematics, student emotional intelligence, student self-esteem and student self-efficacy. Many of the studies indicated that factors like student emotional intelligence, self-esteem and self-efficacy have a significant effect to the student academic achievement. However no study reviewed used exactly the same variables as the present study. The effect of variables emotional intelligence, self-esteem and self-efficacy has not been tested together on academic achievement. Thus it becomes

essential to investigate the impact using the three variables. These variables can have direct effect on student academic achievement.

It has been noted in the literature that the study area of the previous work on this research topic were mainly outside Nigeria. This study will be carried out in secondary schools in Nnewi Education Zone, Anambra state Nigeria. The study can help build policies for education in the zone and Nigeria in general.

CHAPTER THREE

RESEARCH METHOD

This chapter was discussed under the following sub-heading; Design of the study, area of the study, population of the study, sample and sampling techniques, instrument of data collection, validation and reliability of the Instrument, method of data collection and method of data analysis.

Design of the Study

This study adopted correlational survey research design. Nworgu(2015) stated that this type of study seeks to establish what relationship exists between two or more variables. Also this type of studies indicates the direction and magnitude of the relationship between the variables. This study determined if there is any relationship between the emotional intelligence and the academic achievement of SS11 students in mathematics, self-esteem and academic achievement of SS11 students in mathematics and self-efficacy and academic achievement of SS11 students in mathematics, The Emotional intelligence, self-esteem and self-efficacy of the students were correlated with their scores in the mathematics achievement test. The study also establish the magnitude of the relationship.

Area of Study

The research area of the study was Nnewi education zones. Nnewi Education zone is made up of four Local Government Areas, they are Nnewi North and south, Ihiala and Ekwusigo. The zone is the second largest zone in Anambra State in southeastern Nigeria. The Nnewi zone spans over 1,076.9 square miles (2,789 km²) in Anambra State. Nnewi Metropolitan Area and its satellite towns is home to nearly 2.5 million residents as of 2005. The resident of Nnewi are mostly Transporters, traders etc. The zone has fifty Public Secondary schools (Post Primary School Service Commission Nnewi Zone, 2017/2018

Academic Year) See Appendix A1. The choice of this area was informed by the fact that a greater percentage of the students in this education zone was discovered to have emotional related problems possibly as a result of culture. The students have very poor emotional intelligence and low belief of themselves most importantly as regards education especially mathematics which they see as a pursuit of shadow. Again, because of socio-economic nature of this area (who are predominantly traders and transporters), there is much apathy towards education especially mathematics as they usually approach mathematics with poor self-esteem. The researcher therefore saw the need to find out to what extent these traits have relationship with academic achievement.

Population of the Study

The population for this study was two thousand nine hundred and thirty seven (2937) SSII students (Post Primary School Service Commission Nnewi Zone, 2017/2018 Academic Year) See Appendix A1. Reason for chosen SSII students, is because SSII students are available whenever their attention is needed unlike SSIII students who are getting ready for the Senior Secondary Certificate Examinations (SSCE). SSII students who have just been admitted into Senior Secondary may not have realized the enormity of the challenges before them, coupled with the several numbers of subjects they must compulsorily offer.

Sample and Sampling Techniques

A sample of 400 SSII students of the population was used for the study. This sample size was determined by the use of Taro Yamane (1973) statistical equation for determination of sample size (See Appendix E). Multi-stage sampling procedure was used for the study.

In the first stage Three (3) LGA in Nnewi Education zone were sampled out of the four Local Government Areas using simple random sampling technique. This was used so as

to give each Local government area equal chance of being selected for the study.

In the second stage, Sixteen (16) secondary schools were selected from the three LGA in the zone using purposive sampling technique. This method is useful in these instances because it provides a wide range of non-probability sampling techniques for the researcher to draw on. It allows the researcher to select based on characteristics of a population and objective of the study. It is also known as Judgmental, selective or subjective sampling.

In the third stage Twenty five (25) students were selected from each school using proportionate stratified random sampling method. This method was used since the relative proportion of the strata in the sample should correspond to their relative proportion in the population. All the schools in the area are mixed schools, so the sample was a mixed sample.

Instruments for Data Collection

The researcher employed two researcher constructed instruments for this study namely; Emotional Intelligence, Self-Esteem and Academic Self-Efficacy Questionnaire (ESAQ) and Students' Academic Achievement Score Proforma (SAASP). The three instruments above were used for data collection. The questionnaire had two Sections. Section A elicits information on students' demographic data. Section B consists of an Emotional Intelligence Inventory (EII), with well-structured questions on student emotional intelligence was adapted for the study.

The Emotional intelligence Inventory for adolescents was developed by Farn-Shing, Ying-Ming, Ching-Yua and Chia-An (2007). The Emotional intelligence inventory has the response patterns; Never true, Seldom true, sometimes true, often true, always true. In this study, the researcher used likert type response pattern; Strongly agreed, Agreed, Disagreed, Strongly disagreed. This Emotional intelligence inventory consists of 30 questions but the researcher made use of 10 questions only. Twenty (20) were expunged in order to get a clear

and simple 10 questions that can be easily answered by the respondent considering respondent academic level. The reliability coefficient for the adapted EII is 0.79.

A Self-esteem Scale (SES) developed by Eysenck (1976) was adapted to get self-esteem of the students. This questionnaire consists of 20 questions with response options of Yes, No and Undecided pattern. The researcher expunged 10 questions that are not relevant and used 10 questions that are best for the research. The researcher also used likert type response pattern; Strongly agreed, Agreed, Disagree and strongly Disagree. Surveys performed in Iran, have reported satisfactory validity and reliability coefficients for this questionnaire. In the survey of Yazdani Moghadam (1998) reliability coefficients of this test obtained using Cronbach's alpha was 0.84.

Sherer General Self-efficacy Scale (SGSES) by Sherer (1982) was adapted. Sherer (1982) General Self-Efficacy Scale consists of 17 items; with likert type response pattern of Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree. 10 items out of the 17 items were selected considering level of exposure and comprehension capacity of students involved. In this study the researcher also employed likert type response pattern; Strongly Agreed, Agreed, Strongly Disagreed. Its reliability coefficient obtained using Cronbach's alpha was 0.79 in Bakhtiari (1997)'s study and 0.85 in Abdinia (1998).

Emotional Intelligence Inventory, Self-Esteem scale and Academic Self-Efficacy scale Questionnaires that contained 10 items of Emotional intelligence inventory, 10 items of Self-Esteem and 10 items of Academic Self-efficacy Scale, in which a four point Likert type response options ranging from Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) are used.

Students' Academic Achievement Score Proforma (SAASP) was used to collect the students' Academic achievement in mathematics and the student cumulative results (third term results).

Validation of the Instruments

The research instruments were subjected to face validation by three experts, one from mathematics Education Unit and two from measurement and evaluation unit, all in the Department of Science Education, University of Nigeria Nsukka. They vetted the instruments with respect to the appropriateness of the items, clarity and wording of the items of the instrument. Some of their suggestions are as follows

1. That the researcher should look at section A and expunge any information that is not required in the study e.g Sex, occupation etc.
2. That the researcher should expunge the option undecided and use 4 point scale.
3. Researcher should check the difference between emotional difference and feeling and recast accordingly.

The corrections and modifications of the experts were used to get the final versions of the instruments.

Reliability of instruments

Copies of the validated instrument were administered to twenty Royal Saint secondary school SSII students Awka located outside the study area. The data obtained were used to estimate the internal consistency reliability indices of the emotional intelligence inventory, self-esteem scale and self-efficacy scale using Cronbach Alpha method. The reliability indices calculated were 0.99, 0.98 and 0.98 for emotional intelligence inventory, self-esteem scale and self-efficacy scale respectively (See Appendix D). Cronbach alpha was used to test the reliability because it is suitable when assessing the internal consistency of a questionnaire (or Survey) that is made up of multiple likert-type scales and items. Cronbach alpha determines the average correlation of items in a survey instrument to gauge its reliability. However, this study instrumentation is suited using Cronbach alpha reliability test method.

Method of Data Collection

The questionnaires were administered to the selected schools. The Researcher visited the schools sampled to administer and collect the questionnaires back after completion with the help of research assistant. Mathematics teachers in the schools served as research assistants.

Method of Data Analysis

Simple linear regression analysis was used to answer research questions and test null hypotheses. Coefficient of determination was used to answer all the research questions while analysis of variance (ANOVA) was used to test the null hypotheses at 0.05 level of significance. Simple linear regression was used when trying to explain the relationship between two or more variables. Also in Simple linear regression, a Single independent variable was used to predict the value of dependent variable. However this study explained and summarized the relationship between two variables.

CHAPTER FOUR

SUMMARY OF RESULTS

This Chapter deals with the presentation of results according to research questions and hypotheses that guided the study.

Research Question 1

What amount of variation in students' academic achievement in mathematics can be attributed to their emotional intelligence?

Table 1. Model Summary of Emotional Intelligence and Student Academic Achievement

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503 ^a	.253	.251	10.03978

a. Predictors: (Constant), STUDENT EMOTIONAL INTELLIGENCE

In order to answer research question one, the model summary for the amount of variable Emotional Intelligence attribute to change in student academic achievement as stated in the research question are extracted from the linear regression analysis. Result from the table 1 above shows an R square Value of .253. This means that the students emotional intelligence was estimated to attribute 25.3% of the student academic achievement

Generally the variable Emotional intelligence with R- Square value .253 had a direct relationship with student mathematics achievement

Hypothesis 1

The amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence is not significant.

Table 2: The ANOVA Table for F-test for the significance of the variable Emotional intelligence

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13582.127	1	13582.127	134.747	.000 ^b
	Residual	40117.311	398	100.797		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT EMOTIONAL INTELLIGENCE

In order to test hypothesis 1 H_{01} , the ANOVA was used to test the significant of variation in students' academic achievement in mathematics that is attributed to the emotional intelligence of the students. Table 2 above shows that an F-Value of 134.747 with associated exact probability (sig.) value of .000 were obtained. This probability value is less than .05 set as the level of significance for testing hypothesis. It was found to be significant because .000 is less than .05. The null hypothesis which stated that the amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence is not significant was rejected.

The inference drawn was that the variable students' emotional intelligence significantly predicts students' academic achievement in mathematics.

Research question 2

What amount of variation in students' academic achievement in mathematics can be attributed to their self-esteem?

Table 3; A Model Summary of Self-esteem and Student academic achievement in mathematics

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525 ^a	.275	.273	9.88900

a. Predictors: (Constant), STUDENT SELF ESTEEM

In order to answer research question two, the model summary for the amount of variable self-esteem attribute to change in student academic achievement as stated in the research question are extracted from the linear regression analysis. Result from the table 3 above shows an R square Value of .275. This means that the students' self-esteem was estimated to attribute 27.5% of the student academic achievement

Generally the variable Self-esteem with R- Square value .275 had a direct relationship with student mathematics achievement

Hypothesis 2

The amount of variation in students' academic achievement in mathematics that can be attributed to their self-esteem is not significant

Table 4 : The ANOVA table for F-test for the significance of the variable Student Self-esteem

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14778.084	1	14778.084	151.117	.000 ^b
	Residual	38921.354	398	97.792		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF ESTEEM

In order to test hypothesis 2 H_{02} , the ANOVA was used to test the significant of variation in students' academic achievement in mathematics that is attributed to the self-esteem of the student. Table 4 above shows that an F-value of 151.117 with associated exact probability (sig.) value of .000 were obtained. This probability value is less than .05 set as the level of significance for testing hypothesis. It was found to be significant because .000 is less than .05. The null hypothesis which stated that the amount of variation in students' academic achievement in mathematics that can be attributed to their self-esteem is not significant was rejected.

The inference drawn was that the variable students' self-esteem significantly predicts students' academic achievement in mathematics.

Research question 3

What amount of variation in students' academic achievement in mathematics can be attributed to their self-efficacy?

Table 5: A Model Summary of self-efficacy and student academic achievement in mathematics

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.597 ^a	.356	.355	9.31948

a. Predictors: (Constant), STUDENT SELF EFFICACY

To answer research question three, the model summary for the amount of variable self-efficacy attribute to change in student academic achievement as stated in the research question are extracted from the linear regression analysis. Result from the table 5 above shows an R square Value of .356. This means that the students' self-efficacy was estimated to attribute 35.6% of the student academic achievement

Generally the variable Self-efficacy with R- Square value .356 had a direct relationship with student mathematics achievement

Hypothesis 3

The amount of variation in students' academic achievement in mathematics that can be attributed to their self-efficacy is not significant

Table 6 : The ANOVA table for F-test for the significance of the variable Student Self-efficacy

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	19132.045	1	19132.045	220.281	.000 ^b
	Residual	34567.392	398	86.853		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF EFFICACY

In order to test hypothesis 3 H_{03} , the ANOVA was used to test the significant of variation in students' academic achievement in mathematics that is attributed to the self-efficacy of the students. Table 6 above shows that an F-value of 220.281 with associated exact probability (sig.) value of .000 were obtained. This probability value is less than .05 set as the level of significance for testing hypothesis. It was found to be significant because .000 is less than .05. The null hypothesis which stated that the amount of variation in students' academic achievement in mathematics that can be attributed to their self-efficacy is not significant was rejected.

The inference drawn was that the variable students' self-efficacy significantly predicts students' academic achievement in mathematics.

Research question 4

What amount of variation in students' academic achievement in mathematics can be jointly attributed to their emotional intelligence, self-esteem and self-efficacy?

Table 7: Model Summary of variables emotional intelligence, self-esteem, self-efficacy and student academic achievement in mathematics.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.608 ^a	.370	.365	9.24496

a. Predictors: (Constant), STUDENT SELF EFFICACY, STUDENT EMOTIONAL INTELLIGENCE, STUDENT SELF ESTEEM

In order to answer research question four, the model summary for the amount of variables Emotional Intelligence, self-esteem and self-efficacy of student jointly attribute to change in student academic achievement as stated in the research question are extracted from the linear regression analysis. Result from the table 7 above shows an R square Value of .370. This means that the students' emotional intelligence, self-esteem and self-efficacy were jointly estimated to attribute 37.0% of the student academic achievement

Generally the variable Emotional intelligence, self-esteem and Self-efficacy jointly with R-Square value .370 had a direct relationship with student mathematics achievement

Hypothesis 4

The amount of variation in students' academic achievement in mathematics that can be jointly attributed to their emotionally intelligence, self-esteem and self-efficacy is not significant.

Table 8 : The ANOVA table for F-test for the significance of the variables Student Emotional intelligence, self-esteem and Self-efficacy

ANOVA ^a					
Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	19853.617	3	6617.872	77.430	.000 ^b
Residual	33845.820	396	85.469		
Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF EFFICACY, STUDENT EMOTIONAL INTELLIGENCE, STUDENT SELF ESTEEM

In order to test hypothesis 4 H_{04} , the ANOVA was used to test the significant of variation in student's academic achievement in mathematics that is attributed to the joined variables emotional intelligence, self-esteem and self-efficacy of the students. Results from table 8 above shows that an F-Change of 77.430 with associated exact probability (sig.) value of .000 were obtained. This probability value is less than .05 set as the level of significance for testing hypothesis. It was found to be significant because .000 is less than .05. The null hypothesis which stated that The amount of variation in students' academic achievement in mathematics that can be jointly attributed to their emotionally intelligence, self-esteem and

self-efficacy is not significant. was rejected.

The inference drawn was that jointly the variables students' emotional intelligence, self-esteem and self-efficacy significantly predicts students' academic achievement in mathematics.

Summary of the Results

From the data analysis and interpretations of results, the following findings emerge;

1. Hypothesis 1 formulated shows that the variable Emotional intelligence is statistically significant to the students' academic achievement. The inference drawn was that predictor variable emotional intelligence significantly predict students' academic achievement.
2. Hypothesis 2 formulated shows that the variable self-esteem is statistically significant to the students' academic achievement. The inference drawn was that predictor variable self-esteem significantly predict students' academic achievement.
3. Hypothesis 3 formulated shows that the variable self-efficacy is statistically significant to the students' academic achievement. The inference drawn was that predictor variable self-efficacy significantly predict students' academic achievement.
4. Finally, hypothesis 4 formulated shows that the variable Emotional intelligence, self-esteem and self-efficacy jointly is statistically significant to the students' academic achievement. The inference drawn was that jointly the predictor variables emotional intelligence, self-esteem and self-efficacy significantly predict students' academic achievement.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSION, RECOMMENDATIONS AND SUMMARY

In this chapter, the results presented in chapter four are discussed based on the four Research questions and four Hypotheses that guided the study. This chapter is organised based on the following Sub-headings: discussion of findings, conclusion and educational implication of the findings of the study, recommendations, limitations of the study, suggestions for further studies and summary of the study

Discussion of the results

The findings of the study were discussed under the following sub-headings in line with research questions and hypotheses raised in the study. They were discussed with research in literature review.

- Amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence.
- Amount of variation in students' academic achievement in mathematics that can be attributed to their self-esteem.
- Amount of variation in students' academic achievement in mathematics that can be attributed to their self-efficacy.
- Amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence, self-esteem and self-efficacy jointly.

- The hypothesized formulated are statistical significant to student academic achievement in mathematics.

Amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence.

The findings as presented in Table 1 showed that the variable emotional intelligence had a direct relationship with student academic achievement in mathematics. This means that the capability of student to perceive their own emotions, assimilate emotion related feelings amount to change in students' academic achievement in mathematics. This finding is in agreement with earlier finding by Azuka(2012) who found that Emotional intelligence had a significant positive relationship with student academic achievement in mathematics. It is also in agreement with findings by Ogundokun and Adeyemo(2010). The results revealed that emotional intelligence, age and academic motivation were potent predictors mildly associated to student academic achievement.

Amount of variation in students' academic achievement in mathematics that can be attributed to their Self-esteem.

The findings as presented in Table 2 showed that the variable self-esteem had a direct relationship with student academic achievement in mathematics. This implies that student sense of their value or worth, or the extent to which they values, approves and appreciate things or action around them also affect their academic achievement in mathematics. This finding is in agreement with earlier finding by Rahmani(2011) who found that there are significant differences between male and female student in scores of self-esteem and academic achievement . It is also in agreement with findings by Banafshe and Mohamad (2012) that showed there is positive relationship between exciting intelligence, self-esteem and academic achievement.

Amount of variation in students' academic achievement in mathematics that can be

attributed to their Self-efficacy.

The findings as presented in Table 3 showed that the variable self-efficacy had a direct relationship with student academic achievement in mathematics. This means that students capability to organize and execute action, their belief in their innate ability to achieve goal do contribute immensely to their academic achievement in mathematics. This finding is supported with earlier finding by Motlag, Amrai, Yazdani, Abderahim and Sourie(2011) who according to their results showed that self-efficacy is a considerable factor in academic achievement. It is also in agreement with findings by Jahanian and Mahjoubi (2013) that indicated that there is positive and meaningful relationship between student self-efficacy and their academic achievement.

Amount of variation in students' academic achievement in mathematics that can be attributed to their emotional intelligence, self-esteem and self-efficacy jointly.

The findings as presented in Table 4 showed that jointly the variables emotional intelligence, self-esteem and self-efficacy had direct relationship with student academic achievement in mathematics .This finding is supported with earlier findings byAzuka (2012), Rahmani (2012) and Motlag, Amrai, Yazdani, Abderahim and Sourie (2011) who according to their results showed that change in Emotional intelligence, self-esteem and self-efficacy will bring change in student academic achievement in mathematics.

The hypotheses formulated with statistical significant to student academic achievement in mathematics.

The result presented in Table 5,6,7 and 8 above revealed that the four hypotheses formulated for the study are statistically significant. These show that the variables emotional intelligence, self-esteem and self-efficacy had positive relationship with the student academic achievement in mathematics. The study is in agreement with findings of Azuka (2012), Rahmani (2012) and Motlag, Amrai, Yazdani, Abderahim and Sourie (2011) who according to their results

showed that Emotional intelligence, self-esteem and self-efficacy have positive significant with student academic achievement in mathematics.

In line with this it could be said that the variables with statistically significant influence are emotional intelligence, self-esteem and self-efficacy that have direct influence on student academic achievement in mathematics. These variables put together could be thereasons for student poor performance in the subject. Student emotional intelligence, self-esteem and self-efficacy are very important to their academic life, it influence the way student think, act and behave, boast their mental strength and hence they affect their academic achievement.

Conclusion

1. Generally, the variables Emotional intelligence, self-esteem and self-efficacy had a direct relationship with student academic achievement in mathematics.
2. Jointly the variables emotional intelligence, self-esteem and self-efficacy amount to change in students' academic achievement in mathematics.
3. Also the four hypothesis formulated for the study shows that emotional intelligence, self-esteem and self-efficacy separately and jointly are statistically significant on the students' academic achievement in mathematics.

This means that the variables emotional intelligence, self-esteem and self-efficacy significantly are predictors of students' academic achievement in mathematics. Emotional intelligence, self-esteem and self-efficacy are an important aspect of students' life and their disturbances create fears, worries, anxieties, annoyance, resentment, lack of self-worth and self-reliant and makes it hard to achieve the desired goal. These negative feelings must be replaced by feeling of hope, courage and willingness so that they can achieve more. The present study reveals that the factors emotional intelligence, self-esteem and self-efficacy if emphasized help eliminate these negative feelings above which in turn help improve the

students' academic achievement in mathematics. These findings concluded that Emotional intelligence, self-esteem and self-efficacy had direct influence on student academic achievement in mathematics.

Educational implication of the study

The findings have some educational implications on the students, parents, educational administrators, teachers, researchers, society at large and Government.

The finding indicated that student emotional intelligence estimated to attribute 25.3% was the fourth highest amount of contribution to the students' academic achievement in mathematics. The variable also had direct and significant influence on students' academic achievement in mathematics. In order to improve academic achievement of student, measures that improve student emotional intelligence factors should be put in place both at home and in school.

Student self-esteem made the third highest with 27.5% contribution to students' academic achievement in mathematics. The variable had direct and significant influence on students' academic achievement in mathematics. This means that teachers should use methods that encourage self-esteem among the student. Concrete instructional materials should be used in class to enhance student self-esteem. The curriculum should be plan in such a way it has utility to the students and captures self-esteem of the student.

Student-self-efficacy had the second highest with 35.6% amount of the contribution to students' academic achievement in mathematics. Self-efficacy also had direct and significant influence on students' academic achievement in mathematics. This implies that government, educational administrators and teachers should make concerted effort at providing the necessary educational support that will improve and priorities the self-efficacy of student.

Students always like to do what they like and enjoy best, the need to make them belief in their ability to succeed in specification situation or accomplish a task is very important for them to succeed academically. So in order to improve students' academic achievement, measures should put in place both at home and in school that could help improve their self-efficacy.

Finally, The variables emotional intelligence, self-esteem and self-efficacy jointly, had the highest with 37.0% contribution to the students' academic achievement. This shows that these variables are of immense importance to students' academic achievement. Students should strive to improve their academic achievement in whatever situation. Government, Educational administrators, teachers, parents and others stakeholders should study these variables, improve on them so as to enhance students' academic achievement.

Recommendations

1. The results of the findings showed that variables emotional intelligence, self-esteem and self-efficacy had a high direct and significant influence on students' academic achievement. Parents and Teachers should put measures in place at home and in school respectively, that could improve students emotional intelligence, self-esteem and self-efficacy. Concrete instructional materials and method should be used in class to enhance student emotional intelligence, self-esteem and self-efficacy. This will enhance their academic achievement.
2. Educational administrators, teachers should ensure that curriculum plan is in such a way that it has utility to the student and it captures the emotional intelligence, self-esteem and self-efficacy of student. They should make concerted effort at providing the necessary educational support needed to improve these factors.
3. Government should ensure that improving emotional intelligence, self-esteem and

self-efficacy among pre-service teachers should be a fundamental element in their education programs and can be further enhanced and reinforced through continuous professional development activities. Professionally, teachers that have interest and experience in the field of student emotional intelligence, self-esteem and self-efficacy should be employed. Adequate and needed facilities that improve these factors should be provided in all schools whether in rural or urban areas.

4. Students should strive to achieve academic success in whatever situation. Student also should be mindful of their emotional intelligence, self-esteem and self-efficacy so as to improve their academic achievement. They should utilize their assess to wise and knowledgeable mentors, teachers and parents who are willing to guide them to the area of their emotional intelligence, self-esteem and self-efficacy.

Limitations of the study

The limitations for the study are as follows:

The first limitation of this study was finance. funds was grossly inadequate for this work. The cost of material used for this work was not favourable.

The second was the task of moving from one school to the other to administer the instruments on the respondents and ensuring the accuracy and error free while filling the questionnaire by the respondents.

Though in the end it was the researcher personal effort and Supervisor guidance that led to successful completion of the work.

Suggestion for further studies

The following suggestions were made for further research:

1. Replication of the study could be taken in another education zone in different state.
2. Replication of the study could be taking using another different research design and technique analysis so as to compare the results at end.
3. Further studies should be carried out using undergraduates who the research believed understand emotional intelligence, self-esteem and self-efficacy more than secondary school student

Summary of the study

The main purpose of this study was to investigate the Emotional intelligence, self-esteem, and academic self-efficacy of students as correlates of academic achievements in mathematics. Four research questions and four hypotheses were formulated to guide the study. The related literature to the study was reviewed under five main-Subheadings namely: conceptual framework, review of related theories, review of related concept, review of empirical studies and summary of the result. The study used a correlational survey research design. A total of 400 SSII students were used as sample of the study. A 30-item structured questionnaire clustered into four clusters modeled on a four point likert style type rating and student academic achievement score proforma were used to collect data for the study. The research instruments were subjected to face validation by three experts, one from mathematics Education Unit and two from measurement and evaluation unit, all in the department of Science Education, University of Nigeria Nsukka. They vetted the instruments with respect to the appropriateness of the items, clarity and wording of the items of the instrument. The instrument was trial tested on a similar sample in Awka Education Zone. Validated instrument were administered to twenty Royal Saint secondary school SSII students Awka. The data obtained were used to estimate the internal consistency reliability

indices of the emotional intelligence inventory, self-esteem scale and self-efficacy scale using Cronbach Alpha method. The reliability indices calculated were 0.99, 0.98 and 0.98 for emotional intelligence inventory, self-esteem scale and self-efficacy scale respectively(See Appendix D). This shows that the instrument were reliable. The 4 research questions were analysed using coefficient of determination of linear regression analysis. The 4 null hypotheses were analyzed using ANOVA. The results revealed that:

Generally, the variables student emotional intelligence , self-esteem and self-efficacy had a direct relationship with students' academic achievement in mathematics

In research question 4 where Emotional intelligence, self-esteem and self-efficacy jointly analysed. The variables Emotional intelligence, self-esteem and self-efficacy had direct relationship with student academic achievement in mathematics

The amount of Emotional intelligence, self-esteem and self-efficacy that are statistically significant to the student's academic achievement were estimated. This means that student emotional intelligence estimated to contribute fourth highest amount of the students' academic achievement in mathematics, self-esteem contribute the third highest amount of students' academic achievement in mathematics and self-efficacy contribute the second highest amount of students' academic achievement in mathematics.

The amount of emotional intelligence, self-esteem and self-efficacy jointly analysed that are significant of the students' academic achievement also were estimated. This means that jointly, the variables emotional intelligence, self-esteem and self-efficacy was estimated to attribute the highest amount of student academic achievement in mathematics.

The finding were examined and it was recommended that emotional intelligence , self-esteem and self-efficacy had a high, direct and significant influence on students' academic achievement. Methods and instructional materials that will help student emotional intelligence, self-esteem and self-efficacy should therefore be introduced and encouraged in

school. Also it is of great importance for teachers that can mentor students on their emotional intelligence, self-esteem and self-efficacy be employed as educators. Government should also re-design school curriculum to include topics that enhance students' emotional intelligence, self-esteem and self-efficacy in schools. Teachers, government and educationist have a role to play in making parents aware of their own contributions towards improvement of student emotional intelligence, self-esteem and self-efficacy. This could improve student academic achievement. The limitations of the study and suggestion for further studies were highlighted at end.

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APPENDIX A1**Population of Students****Student enrolment for 2nd Term 2017/2018 Session in Nnewi Education Zone**

APPENDIX A2**Sample Distribution Of The Number Of Students Chosen Per School**

S/N	SCHOOL NAME	NO. OF STUDENT
1	C.S.S. ICHI	25
2	C.S.S. IHEMBOSI	25
3	C.S.S. ORAIFITE	25
4	C.S.S. OZUBULU	25
5	C.S.S. AMORKA	25
6	ST ANTHONY AZIA	25
7	ST JUDE IHIALA	25
8	C.S.S. MBOSI	25
9	ZIXTON OZUBULU	25
10	GTC IHIALA	25
11	UTUH HIGH SCHOOL UTUH	25
12	C.S.S. EKWULUMILI	25
13	C.S.S. AMICHI	25
14	UKPOR HIGH SCH. UKPOR	25
15	C.H.S. OSUMENYI	25
16	C.S.S. AZIGBO	25

APPENDIX B
REQUEST LETTER TO RESPONDENTS

Science Education Department
Faculty of Education,
University of Nigeria Nsukka
Enugu State.

Dear Respondents,

RESEARCH QUESTIONNAIRE

I am a student of the above mentioned institution. I am conducting a research on **“Emotional Intelligence, Self Esteem, And Academic Self-Efficacy of Students as Correlates of Academic Achievements in Mathematics”** as part of the requirement for the award of Master of Science Degree in Science Education.

You are kindly requested to provide answers to the following questions objectively, honestly and without prejudice. I assure you that any information provided are purely for academic purposes and will be treated in strict confidence.

Thanks for your anticipated cooperation.

Yours faithfully,

ASOMUGHA, C. G.
Researcher

APPENDIX C

VALIDATION OF INSTRUMENT

Department of Science Education
Faculty of Education
University of Nigeria, Nsukka
17th November, 2017.

Dear Sir/Madam,

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENT

I am a postgraduate of the above named department in the faculty of Education, University of Nigeria , Nsukka. I am currently conducting a research work on the topic “**Emotional Intelligence, Self Esteem, And Academic Self-Efficacy of Students as Correlates of Academic Achievements in Mathematics**”. I wish to request for your assistance in the validation of my research instrument. You are to vet the instrument in terms of;

- i. Clarity of items
- ii. Simplicity of vocabulary
- iii. Relevance of the items to the study

You are also requested to express your comments and suggestion for improving the quality of the instruments.

Attached is a draft copy of the instrument, Purpose of the Study, Research Question and Research Hypotheses

Yours faithfully

ASOMUGHA, C. G.
PG/MED/12/64442
08064397122

**EMOTIONAL INTELLIGENCE, SELF ESTEEM, AND ACADEMIC SELF-
EFFICACY OF STUDENTS QUESTIONNAIRE (ESAQ)**

INSTRUCTION:

SECTION A :Personal Information of Student

Tick right (✓) in the box appropriate to your response to the following questions

Sex: Male ☐ Female ☐

Qualification: B.Sc (ed) ☐ Sc NCE ☐ SC ☐
M.Ed ☐ Others ☐ None ☐

Cumulative Grade Point Average of the Student in Mathematics:

100-70	=	Excellent	☐
69-60	=	Good	☐
59-40	=	Fair	☐
Below 39	=	fail	☐

SECTION B

Below are possible factors that may be used to prove Emotional intelligence, self-esteem and self-efficacy of students as correlates of their academic achievement in mathematics. Tick right (✓) under any column that corresponds to your opinion. **SA=Strongly Agreed; A=Agreed; D= Disagree; SD=Strongly Disagree.**

EMOTIONAL INTELLIGENCE INVENTORY (EII)

S/N	ITEM STATEMENT	SA	A	D	SD
1	I always know which emotions I am feeling and why				
2	I realize the links between my emotion and what I think, do, and say				
3	I recognize how my emotion affect my achievement in mathematics				
4	I have a guiding awareness of my values and goals				
5	I am aware of my strengths and weaknesses				
6	I am reflective and try to learn from experience				
7	I am open to candid feedback, new perspectives, continuous learning, and self-development				
8	I am able to show a sense of humour and perspective about myself				
9	I manage my impulsive feelings and distressing emotions well				
10	I realize the link between my emotion and my intelligence				

SELF-ESTEEM SCALE(SES)

S/N	ITEM STATEMENT	SA	A	D	SD
11	I am decisive, and able to make sound decisions despite uncertainties and pressures				
12	I am aware of my worth				
13	I meet commitments and keep promises				
14	I am organized and careful in my studies				
15	I hold myself accountable for meeting my target in school				
16	I realize the link between my self-esteem and my intelligence				
17	I realize that my self-esteem affect my academic achievement in mathematics				
18	I adapt my responses and tactics to fit my circumstances				
19	I am flexible in how I see events and fast in learning				
20	I am attentive to emotional cues and am a good listener				

GENERAL SELF-EFFICACY SCALE(GSES)

S/N	ITEM STATEMENT	SA	A	D	SD
21	I understand what expected of me in school and match them to my career goal				
22	I realize the link between my efficacy and academic achievement in Mathematics.				
23	It easy for me to stick to my target and accomplish my goals.				
24	I think clearly and stay focused under pressure and can read for long period of time				
25	I smoothly handle multiple demands in Schools, shifting priorities, and rapid change				
26	I generate new ideas and always eager and ready to learn				
27	I take fresh perspectives and risks in my thinking				
28	I continuously learn in order to improve my achievement in mathematics				
29	I pursue information to reduce uncertainty and find ways to do better.				
30	I am persistent in seeking goals and achieve a good result despite obstacles and setbacks				

STUDENTS ACADEMIC ACHIEVEMENT PROFORMA

Name of School_____

[illegible]

APPENDIX D

EVIDENCE OF RELIABILITY TEST

SCALE: EMOTIONAL INTELLIGENCE RELIABILITY TEST

Case Processing Summary

	N	%
Valid	20	100.0
Cases Excluded ^a	0	.0
Total	20	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
.985	.985	10

SPSS Version20

Scale: SELF-ESTEEM RELIABILITY TEST

Case Processing Summary

	N	%
Valid	20	100.0
Cases Excluded ^a	0	.0
Total	20	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
.982	.984	10

SPSS Version2

Scale: SELF EFFICACY RELIABILITY TEST

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	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
.981	.986	10

SPSS Version20

APPENDIX E

SAMPLE SIZE DETERMINATION USING TARO YAMANE

Applying Taro Yamane statistical equation for the determination of sample size from 2937 total population at 95% level of confidence and 5% level of significance(e)

Thus the equation is stated below:

$$n = \frac{N}{1 + N (e)^2}$$

Where n = sample size

N = total population

The total estimate population of the selected staff

E = the level of significance (5%)

I = Constant areas

The level of significance = 5% = 0.05

$$n = \frac{2937}{1 + 2937 (0.05)^2}$$

$$= \frac{2937}{8.34}$$

$$= 352.15$$

Sample Size used was 400 respondents which is closed to the 352.59 calculated using Taro Yamane Equation and also within the +25% TO - 25% stipulated range according Taro Yamane.

APPENDIX F

LINEAR REGRESSION AND ANOVA ANALYSIS OUTPUT RESULTS USING SPSS

RESEARCH QUESTION 1

Descriptive Statistics

	Mean	Std. Deviation	N
Student Academic Achievement in maths	51.2625	11.60108	400
STUDENT EMOTIONAL INTELLIGENCE	3.4050	.92635	400

Correlations

		Student Academic Achievement in maths	STUDENT EMOTIONAL INTELLIGENCE
Pearson Correlation	Student Academic Achievement in maths	1.000	.503
	STUDENT EMOTIONAL INTELLIGENCE	.503	1.000
Sig. (1-tailed)	Student Academic Achievement in maths	.	.000
	STUDENT EMOTIONAL INTELLIGENCE	.000	.
N	Student Academic Achievement in maths	400	400
	STUDENT EMOTIONAL INTELLIGENCE	400	400

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	STUDENT EMOTIONAL INTELLIGENCE ^b	.	Enter

a. Dependent Variable: Student Academic Achievement in maths

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.503 ^a	.253	.251	10.03978

a. Predictors: (Constant), STUDENT EMOTIONAL INTELLIGENCE

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13582.127	1	13582.127	134.747	.000 ^b
	Residual	40117.311	398	100.797		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT EMOTIONAL INTELLIGENCE

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.817	1.914		15.574	.000
	STUDENT EMOTIONAL INTELLIGENCE	6.298	.543	.503	11.608	.000

a. Dependent Variable: Student Academic Achievement in maths

RESEARCH QUESTION 2

Descriptive Statistics

	Mean	Std. Deviation	N
Student Academic Achievement in maths	51.2625	11.60108	400
STUDENT SELF ESTEEM	3.3625	.95045	400

Correlations

		Student Academic Achievement in maths	STUDENT SELF ESTEEM
Pearson Correlation	Student Academic Achievement in maths	1.000	.525
	STUDENT SELF ESTEEM	.525	1.000
Sig. (1-tailed)	Student Academic Achievement in maths	.	.000
	STUDENT SELF ESTEEM	.000	.
N	Student Academic Achievement in maths	400	400
	STUDENT SELF ESTEEM	400	400

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	STUDENT SELF ESTEEM ^b	.	Enter

a. Dependent Variable: Student Academic Achievement in maths

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.525 ^a	.275	.273	9.88900

a. Predictors: (Constant), STUDENT SELF ESTEEM

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14778.084	1	14778.084	151.117	.000 ^b
	Residual	38921.354	398	97.792		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF ESTEEM

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.732	1.820		16.337	.000
	STUDENT SELF ESTEEM	6.403	.521	.525	12.293	.000

a. Dependent Variable: Student Academic Achievement in maths

RESEARCH QUESTION 3

Descriptive Statistics

	Mean	Std. Deviation	N
Student Academic Achievement in maths	51.2625	11.60108	400
STUDENT SELF EFFICACY	3.1850	1.04331	400

Correlations

		Student Academic Achievement in maths	STUDENT SELF EFFICACY
Pearson Correlation	Student Academic Achievement in maths	1.000	.597
	STUDENT SELF EFFICACY	.597	1.000
Sig. (1-tailed)	Student Academic Achievement in maths	.	.000
	STUDENT SELF EFFICACY	.000	.
N	Student Academic Achievement in maths	400	400
	STUDENT SELF EFFICACY	400	400

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	STUDENT SELF EFFICACY ^b	.	Enter

a. Dependent Variable: Student Academic Achievement in maths

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.597 ^a	.356	.355	9.31948

a. Predictors: (Constant), STUDENT SELF EFFICACY

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19132.045	1	19132.045	220.281	.000 ^b
	Residual	34567.392	398	86.853		
	Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF EFFICACY

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	30.123	1.499		20.101	.000
	STUDENT SELF EFFICACY	6.637	.447	.597	14.842	.000

a. Dependent Variable: Student Academic Achievement in maths

RESEARCH QUESTION 4

Descriptive Statistics

	Mean	Std. Deviation	N
Student Academic Achievement in maths	51.2625	11.60108	400
STUDENT EMOTIONAL INTELLIGENCE	3.4050	.92635	400
STUDENT SELF ESTEEM	3.3625	.95045	400
STUDENT SELF EFFICACY	3.1850	1.04331	400

Correlations

		Student Academic Achievement in maths	STUDENT EMOTIONAL INTELLIGENCE	STUDENT SELF ESTEEM
Pearson Correlation	Student Academic Achievement in maths	1.000	.503	.525
	STUDENT EMOTIONAL INTELLIGENCE	.503	1.000	.977
	STUDENT SELF ESTEEM	.525	.977	1.000
	STUDENT SELF EFFICACY	.597	.918	.931
	Student Academic Achievement in maths	.	.000	.000
Sig. (1-tailed)	STUDENT EMOTIONAL INTELLIGENCE	.000	.	.000
	STUDENT SELF ESTEEM	.000	.000	.
	STUDENT SELF EFFICACY	.000	.000	.000
	Student Academic Achievement in maths	400	400	400
	STUDENT EMOTIONAL INTELLIGENCE	400	400	400
N	STUDENT SELF ESTEEM	400	400	400
	STUDENT SELF EFFICACY	400	400	400
	STUDENT SELF EFFICACY	400	400	400

Correlations

		STUDENT SELF EFFICACY
Pearson Correlation	Student Academic Achievement in maths	.597
	STUDENT EMOTIONAL INTELLIGENCE	.918
	STUDENT SELF ESTEEM	.931
	STUDENT SELF EFFICACY	1.000
Sig. (1-tailed)	Student Academic Achievement in maths	.000
	STUDENT EMOTIONAL INTELLIGENCE	.000
	STUDENT SELF ESTEEM	.000
	STUDENT SELF EFFICACY	.
N	Student Academic Achievement in maths	400
	STUDENT EMOTIONAL INTELLIGENCE	400
	STUDENT SELF ESTEEM	400
	STUDENT SELF EFFICACY	400

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	STUDENT SELF EFFICACY, STUDENT EMOTIONAL INTELLIGENCE, STUDENT SELF ESTEEM ^b		Enter

a. Dependent Variable: Student Academic Achievement in maths

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.608 ^a	.370	.365	9.24496

a. Predictors: (Constant), STUDENT SELF EFFICACY, STUDENT EMOTIONAL INTELLIGENCE, STUDENT SELF ESTEEM

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	19853.617	3	6617.872	77.430	.000 ^b
Residual	33845.820	396	85.469		
Total	53699.437	399			

a. Dependent Variable: Student Academic Achievement in maths

b. Predictors: (Constant), STUDENT SELF EFFICACY, STUDENT EMOTIONAL INTELLIGENCE, STUDENT SELF ESTEEM

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	33.009	1.803		18.310	.000
	STUDENT EMOTIONAL INTELLIGENCE	-4.724	2.366	-.377	-1.996	.047
	STUDENT SELF ESTEEM	1.410	2.497	.116	.565	.572
	STUDENT SELF EFFICACY	9.292	1.219	.836	7.621	.000

a. Dependent Variable: Student Academic Achievement in maths