INFLUENCE OF TEACHERS ACADEMIC BACKGROUND, ON SENIOR SECONDARY SCHOOL STUDENTS MATHEMATICS ACHIEVEMENT IN MINNA METROPOLIS

BY

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2017/3/69332BE

A PROJECT SUBMITTED TO THE DEPARTMENT OF SCIENCE EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

IN PARTIAL FULFILLMENT OF REQUIREMENT FOR THE AWARD OF BACHELORS OF TECHNOLOGY (B.TECH) DEGREE IN SCIENCE EDUCATION WITH OPTION IN MATHEMATICS EDUCATION

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

AUGUST, 2021

ABSTRACT

The aim of this study is to assess the influence of teachers' academic background on students' mathematics achievement in senior secondary schools in Minna metropolis. The research design adopted for the study was quasi-experimental research design. In order to meet the purpose of the study, three research questions and hypothesis were designed. The target population was the twenty-three (23) co-educational science secondary schools students with population of 7,710 for 2020/2021 academic session in Minna Niger State. The sample constituted seventy (70) senior secondary ss2 mathematics students (Male= 45, Female = 25) and thirty (30) teachers selected from ten co-educational science schools in Minna metropolis. Purposive sampling technique was used in selecting the tour (4) coeducational schools which was used for the study. The study used primary data which was collected using self-administered questionnaires. The data collected was analyzed using independent sample t-test. The findings of this study revealed that majority of the teachers in senior secondary schools in Minna metropolis are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder. It was also observed that there is mean difference in teacher academic quality on students' academic achievement in Mathematics in favor of NCE teachers as students taught by NCE teachers had the highest mean achievement score. The result of the statistical analysis shows that; teachers academic background does not significantly influence student's academic achievement. Though teacher quality is an essential component for the quality development of secondary schools, this result found out that it did not significantly influence the academic performance of students. It is therefore recommended that school head should ensure that the potentials of the teachers are well harnessed and utilized to reflect the true picture of their quality in the academic performance of students.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

1.0

Education is widely regarded as a basic human right, a key to enlightenment, and a source of wealth and power. It is critical to industrial and technological development, with the history of developed nations bearing records of this, developing nations aspiring to realize the same status have to put a premium. Progressively more, nations need a skilled, knowledgeable workforce and a citizenry equipped to function in a complex world. This can only be accomplished through a comprehensive understanding of science and technology (Sufiyanu and Elizabeth, 2018).

Science is a major tool for change in the modern world. Science is most often referred to as a way of pursuing knowledge. It is associated with scientific method itself, as a disciplined way to study natural world. Science is the bedrock of all technological advancement (Oviawe, 2016), the scientific feat has turned the world into a global village and turned those who are not technologically advanced to mere pawns in the game of survival. Science is a systematic enterprise that builds and organizes knowledge in form of testable explanations and predictions about the universe.

Mathematics is bedrock of science and technology, without mathematics there will be no real development in science and technology. Mathematics has all through the years been an important subject both in the role it plays in everyday activities and in its usefulness to other sciences. It is a body of knowledge centered on concepts such as quantity, structure, space, change and also the academic discipline that studies them (Sufiyanu and Elizabeth, 2018). Mathematics is widely used throughout the world, in human life and many fields including

Social Sciences, Natural Sciences, Engineering, Medicine and Education. It is a vital tool in science, commerce and technology. In the areas of buying and selling, communication, timing, measurement, molding, recording among others, the importance is highly acknowledged. Mathematics is one of the core subjects in both junior and senior secondary school curricula in Nigeria, which justifies its recognition as being essential in the development of technological advancement in Nigeria. The Federal Government of Nigeria made Mathematics compulsory and one of the core subjects in both primary and secondary schools because of its usefulness. Some of the roles of mathematics includes: its ability to enhance the thinking capabilities of individuals by making them to be more creative, reasonable and rational as well as imaginative. There is no school curriculum or a national development planning which does not take cognizance of the usefulness and development in school mathematics.

Academic achievement, no doubt is the main focus of all educational activities in secondary schools that has received tremendous attention from educationists. However, predicting academic success or achievement is a difficult and complex task. According to Nwokocha and Amadike (2005) academic achievement of students is the yardstick for testing educational quality of a nation. Hence, it is expedient to maintain a high achievement in internal and mostly external examinations.

In Nigeria, education is seen as an instrument par excellence for effecting national development. As such, education is expected to be of high quality in order to produce sound and quality products that can contribute to the growth of the national economy. The quality of education of a nation could be determined by the quality of her teachers. The most important factor in improving students' academic achievement in school is by employing

seasoned qualified teachers in all schools (Abe & Adu, 2013). Academically qualified teachers refer to those who have academic training as a result of enrolment into educational institution and obtained qualifications in various areas of endeavour such as HND, B.Sc, B.A, and Master of Art (M.A.) and so on; while professionally qualified teachers are those who got professional training that gave them professional knowledge, skills, techniques, aptitudes as different from the general education. They hold degrees like, B.Ed, B.Sc. Ed, B.A. Ed, and M.Ed degrees and so on. It is claimed that academic success or failure is related to many factors. In general, various studies that attempt to explain academic success or failure do so by beginning with three elements that intervene in education; parents (family causal factor), students (personal causal factor) and teachers (academic causal factors) (Omotayo, 2012).

1.2 Statement of Problem

Over the years, students' achievement in mathematics has prompted educational researchers to continuously make relentless efforts at identifying many factors that might account for the observed poor performance. Muhammad.B. A (2013) suggest that factors inside and outside the classroom affect students' achievement and interest. Amongst other variables identified are: Students' poor study habit, low self-esteem, teacher factors (teacher quality), shortage of qualified teachers, inadequate teaching facilities in Schools, home factor, school environmental factors and many others. Despite their efforts, students continue to exhibit poor performance in the subject (Lawal, 2012). In this vein, teacher factor has been linked to be one of the causes of students' poor performance, in this sense there is need to look into the quality of teachers in our secondary schools because effective teaching elicit effective learning. Teacher is the principal initiator of learning. Therefore, this study is designed to

assess the influence of teachers' academic qualification on students' achievement in mathematics.

1.3 Aim and Objectives of the study

The aim of this study is to assess the influence of teachers' academic background on students' achievement in mathematics in senior secondary schools in Minna metropolis.

The objectives of the study is to determine the;

- teachers' academic background in mathematics in senior secondary schools in Minna metropolis
- students' academic achievements in mathematics in senior secondary schools in Minna metropolis
- iii. influence of teachers' academic background on students' academic achievements in senior secondary schools in Minna metropolis

1.4 Research Questions

The following research questions were posed to guide the study.

- i. What is the teachers' academic background in mathematics in senior secondary schools in Minna metropolis?
- ii. What is the level of students' academic achievements in mathematics in senior secondary schools in Minna metropolis?
- iii. How does teachers' academic background influences students' mathematics achievement in senior secondary schools in Minna metropolis?

1.5 Research Hypotheses

In order to carry out the research effectively, the under listed hypotheses was tested at p= 0.05 level of significant.

Ho_{1:} There is no significant difference in the teachers' academic background in mathematics in senior secondary schools in Minna metropolis

Ho_{2:} There is no significant difference in the level of students' academic achievements in mathematics in senior secondary schools in Minna metropolis

Ho_{3:} There is no significant different of teachers' academic background on students' academic performance in mathematics in Minna metropolis.

1.6 Significance of the Study

The study examines the influence of teachers' academic background on senior secondary school students' achievement in mathematics in senior secondary schools in Minna metropolis. Findings from this study would be very useful to the teachers and other stake holders in Education sector and teachers' academic background contribute positively to students' achievement and interest in mathematics, thereby charging them to work towards teachers' academic background. The findings from the study will also bring to an end the long search by educational researchers, a remedy to the problem of students' poor performance in mathematics. It will also be significant to the Education agencies to always monitor the quality of teachers they post to schools.

1.7 Scope and Limitation of the Study

This study was limited to senior secondary schools students and their teachers in some selected secondary schools in in Minna metropolis of Niger State, Nigeria. The study covers

teachers' academic background, students' academic achievements in mathematics and the influence of teachers' academic background on students' academic achievements in senior secondary schools in Minna metropolis.

1.8 Operational Definition of Terms

- Achievement: something accomplished, especially by superior ability, special effort, great courage, etc.; a great or heroic deed. It is also the act of achieving; attainment or accomplishment.
- **Mathematics:** It is a body of knowledge centered on concepts such as quantity, structure, space, change and also the academic discipline that studies them. It is one of the core subjects in both junior and senior secondary school curricula in Nigeria, which justifies its recognition as being essential in the development of technological advancement in Nigeria. Mathematics is bedrock of science and technology, without mathematics there is no real development in science and technology.
- NCE: it's an acronym of Nigeria Certificate in education. It's is certificate issue after a completing a course of study in colleges of education or any educational institution that make an individual a professional teacher in the field of teaching profession.
- **Bsc. Ed:** Bachelor in science Education is a certificate issued in a University to a person who has successfully finish a course of study in any of educational Courses to become a professional in the field of education.
- Non-qualified teacher: This are teachers in the field of teaching profession who did not undergo any training in the field of teaching and learning. They are some also refers to as "out of field teachers.

- **Teacher quality variable:** These are the differences that exist between teachers with different teaching experiences and qualifications.
- Academic achievement: This refers to the level of knowledge acquisition that occurs in a given course as defined by end-of-course grade point average obtained by the students.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

Conceptual framework of this study focuses on explaining the concepts that makes up the topic of interest in an understandable way that will bring about easy breakdown of the subject matter. This study intends' to review the following concepts:

- Meaning, scope and nature of teaching profession
- Teachers' qualifications
- Concept of Academic Achievement
- Teacher's quality and academic performance
- Factors that Affect Academic Performance of Students

2.1.1 Meaning, Scope and Nature of Teaching Profession

Teaching profession is a unique profession with an unending prestige and honor. A student will always remember and respect so much a professional teacher in both present age and the future to come. Mogbo and Gana (2014) are of the view that the nature of the teaching profession throughout the ages indicate' that teaching is taken as a career by intellectual and peculiar individual with a very strong desire to motivate, stimulate and facilitate humanitarian service and not for the money. Teaching profession demands for passion and willingness to work very hard for a desirable outcome.

Teaching profession demands important intellectual delivery of knowledge, facts and ideas in a regular manner so as to improve the cognitive domain of an individual. The scope of teaching profession is broad and as such, it is used by all other fields in the educational system, in the absence of teaching profession medicine, pharmacy, nursing, engineering, mathematics, agriculture, geography and geology would not exist. It is as a result of teaching profession that knowledge in other fields is been transferred into an individual to become a professional in those fields of study. It there means that, teaching profession is the mother of all other professions in the aspect of education. A teacher is a person who transfers knowledge to an individual and turns the individual into a very useful personality in the community or society at large. A professional teacher should have acquire professional qualifications or credentials in education which could either be biology education, geography education, physics education, biology education, mathematics education, computer education, agricultural education, educational management and so on (Ozkan, 2013).

Teachers are responsible for the crucial educational development of the learners because they partake in formulating and implementing policies that affect them. Teachers are the catalytic agents (someone who causes change) standing in the gap between the students and the subject matter that ensures the permanent change in learners' behaviour. The instrumentality of the teachers in students' learning and in the preparation of students to succeed in examinations and the real world cannot be debated, perhaps, the reason why Adegbemile (2011) averred that teachers hold the key to nation-building. All of these make the job of a teacher a difficult one.

Effective teaching should lead to permanent change (positive) in learners' behaviour, measurable in terms of their affective (attitude) or cognitive (academic achievement) components as described in the Blooms taxonomy of educational objectives. However, effective teaching will be difficult to achieve without quality teachers. This demonstrates the

prominence of the school teacher in enhancing students' learning outcomes Scheneider and Soloway (2011)

2.1.2 Teachers' Qualifications

Teachers' qualifications could, therefore, mean all the skills a teacher required to teach effectively. Such skills include formal education, experience, subject matter knowledge, pedagogy studies, duration of training, certificate/licensing and professional development (Zuzovsky, 2009). Someone might have a teaching certificate at hand but without adequate knowledge of subject matter, this individual has no teaching qualifications yet. Similarly, someone without proper knowledge of pedagogy or someone who spent few years in training without completing the required years does not possess teacher qualifications (Darling-Hammond *et al.*, 2001).

Professional development and experience also count for teachers' qualifications because several studies have revealed this (Helk, 2007). Qualification is one of the critical factors that drive students' academic performance. Hakielimu (2011) observed that one of the most important factors in the teaching process is a qualification of the teacher. Teachers' profession relates to competence in instruction and management of students and materials in the classroom. Teachers' qualifications, therefore, might not only be the certificate someone is holding as erroneously conceived by some people. Teachers' qualifications are more than just holding a certificate of any institution (Hamilton-Ekeke).

Another factor that quality's a teacher in formal education Here we talk about various academic degrees a teacher can possess to qualify him or her to teach. In Nigeria, these are NCE, Bachelor's, Master's, Doctorate degrees, other certificates, and diplomas inclusive.

However, only degree holders are qualified to teach in senior secondary schools. According to Zuzovsky (2009), findings related to teachers' academic degrees are inconclusive. Some scholars believed that higher degrees showed positive correlation with students' academic achievement. Teacher formal education is imperative. Darling-Hammond *et al.* (2001) asserted that teachers who have more training produce students who have the better achievement.

Certification is a measure of teacher qualifications that combines both aspects of knowledge about the subject matter with teaching and learning. Certified teachers are usually those who have graduated from accredited teacher education programs. These categories of teachers are also required to complete an induction program or pass a national teacher examination test to obtain a license (Zuzovsky, 2009). In the Nigerian context, a certified teacher must be licensed by the Teacher Registration Council of Nigeria apart from graduating from an accredited institution. According to the National Policy on Education (FRN, 2014), the Nigerian Certificate in Education (NCE) was approved as the minimum qualification for entry into the teaching profession. However, the major problem facing Nigerian now is the rate at which private teacher training institutions are springing up. Many of these institutions bribed their ways to get accredited when they have not met the required standard.

The poor qualifications of teachers are not only a major problem in Nigeria but in African schools (Maphoso and Mahlo, 2015). Ideally, teacher certification should keep unqualified teachers away from the classroom, while giving qualified teachers with the requisite requirements the authorization to enter the classroom. The quality of teachers in an education system determines the quality of instruction they will provide to learners. This is why the National Policy on Education (FRN, 2014) considered it easier for a camel to pass

through the eye of a needle than for an education system to rise above the quality of its teachers. A qualified teacher might have been exposed to the rules and procedures that enable students to understand clearly and develop mastery in Geography. Newstrom and Davis (2012) in a study determine teacher quality and training on students' achievement, the results showed that trained teachers do make a difference and in particular teacher qualification, positively imparted on students.

There is mixed evidence on the influence of licensing on students' academic achievement. Some believed that certified as a teacher does not guarantee achievement gain (Kane *et al.*, 2006). While some Clotfelter *et al.* (2006); Darling-Hammond *et al.* (2001) agreed that been certified as a teacher influences academic gain. In agreement with Darling-Hammond *et al.* (2001); Nevgi *et al.* (2004) said students who are taught by certified teachers outscored those with another kind of teachers. A study also found that an instruction delivered by a highly qualified teacher has a positive learning outcome (attitude and academic achievement) on the students (Gershenson, 2016). The unqualified teacher on the other hand may be lacking in these qualities and therefore may not be able to make the students develop the required skills.

2.1.3 Concept of Academic Achievement

Students' academic performance is a perplexing question in education science and economics. The general approach followed by economics is to use a model of added value based on the educational production function. This methodology consists in evaluating the effect of the educational inputs (characteristics and attitudes of the teachers, physical resources committed in the universities, the teaching organisation, the rate of students framing, etc.) on the students' performance by taking into account other inputs (socioeconomic origin, characteristics and attitudes of the students (Suri and Sharma, 2013). A large body of literature is dedicated to this subject and here we are not aiming to survey this research. However, the findings indicate consistent trends and provide evidence on the relationship between educational environment, students' characteristics, teachers' characteristics and performance of students.

Duruji *et al.* (2014) define academic performance as the degree of a student's accomplishment in his or her tasks and studies. Duraji *et al.* (2014) expanded on the measures of academic performance when they wrote that the most well-known indicator of measuring academic performance is grades which reflect the students score for their subjects and overall tenure. Akiri (2013) examined teachers' effectiveness on students' academic performance and came to a conclusion that students' poor performance is as a result of teachers' performance in terms of qualification and other aspects. This is especially so in a subject like financial accounting that is professional in nature which demands a very high and sound knowledge of subject matter as well as teaching methods for it to be interesting to students which will in turn motivate them to want to learn and perform well in it. Of a necessity, an accounting but must be professionally qupt of Academic Performance.

According to Talton and Simpson (2013) classroom environment is composed of six areas; the emotional climate of science classroom, science curriculum, physical environment of science classroom, science teacher, students in the science classroom, friends' attitude toward science. Talton and Simpson stated that there exists a significant correlation between attitude towards science and all the classroom environmental variables and that these affect students' achievement in science particularly biology. Manoussou (2011) investigated the

relationship between attitudes toward biology achievement of Greek students; and found significant correlation between attitudes toward biology classroom environment and academic achievement in biology; and concluded that classroom environment is an important factor that develops positive achievements towards biology. Simpson and Troost (2012) also emphasized that if students experience an unpleasant punishment in science classroom the little science knowledge that they learn may disappear because the classroom environment is not suitable and will affect the students' academic achievement. In the laboratory practical work the teacher should create good atmosphere by organizing the lesson that would be interactive and attractive to students either in group or individually.

Teaching method is another factor in academic achievement especially cooperative learning approach which encourages students to work together in small groups and to use a variety of activities to improve their understanding of subject matter. Inquiry instructional approach encourages students to extend their thinking and express their ideas in a variety of ways through exploring and experiencing their environment through guided or unguided learning activities. inquiry approach which involves students gathering information, collecting and interpreting data, formulating hypotheses and drawing logical conclusions; (Scheneider & Soloway, 2011). It could be therefore possible for academic achievement to be attained if biology subject will be learned practically through the use of inquiry method in the laboratory or outside the laboratory. Laboratory method in science lessons has an important position among instructional approaches for meaningful learning. It is generally believed that science is better learnt in an applied manner through laboratory activities. The students in doing experiments construct the bases for learning science because practical work involves the use of five senses which enable the students to understand and retain the knowledge they acquired through the process of teaching and learning; this makes them behave like scientists. Laboratory experiment could therefore enhance students' academic achievement through practical skills (Ozkan (2013).

The teacher has always been considered a crucial factor affecting academic achievement in biology and science in general. Students always identify the teacher as the most important element in a classroom learning environment. The teacher should always create good atmosphere by interacting with the students freely in the laboratory to make the lesson not boring and at the same time maintains discipline; such attitude promotes academic achievement (Ozkan, 2013). Several researchers like Ozkan (2013); Chang and Moa (2009), Scheneider and Soloway (2011) have commended on the attitudes of students, teachers, teaching methods, laboratory activities, classroom environment and how they affected students' academic achievement in science. However, this study is particularly interested in investigating the influence of teachers' academic background on students' achievement in mathematics.

2.1.4 Teacher's quality and academic performance

Several scholars and researchers generally are in agreement that the school variables, which include teacher administration, perform a critical role in educational achievement than other variables (Patrick, 2005). The important role of the teachers in the learning is unquestionable. Teachers have a lot of influence on their classroom practices. Teachers should have and apply specific abilities without which their influence may not be reflected in their students' performance in the subject. For students to be able to make connection

between what is taught in school and its application in problem solving in real life, the teacher has to be effective in their teaching.

A number of researches have argued that teacher quality is a powerful predictor of students' performance. Darling-Hammond (2002) opined that measures of teacher preparation and qualification are by far the strongest correlates of student achievement in reading and mathematics. Rockoff (2003) found a strong and statistically significant different between teachers' qualification and achievement. Studies show little impact of emergency or alternative- route certification on students' performance in either mathematics or science as compared to teachers who acquire standard certification.

Olaleye (2011) establishes that there was relationship between teachers characteristics and pupils performance. Akinsolu (2010) asserts that availability of qualified teachers determined the performance of students in schools. Huang & Moon (2009) documents that teacher qualification accounted for approximately 40 to 60 percent of the variance in average of students' achievement in assessment. Richardson (2008) reveals that students in urban areas performed better than those in rural areas. The researcher suggests that the availability of enough qualified teachers must have been a determinant for students' performance. However, in Kenya, some schools in the rural areas have performed better than their urban counterparts (Owoeye & Yara, 2011).

Muhammad *et al.* (2011) who found out that there was no much difference in the quality of teachers of schools with higher academic achievement and that of the schools with lower academic achievement. However, Daso (2013) in a study had found out that there was a significant relationship between teachers' method of teaching, teachers' attitude and

students' achievement in mathematics. Furthermore, Adedoyin (2011) in another related study found that teachers' training had significant relationship on students' academic performance in Mathematics. In another related study, Jacob and Lefgren (2004) found out that marginal increases in in-service training have no statistically or academically significant effect on either Reading or Mathematics achievement, suggesting that modest investments in staff development may not be sufficient to increase the achievement of school children in high poverty schools.

Oviawe (2020) found that teachers' quality influences students' academic performance in technical drawing. Similarly, Alufohai (2013) stated that teacher certification status and a degree in the subject to be taught are positively correlated with subject outcomes (attitude and academic achievement). Jega and Julius (2018) and Unanma *et al.* (2013) found a positive relationship between the teacher's academic qualifications and student's academic achievement. Musili (2015), Adaramola and Obomanu (2011) found that teacher qualification could predict students' attitudes and achievement. Bamidele and Adekola (2017); Owolabi and Adebayo (2012) revealed that students taught by teachers with higher qualifications performed better than those taught by teachers with lower qualifications.

2.1.5 Factors that Affect Academic Performance of Students

Several studies have been conducted to identify and analyze the numerous factors that influenced academic performance in various centers of learning. Their results identify students' effort, previous schooling, parents' education, family income, self-motivation, students' age, learning preferences, class attendance, and entry qualifications as factors that have a significant effect on the students' academic performance in various settings. The utility of these studies lies in the need to undertake corrective measures that improve the academic performance of students, especially in public funded institutions. The throughput of public-funded institutions is under scrutiny especially because of the current global economic downturn which demands that governments improve efficiency in financial resource allocation and utilization.

According to Oluremi (2013), the most important educational resources are teacher. Good buildings, good environment and equipment, special services and others can provide favourable learning but the learning experiences must be directed by competent teachers. The success of any teaching and learning process which influences students' academic performance depend on how effective and efficient the teachers are. Teachers influence is always felt in every aspect of the society. The quality of a teacher has a positive correlation with student achievement in school. Duse and Ogbha (2013) said teachers touch the lives of children with varying ability levels, including those with significant disadvantages. The low academic performance of students in Nigeria could be attributed to low quality of teachers. Agharuwhe (2013) argued that the quality of education and performance of students depends on the teachers.

The teachers are therefore, expected to give considerable attention to the selection and use of appropriate instructional resources to stimulate students' interest for meaningful learning during lessons (Owulu *et al.*, 2016). For instance, the use of interactive whiteboards, video projection units, and microscopes connected to computers, provide more opportunities and add value to curriculum delivery.

2.2 Theoretical Framework

This study aims at assessing the influence of teachers' academic background on students' achievement in mathematics, therefore, the following theories were used a guide; Behaviorist Learning Theory, Effective Schools Theory and Behaviors Modification Model.

2.2.1 Behaviorist Theory of Learning

The origins of behaviorist learning theories can be traced backed to the late 1800's and early 1900's with the formulation of "associationistic" principles of learning. The overall goal was to derive elementary laws of learning and behavior which can then be extended to explain further complex situations. Inferences were tied very close to the observed behavior in "lower organisms" with the belief that the laws of learning were universal and that work with laboratory animals could be extrapolated to humans. It was believed that a fundamental set of principles obtained from the study of learning in a basic or "pure" form could then be employed to the broader context of learning in schools (Darling-Hammond *et al.*, 2001). There are three experimental approaches which are related to the study of associationistic learning including:

- i. The use of nonsense syllables and individual words to study the association of ideas
- ii. use of animals to study the association between sensations and impulses
- iii. The use of animals to study association and Reflexology

2.2.2 Cognitive-Information Processing Theories

There is no single point in time that signaled the end to the behavioral era, and the beginning of the cognitive revolution. Early on, the cognitive revolution was a silent one. Although, as psychologists became more frustrated with the limitations of behavioral theory and methods, and persuasive arguments against radical behaviorist theories were being brought forth by experts studying language development, the "time was right" for the emergence of cognitivism. Another profound factor was the development of computers (Baars, 1986), which brought about both a credible metaphor for human information processing, and a significant tool for modeling and exploring human cognitive processes.

One major group of cognitive theories may be classified as cognitive-information processing learning theories. According to the Cognitive Information Processing (CIP) opinion, the human learner is conceived to be a processor of information, just as a computer is. When learning is set to take place, information is input from the environment, processed and stored in memory, and output in the form of a learned abilities.

Proponents of the CIP model, like behaviorists, try to explain how the environment modifies human behavior. However, unlike behaviorists, they assume an intervening variable between the environment and the human behavior.

Social Cognitive Theory was proposed by a Canadian psychologist Albert Bandura. Bandura carried out series of studies in accompaniment with the psychologist's students and colleagues. This study was titled "Bobo Doll Experiment" in 1961 and 1963 which was used to find out the cause of hostile behaviours in children. Bandura discovered that a child learned by observing the behaviours exhibited by the model which indicates that modelling is a great determinant of a child's behaviour. Social cognitive theory study's' the acquisition of knowledge through observation of social interactions, experiences and external media influences exhibited by the individuals.

Social Cognitive Theory states that when people observe a model exhibiting behaviour and the outcome of such behaviour, it stimulates remembrance of the sequence of actions and appeals this information to subsequent behaviours. Social psychologists are in agreements that behaviour is influenced by environment, the cognition of the individual. A behaviour observed by an individual can affect the way the individual thinks or the sensitivity of the environment. This theory also focuses on knowledge acquirement directly correlated to the observations of models which could be inter-personal imitation or media sources.

2.2.3 Effective Schools Theory

The study was largely based on the Effective Schools Model by Lezotte (2010). According to this model, an effective school is a school that can, measure student achievement terms, demonstrates the joint presence of quality and equity. Based on Lezotte (2010), there are seven correlates of effective schools - strong instructional leadership, clear and focused mission, safe and orderly schools, climate of high expectations for success, frequent monitoring of student progress, positive home-school relations, and opportunity to learn/time on task. According to Lezotte (2010), strong instructional leaders are practical and seek help in building team leadership and a culture helpful to learning and professional growth. In the effective school, the principal and others serve as instructional leaders and effectively and patiently communicate and model the mission of the school to staff, parents, and students.

Having a pure and focused vision and mission means everyone knows where they are heading and why. A pure focus helps in aligning programs and activities for school improvement. To effectively determine a precise focus, school leadership and stakeholders use a collaborative process to target a few school goals and then construct consensus around them. A safe and orderly school is defined as a school climate and culture characterized by reasonable expectations for behavior, unfailing and fair application of rules and regulations, and caring, responsive relationships among adults and students (Lezotte, 2010). Classrooms are warm and attractive, and learning activities are focused, engaging, and significant. Personalized learning environments are produced to increase positive relationships among students and between students and their teachers. Students feel that they belong in the school community, and children are esteemed and honored; their heritage and backgrounds are viewed as "assets," not deficiencies.

2.2.4 Behaviour Modification Model (Reinforcement)

This is a model created for classroom management. The behavioural psychologists believed that learners' behaviour in the classroom can be predisposed by some environmental conditions. According to Usman (2012), behaviour modification model make sure that a follow up of learners by four costs: positive reinforcement, negative reinforcement, type I punishment and type II punishment. Effectual use of this model will amplify or reduce the frequency of learners' behaviour. A suitable behaviour by the teacher exhibited by the student should be compensated (positive reinforcement) which could be done by praise, gift and referencing the student in the classroom while the other side of this act is negative reinforcement. Type I punishment could be functional to an unacceptable behaviour exhibited by the learner. Examples of these are kneeling down and standing with hands raised. Type II punishment is introduced when acceptable behaviour persists by the learner, the teacher withdraws the prize from the student. Example is to stop the class or group leadership. This approach will help to sustain discipline in the classroom and furnish the students behaviours to become a smart citizen with good morals and values.

2.3 Empirical Studies

Empirical studies evaluate the work of other researchers to determine the level of the prevalence problem. There are many researches on the effects of teacher quality variable on academic achievement on senior secondary school students. The relationship between effects of teacher quality variable and student achievement is not easy to interpret because this variable is highly affected by market conditions and/or motivation of women teachers to work during the child-rearing period. Harris and Sass (2009) point to a selection bias that can affect the validity of conclusions regarding the effect of teachers' years of experience: if less effective teachers are more likely to leave the profession, this may give an incorrect appearance that experience raises teacher effectiveness. Selection bias could, however, work in the opposite direction if the more able teachers with enhanced opportunities to earn are those teachers most likely to leave the profession.

Professional development activities can be carried out by many different organizations, in school and out of school, on the job or during vacation. On these occasions, practicing teachers renew their content knowledge and teaching skills so that they can meet the necessities of new curricula, consider new research findings on teaching and learning, and adjust to changes in the needs of the student population, etc.

Anita *et al.* (2013) examined the relationship between teacher characteristics and students' academic achievement. The study was guided by Education Production Function theory (EPF) which connects student academic achievement to teacher characteristics. The study was conducted in Nandi District, Kenya and the target population comprised of teachers of all 26 public secondary schools. The study applied a causal comparative research design. A

questionnaire was used for data collection. The study findings suggest that there was no significant relationship between teacher qualification and student academic achievement.

On the contrary, Umar *et al.* (2013) findings shows that there is significant difference between students' performance on account of their teachers' qualifications. The work examined the effects of teachers' qualifications on performance in further mathematics among secondary school students in Kaduna state. By purposive sampling, 12 senior secondary schools were selected from four inspectorate divisions in the state namely Anchau, Kaduna, Kafanchan and Zaria which participated in this study. In the second stage, random samples of 160 further mathematics students were finally selected across the four divisions. The Analysis of Variance (ANOVA) revealed that significant difference exists between students' performance on account of their teachers' qualifications

Lydia and Migosi (2015), look into the extent to which teacher qualification influenced student's academic performance in SMT subjects. The study applied ex-post factor survey research design. Random sampling was used to select eight secondary schools in Kitui country.it include eight head teachers of SMT subjects and 600 candidates who sat for the Kenya certificate of secondary education (KCSE) in the year 2012. Data were collected using questionnaire and document analysis. It was analysed using Descriptive inferential statistical looks. The study found that there was no significant difference in means between teacher qualification and students performance in SMT subject at form four level.

Henna and Abdullahi (2016) examined the impact of teachers' qualification and experience on students performance in college of education in Kaduna State. Nigeria. Two college of education in Kaduna State were used for the study. A total of twenty (20) teachers and hundred (100) students were randomly selected from the two colleges of education. The data was collected using questionnaire and students test scores. Data was analysed using frequency counts, percentage and t-test. The results revealed that a significant difference existed in the performance of students taught English language by professional and experienced teachers

Ofeimu and Kolawole (2017) investigated teachers' quality as determinant of students' academic performance in secondary schools in Edo South Senatorial District of Nigeria. A correlational research based on survey research design was adopted. The population for this study consisted of 418 Mathematics and English Language teachers in secondary schools in Edo South Senatorial District of Nigeria. Eighty-four (84) Mathematics and English Language teachers in secondary schools were sampled. The results revealed that level of teacher quality in secondary schools in Edo South Senatorial District of Nigeria, Teacher quality and academic qualification had no significant influence on students' academic performance.

Similarly, Etiubon and Benson (2014) investigated on teachers' qualification and experience as determinants of quality chemistry education in Always Ibom state of Nigeria. A survey research design was adopted for the study. The research questions and three hypothesis were formulated to guide the study. Results showed that there was a significant influence of teacher qualification and experience on quality of chemistry education

According to Skelton (2013), a major problem for a current initiative is that they are not based on any research evidence and therefore lack clear direction. Considerable research has

been conducted on the difference between boys and girls and a bit of research has been conducted on the difference between male and female teachers, but the link between the instructors, the qualification and achievement, interest and behavior of their male and female student has only been examined sporadically.

Thomas (2014) carried out a study on effects of teachers" qualification on students" performance in secondary schools in Ikere Local Government Area of Ekiti state, Nigeria. A sample of 300 students was selected from 16 schools. Data were analyzed using mean, standard deviation and t-test. The findings shows a significant difference in the performance of students taught by teachers whose highest qualifications were National Certificate in Education (NCE) and Bachelors of Science degree in Education. The author recommended that NCE teachers should try hard to further their studies while graduate teachers without professional qualification should be encouraged to proceed on Post graduate Diploma in Education to improve teaching in their special area.

Also, Sufiyanu and Elizabeth (2018) examine the effects of teachers' academic qualification and experience on students' achievement and interest in mathematics. The sample was made up of two hundred and twenty (220) senior secondary two students and fifty (10) mathematics teachers from two (2) secondary schools in Jega education zone of Kebbi State. One hundred and ten (110) students and five (5) mathematics teachers were selected from each school, using random sampling technique. The findings from the study revealed that all teachers' academic qualification and experience when taken together made significant effects on students' achievement in mathematics.

2.4 Summary of Related Literature Review

This chapter reviewed Conceptual Framework on the influence of teachers' academic background on students' achievement in mathematics in senior secondary schools which discussed the independent variable and dependent variables. The researcher also pointed out the meaning and scope of teaching profession. The researcher also looked at the concept of Teachers' qualifications. The chapter also discussed the concept of academic achievement, teacher's quality and academic performance, and factors that affect academic performance of students

Theories were used to explain the phenomenon, the teachers related, student related and classroom related theories explain the concept of effects of teachers' quality. Sigmund Freund Psychoanalytic Theory focused on personality. The classroom related theories such as Interaction Model, effective Schools Theory and Behaviors Modification Model, which illustrates' reinforcement skills.

This chapter also discussed some empirical studies related to the topic of the study, although many researchers have worked on influence of teachers' academic background on students' achievement in mathematics in senior secondary schools, there was none in Minna, Niger State. This study therefore, examines the influence of teachers' academic background on students' achievement in mathematics in senior secondary schools in Minna metropolis.

CHAPTER THREE

3.0 RESEA

RESEARCH METHODOLOGY

This section of the study focused on materials and methods used in the study and were achieved through the following headings; Research Design, Sample and Sampling Technique, Population of the Study, Method of Data Collection, Validity of the study, Pilot Study and Method of Data Analysis.

3.1 Research Design

The research design adopted for the study was quasi-experimental research design. The sample for the study was grouped into experimental and control group using pre-test, post and non-equivalent group design. The design is considered appropriate because it establishes a cause effect relationship between the independent and the dependents variables of study (Nekang, 2011). The pretest was administered to find out variance within the two groups and control selection preference, which is a characteristic to internal validity.

3.2 Population of the Study

The population of the study consists of all the senior secondary mathematics students from all the secondary schools in Minna metropolis during the 2020/2021 academic session. The total number of seventy (70) senior secondary mathematics students and thirty (30) teachers was used for this research. The respondents were made up of both male and female from SS 1 - SS 3 of selected secondary schools in Minna metropolis. The target population was the twenty-three (23) co-educational science secondary schools students with population of 7,710 for 2020/2021 academic session in Minna Niger State.

3.3 Sample and Sampling Techniques

The sample constituted seventy (70) senior secondary mathematics students (Male= 45, Female = 25) selected from ten co-educational science schools in Minna metropolis. Purposive sampling technique was used in selecting the four (4) co-educational schools which was used for the study. This is to ensure that both girls and boys were operating under the same classroom teaching-learning conditions. From each of the school selected, one intact class was selected using simple random sampling techniques by balloting without replacement. In each chosen class, all the students were used for the study. Two classes were randomly assigned to treatment group while the other two were randomly assigned to control group.

3.4 Instrument of Data Collection

In order to gather data for this study, two major instruments were used in this study are: Mathematics Teacher's Questionnaire (MTQ) and Mathematics Achievement Test (MAT): The MTQ was developed by the researcher to elicit response for Mathematics Teachers. The questionnaire sought demographic information such as; age, sex, highest educational qualification, area of specialization and length of years in service. MAT was made up of 15 multiple choice questions with four options A, B, C, D selected from Senior Secondary Certificate Examination (SSCE) questions based on the topics treated during the study. The test was administered to 70 students who have similar characteristics with the subjects of this study but did not form part of the study sample. Pre-test was administered before the selected topics were taught for six weeks. The Post-test was then administered at the end of the six weeks. The pre-test and post-test scripts were collected and sorted out according to the category of teacher and marked by the researcher.

3.5 Validity of the Research Instrument

The questionnaires were subjected to content and face validity to ensure its suitability by the project supervisor and some other senior lecturers in Science Education Department FUT Minna and also two computer experts. The experts were asked to examine the test items with the following criteria appropriateness of the question to the students' level of understanding and experimental agreement of the test items with the purpose of the study.

3.6 Pilot Test

A pilot study was conducted using the designed instrument in order to establish its reliability as well as the internal consistency index of the instrument. A total of four (4) randomly selected senior science SS2 students. Cronbach Alpha formula was used to calculate the reliability coefficient of the instrument. This was done to ascertain the questionnaire as reliable and suitable for the study.

3.7 Method of Data Collection

The researcher collected a letter of introduction from the Department of Science Education FUT Minna which was presented to Principals of all the schools to be visited. Thereafter, the researcher was introduced to the students. Thereafter, the students were sampled; pretest was administered to the students in the four (4) schools in order to assess their entry behavior before the commencement of the treatment while, Post-test was administered after the treatment in the selected schools.

3.9 Method of Data Analysis

The data gathered from this study was analysed using Mean, Standard Deviation and formula using Statistical Package for Social Sciences (SPSS Version 20.0). The results of

the analyses obtained were used to provide answers to the research questions and independent chi-square test was used to test the three null hypotheses. Significance level of accepting or rejecting the hypotheses tested was ascertained at 0.05 alpha level.

CHAPTER FOUR

4.0

RESULTS AND DISCUSSION

This chapter gives fact on presentation of data collected and analyzed statistically. This was done in agreement with formulated null hypotheses stated in chapter one and it deals with the discussion of the findings of the research. SPSS 20 was used to collect the average, mean, standard deviation and t-test scores of the experimental and control group.

4.1 Results

Gender	Frequency	Percentage (%)
Male	16	53.33
Female	14	46.67
Total	30	100
Male	45	64.29
Female	25	35.71
Total	70	100
	Gender Male Female Total Male Female Total	GenderFrequencyMale16Female14Total30Male45Female25Total70

Table 4.1: Gender of Respondents

4.1.1 Gender of Respondents

Table 4.1 shows the frequency of the respondents' gender. As observed from the result, majority of the teachers were males (16) which represents 53.33% of the teacher's population, while (14) 46.67% were females' teachers. Similarly, majority of the students used in this study were males (45) which represent 64.29% of the students. On the other hand, females students constitute the minority 25, representing 35.71% of the student study population. This shows that the study population had more males than females.

4.1.2 Years of Experience



Figure 4.1: Teachers Years of Experience

The years of experience of the teachers is presented in Figure 4.1. The result indicates that majority of the teachers respondents 11(36.67%) had 11-15 years of teaching experience, this was followed by 8(26.67%) having 6-10 years of teaching experience. More also, 6(20.00%) of the respondent had 16-20 years of teaching experience, 3(10.00%) had 1-5 years teaching experience, while only 2(6.67%) of the teachers had above 21 years of teaching experience. This result shows that a large number of the respondents had generally above 10 years of teaching experience, this shows that the teachers used in this study had a good years of teaching experience.



4.1.3 Educational Background of Teachers

Figure 4.2: Respondents Year of Study

Figure 4.2 shows the year of study of the respondents. The results revealed that majority of the teachers 14(46.67%) are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder, this is followed by 10(33.33%) of the teachers who had only Nigeria Certificate in Education (NCE), while only 6(20.00%) of the teachers are Bachelor of Education (B.Ed) degree holders.

N	Mean	SD
1	Witcuii	50
45	14.21	2.56
25	14.25	3.01
70		
	N 45 25 70	N Mean 45 14.21 25 14.25 70 V

 Table 4.2 Mean Achievement scores of Students.

4.1.4 What is the level of students' academic achievements in mathematics in senior secondary schools in Minna metropolis?

Table 4.2 shows the mean achievement test score of students' in mathematics in senior secondary schools in Minna metropolis. The result shows that the female students had the highest mean achievement score of 14.25. Close to this was mean achievement score of 14.21 recorded among the male students.

 Table 4.3: Influence of Teachers Academic Background on Students Academic

 Achievement in Mathematics

Teachers Qualification	Number of Students Taught (N)	Mean Performance of Students	Standard Derivation (SD)	Level of Influence
NCE	25	15.18	2.68	1 st
BSc/BTech	35	14.24	2.78	2 nd
B.Ed	10	13.67	2.83	3 rd
Total	70			

4.1.5 Does teachers' academic background influences students' academic achievement in senior secondary schools in Minna metropolis?

Table 4.3 shows the influence of teachers' educational background on students' academic achievement in mathematics. The influence of educational background of teacher on students' achievement when rated showed that NCE teacher with students' mean score of

15.18 had the highest influence on students" achievement. BSc/BTech with students" mean score of 14.24 had the second highest influence on students" achievement. While B.Ed teachers whose students" mean score was 13.67 had the third highest influence on students" academic achievement. The result implies that teacher educational background influence student's academic achievement.

 Table 4.4: Teacher educational background and students' academic performance chi

 square tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.085 ^a	4	0.256
Likelihood Ratio	5.678	4	0.281
N of Valid Cases	30		

4.1.6 Test of Hypotheses

In order to carry out the research effectively, this research tested the null hypotheses "There is no significant difference of Teachers academic background on students' academic performance in mathematics in Minna metropolis" and the result is presented in Table 4.4. The results suggest that; at (4, N=30) = 5.085, p= 0.256) teacher qualification and student academic achievement is not statistically significant. The null hypothesis was therefore accepted. The results show that teacher qualification does not influence student's academic achievement.

Major Findings

At the end of this study, the following findings were made:

- The results revealed that majority of the teachers in senior secondary schools in Minna metropolis are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder.
- ii. The influence of academic background of teacher on students" achievement when rated showed that NCE teacher with students" mean score of 15.18 had the highest influence on students" achievement.
- iii. Teacher qualification does not significantly influence student's academic achievement.

4.2 Discussion

This study investigated the influence of teacher academic background and students' academic achievement in secondary schools. The findings reveal that majority of the teachers in senior secondary schools in Minna metropolis are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder. This shows that the level of teacher quality in secondary schools in Minna metropolis was high. It indicates a very high level of quality manpower in secondary schools in Minna metropolis. This result is in line with the findings of Ofeimu and Kolawole (2017) who reported that majority of the sampled teachers in secondary schools in Edo South Senatorial District of Nigeria had B.Sc degree and above. The reason for this could be as a result of the minimum qualification benchmark by the Federal Government of Nigeria that NCE should be the minimum requirement for teaching even at the primary school level. Hence, every teacher would strive to upgrade in order to remain on the job.

Although findings from this study shows that teacher qualification influences academic performance of students, it was however not significant. This is consistent with the findings of Ofeimu and Kolawole (2017) who reported that teacher educational qualification does not significantly influences academic performance of students. The result supports that of Muhammad, Rashida, Riffat and Fayyaz (2011) who found out that there was no much difference in the quality of teachers of schools with higher academic achievement and that of the schools with lower academic achievement. However, Daso (2013) in a study had found out that there was a significant relationship between teachers' method of teaching, teachers' attitude and students' achievement in mathematics. Furthermore, Adedoyin (2011) in another related study found that teachers' training had significant relationship on students' academic performance in Mathematics. Though teacher quality is an essential component for the quality development of secondary schools, this result found out that it did not significantly influence the academic performance of students. The reason could be attributed to the level of commitment of the teachers to their teaching task in schools. It could also be that students do not depend solely on the teaching in the school but engage in extra classes to enhance their academic quality and performance.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study examined the influence of teachers' academic background on students' achievement in mathematics in senior secondary schools in Minna metropolis. In order to achieve this aim, four research questions were made in the study and a null hypothesis was formulated and tested in an attempt to find answer to the research questions. The study was limited to four secondary schools in Minna metropolis. This study adopted a quasi-experimental design with sample size of thirty (30 teachers and seventy (70) students in senior secondary schools in Minna metropolis. The instruments for data collection in this study is Mathematics Achievement Test (MAT) with comprise of 20- item multiple choice questions, it was used as pretest and posttest after treatment by the groups of teachers.

The result of revealed that majority of the teachers in senior secondary schools in Minna metropolis are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder. The influence of academic qualification of teacher on students'' achievement when rated showed that NCE teacher with students'' mean score of 15.18 had the highest influence on students'' achievement. However, statistical analysis shows that, teacher qualification does not significantly influence student's academic achievement.

5.2 Conclusions

The findings of this study revealed that majority of the teachers in senior secondary schools in Minna metropolis are either Bachelor of Science (BSc) or Bachelor of Technology (BTech) degree holder. It was also observed that there is mean difference in teacher academic quality on students' academic achievement in Mathematics in favor of NCE teachers as students taught by NCE teachers had the highest mean achievement score. The result of the statistical analysis shows that; teacher academic background does not significantly influence student's academic achievement. Though teacher quality is an essential component for the quality development of secondary schools, this result found out that it did not significantly influence the academic performance of students.

5.3 **Recommendations**

Based on the findings observed in the study, the following recommendations are mad by the researcher;

- i. School head should ensure that the potentials of the teachers are well harnessed and utilized to reflect the true picture of their quality in the academic performance of students.
- ii. Government through the inspectorate division must routinely visit schools to ensure that teachers are doing their primary assignment.
- School counselor should utilize guidance services and counseling techniques in promoting effective positive study habit
- iv. Students must ensure they continue to be hard working to improve on their performance in the school in order to secure a bright future for themselves.
- v. Teachers have to wake up to their responsibilities and be dedicated to their duty in the classroom because poor performance of students will always be attributed to their failure in their assigned task.

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APPENDIX

TEACHERS QUESTIONNAIRE

DEPARTMENT OF SCIENCE EDUCATION FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE

QUESTIONNAIRE ON: Influence of Teachers' Academic Background on Students' Achievement in Mathematics in Senior Secondary Schools in Minna Metropolis.

Dear Respondent,

You have been randomly chosen as a respondent in the above titled survey which is being undertaken as part of an educational research in partial fulfillment of the Bachelor of Technology Degree in Science Education of FUT Minna. Your cooperation in filling this questionnaire will ensure success of the study. Please feel free to indicate your choice by putting a tick in the checkbox before the answer you feel most appropriate. The responses will be for academic purposes only and will be treated with utmost confidentiality.

Thank You Sir/ Ma

Please provide information regarding yourself by ticking the appropriate boxes

(1) Gender	Male () Fema	le ()		
(2) Age	(a) 15-20 (), (b) 21-30 (), (c) 31-40 (), (d) 4	1 Above ()	
(3) Years of 3	Experience (a) 1-5 years () (b) 6-10 years ()	(c) 11-15 years () (d)
16-20 years (e	e) 21 years & above ()			

(4) Educational qualification (a) NCE () (b) BSc/BTech () (c) B.Ed () (d) MSc (

) (e) PGDE () (f) PDE () (g) PhD ()

- Nigeria Certificate in Education (NCE)
- Bachelor of Science (BSc)
- Bachelor of Technology (BTech)
- Bachelor of Education (B.Ed)
- Master of Science (MSc)
- Postgraduate Certificate in Education (PGDE)
- Professional Diploma in Education (PDE)
- Bachelor of Education (B.Ed)
- Doctorate Degree (PhD)