CHALLENGES MILLITATING AGAINST EFFECTIVE TEACHING AND LEARNING OF MATHEMATICS IN GOVERNMENT JUNIOR SECONDARY SCHOOL IN CHANCHAGA LOCAL GOVERNMENT AREA OF NIGER STATE

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ABSTRACT

The study was undertaken to investigate challenges militating against effective teaching and learning of mathematics in Chanchaga local government area of Niger state using some selected public and private junior secondary schools within Chanchaga local government area of Niger state. Four research questions were raised to guide the study. The study adopted descriptive survey research approach. The population of the study comprised of 23279 junior secondary students and 107 junior secondary school Mathematics teachers. 100 students and 15 Mathematics teachers were randomly selected and used as sample for the study. The instrument that was used for the study was a set of 18 structured questions for students on a questionnaire while 19 structured question on a questionnaire for teachers which were validated by the supervisor and one other expert. Three hypothesis were formulated and tested which shows, there is significant difference between teachers with bachelor in Mathematics education and those with N.C.E. The copies of the questionnaires were administered personally by the researcher and with the help of research assistants, the questionnaire were collected and analyzed using simple percentage, frequency count, mean and standard deviation. The findings revealed that numerous problems such as students' attitudes towards learning Mathematics, societal and governmental factors and parent social economic status contributes to the ineffective teaching and learning of Mathematics. The researcher recommended that more qualified teachers should be employed in other to decongest the classroom, students should also be encouraged to learn Mathematics and more instructional aids and media should be provided to schools in other to effect teaching and learning of Mathematics in junior secondary schools.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Mathematics is related to so many other professions and sciences, it has traditionally received considerable emphasis in education. Furthermore, student achievement in mathematics has been a hot topic and is considered as a vital worldwide concern in many countries. Mathematics challenges have been linked to a lack of regulatory skills among students in learning mathematics, in addition to being considered as a difficult topic. Self-regulation is a comprehensive concept that encompasses the stages of learning before, during, and after. Learning self-regulation is linked to 21st-century learning competency (Virtanen, et al., 2021) As a result, students who lack self-control will find it difficult to overcome the obstacles or problems they confront while learning. Students are affected greatly by quick changes in the educational system and delivery method. This condition necessitates students learning more effectively and independently (Thornton, 2016). To accomplish this, students must be taught how to improve their ability to select the most appropriate learning technique. (Gilar-Corbi et al., 2018). Failure to do so will have an impact on students' motivation to learn and may eventually cause them to lose interest in learning. Motivation is an inducer and propeller for completing a task successfully, and it is a critical component of the learning process. As a result, motivation is required for an individual to successfully face academic obstacles. Furthermore, students will use motivation as an attribution or determinant of their learning and performance behavior.Academic motivational behaviors such as the desire to complete tough work and stay longer in challenging settings will determine students' ability to face everyday school life problems (Kumavat, S. D. 2017).

The current study was undertaken to investigate the daily problems faced by students in the process of learning mathematics, based on the above-mentioned claims. Students may face

obstacles and problems as a result of these challenges. This is significant because of the existing state of mathematics education, the delivery system, and the variables that have the ability to stymie students' mathematical learning development, as described previously.In terms of the role that individuals are expected to play in the current national building process, the content and philosophy of Nigerian education must reflect the past, present, and drive into the future of Nigerian society. Education is the greatest gift a parent can provide to their child; it is the source of human capital. It is the center of life and the truth of existence. Every human being relies on education to live in a truthful, peaceful, and wise manner. Non-governmental organizations, communities, and individuals, as well as government parastatals, have all actively participated in bringing education to the country.Education is a tool for national development since it encourages individual worth and growth so that they can be self-reliant, just, and contribute to the creation of an egalitarian society (Federal Republic of Nigeria [FRN] 2004).

“A teacher achieves this concentration by commencing the class in an officious manner with respect to arousing the interest of students and maintaining it via skillful instructional management,”

Obodo (2014) said of effective mathematics teaching and learning. In most circumstances, teachers fail to notice this effective instructional management, with the clear result that the more the teacher teaches, the more perplexed the student becomes, and the deeper the student's confusion becomes.the dislike and terror of the subject”

Mathematics is all-encompassing and all-pervasive. Mathematics has been employed as a tool in practically every aspect of human effort, including trade, farming, and environmental control. Mathematics has also proven valuable in fields such as medical, engineering, administration, and aviation, to name a few. This was a time when individuals felt completely lost without even a basic understanding of arithmetic.

Mathematics necessitates a high level of concentration and practice. Learners acquire interest and motivation when they participate in these activities, which are well focused, which they enjoy and concentrate on, no matter how complicated and involving the activities may be. Despite the Nigerian government's efforts to emphasize the importance of mathematics study in schools by making it obligatory for all students, as well as the work of the Mathematics Association of Nigeria (MAN) to enhance mathematics, students continue to do poorly in this subject.The National Policy on Instruction (NPE) of 1981 included mathematics education in the Nigerian School Curriculum as a tool for achieving national development. This was the basis for its inclusion in Nigeria's basic curriculum at various levels of schooling. There are issues and opportunities in mathematics education curriculum development agencies like the Nigerian Educational Research and Development Council (NERDC) and experts identified and distributed the subject's curriculum goals or purposes in the school curriculum. Citizenship education, reflective inquiry, and mathematics education are among them.

Mathematics is a pure discipline that necessitates mental work in the form of calculation in order to learn about the world. It is one of the basic subjects recommended in the national education policy for both primary and secondary school students. This emphasizes the importance of mathematics, which is a subject that every member of society should be familiar with due to its utility in day-to-day operations. Based on a mathematics conference conducted in Kaduna in 1998, the following objectives were identified:-

(1) To assist students in developing a belief in the worth of mathematics and its utility to them.

(2) To instill faith in their own mathematical abilities.

(3) To promote a sense of personal accomplishment as well as a long-term and creative interest in mathematics.

(4) To improve students' skills, concepts, comprehension, and attitude so that they can deal confidentially with everyday mathematics.

(5) Develop a range of techniques to solving mathematical problems, as well as the capacity to think and reason logically.

(6) To help students develop the mathematical and statistical literacy required in today's technologically advanced and information-rich society.

(7)To lay a foundation for students who want to pursue further studies in mathematics or other subjects where mathematical principles are important.

(8)Finally, to encourage and nurture mathematical talent in students, as well as to instill or develop the ability to think creatively, analytically, strategically, and rationally in students.

The achievement of these objectives in junior secondary school will serve as a foundation or preparatory knowledge, particularly for those planning to study engineering, medicine, agriculture, science, and technology in higher education institutions, as well as in dealing with other science subjects such as physics and chemistry in senior secondary school, which is why mathematics is made compulsory for all students.

Mathematics is a science of number and shape, according to the Oxford Advanced Learner's Dictionary (2000), and its primary divisions include geometry, arithmetic, algebra, and trigonometry. Mathematics is a science that deals with structures and process of counting, measuring, and describing the shapes of items has grown into a system of order and relations.

Since the introduction of mathematics into the curriculum with adequate study, numerous issues have arisen, such as the use of unqualified teachers in the teaching of mathematics in our various schools, who lack knowledge of the topic or are not mathematically oriented. Because teachers do not adopt a motivational approach, students have nonchallant attitudes about mathematics and learning in general. The failure of mathematics teaching and learning has been attributed to a poor environment and a lack of infrastructure facilities.The failure of effective teaching and learning of Mathematics has been attributed to a total failure in the use of instructional materials due to instructors' lack of awareness of instructional aids. As a result,

we must embark on this investigation in order to uncover a feasible solution to the numerous issues. As a result, teaching and understanding mathematics in junior secondary school is unquestionably important, as it is seen as a yardstick in any nation's development..

1.2 Statement of the Problem

According to Modebelu (2014), students have showed a significant rate of mass failure in mathematics over the years. He went on to suggest that the problem of mass failure could be traced to the quality of teaching in schools, and that unless there is an improvement in the teaching of mathematics and learning in schools, the examination bodies will be powerless to save the already dire situation. The government, parents, policymakers, mathematics educators, mathematicians, and other professional organizations are all concerned about what could be causing this barrier to successful mathematics teaching and learning. This researcher is concerned about this bad trend, so he inquired, "What are the elements militating against efficient mathematics teaching and learning in Government Junior Secondary Schools?" Education's ultimate goal is to offer information to the rest of the world. In order to accomplish this, knowledge has been separated into a system of studies known as topics, with mathematics serving as one of the system's components. In impoverished countries such as Nigeria, education can be tedious and tough. Students are more likely to attend schools that are badly built and equipped, such as those with no windows or doors, no seats for students to study but a cracked and muddy floor, and so on. Teaching and learning might sometimes take place under the trees with a very poor chalkboard, causing students to struggle to see what is written on the board clearly. In the teaching and learning of mathematics, teachers often overlook the use of instructional resources. They use the chalk-and-talk method of instruction, which leaves students with little or no comprehension. The researchers were motivated by the foregoing to investigate challenges militating against effective mathematics teaching and learning in government junior secondary schools in Niger State's Chanchaga Local Government Area

1.3 Aim of the Study

The main aim of this study are to assess the challenges militating against the effective teaching and learning of mathematics in our Government Junior Secondary Schools, these include the following:

(1) To determines the teachers qualification as a challenges militating teaching and learning of mathematics.

(2) To determines students attitude towards learning of mathematics as a challenges militating teaching and learning of mathematics

(3) To determines availability of instructional material as a challenges in teaching and learning of mathematics

(4) To determines status school learning environment as a challenges militating teaching and learning of mathematics

1.4 Research Questions

(1) What are the qualification status of mathematics teachers in Government junior secondary schools?

(2) What are the attitudes of students towards learning of mathematics?

(3) How available are the instructional material in teaching and learning of mathematics in the Government junior secondary schools?

(4) Is the school learning environment a challenge affecting teaching and learning of mathematics?

1.5 Scope of the Study

The study focused on the challenges militating against effective teaching and learning of Mathematics in Government junior secondary schools in chanchaga local government. The study will cover the Effect of teaching and learning of Mathematics in the Government schools.

The study will be delimited to five junior secondary school within the Chanchaga local Government Area

1.6 Significance of the Study

Students, teachers, curriculum planners, and the general public will benefit greatly from this research study in the following ways: The outcomes of this study will assist students who are directly affected in appreciating the subject of mathematics, as well as encourage them to put more effort into studying because it is unavoidable. This research project will highlight the importance of mathematics, its wonders, and the joy and satisfaction it brings to students, as well as demonstrating that mathematics is a simple topic, in order to dispel any negative feelings, attitudes, or fears students may have about the subject. This study will reveal areas where teachers should focus their efforts in the classroom when teaching mathematics.It will also assist teachers in utilizing better teaching approaches and methods to ensure that students understand what they are being taught. The findings of the study will be extremely useful to future and current curriculum planners. It will enlighten and broaden their knowledge in order to create an effective curriculum that is better understood by the teacher who will execute it in order to achieve its goals. This research study serves as a wake-up call to the general public, emphasizing the relevance of mathematics and its practical applications in everyday life, as well as mathematics' critical role in nation-building.

1.7 Operational Definition of Terms

Mathematics: is a discipline of science that is concerned with the identification of numbers.

Effective teaching: is the process of the instructor passing on his or her knowledge and skills to the student. It includes all actions related to teaching or instructing. It can also be an act or an experience that has a formative effect on an individual's mind, character, or physical ability.

Learning: is the process of acquiring new knowledge, behaviors, skills, values, or preferences, as well as modifying and reinforcing existing knowledge, behaviors, skills, values, or preferences. It may also involve synthesizing different types of information.

Learning Environment: A learning environment is a virtual or physical location where students learn. The majority of learning settings are constructivist in nature. Schools, colleges, and universities are examples of good learning environments. It also includes instructional resources such as chairs, tables, laboratories, and classrooms, among other things

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This researcher is reviewing previous research that has been done that the challenges militating against effective teaching and learning of mathematics. After reviewing these various studies, this researcher has been able to use them as factors in discovering the extent to which challenges militating against effective teaching and learning of mathematics.

2.1.1 Conceptual framework

2.1.2 Meaning and Concept of Mathematics

The components of effective mathematics teaching is a lack of adequately trained and certified subject instructors, particularly mathematics teachers. It is common knowledge that one cannot effectively teach what one does not understand. Mathematics is a core subject in Nigeria, according to eminent scholars and educationists, and subject teachers in general should have a good certificate in the field of study they want to teach, such as a degree or NCE qualification. According to Gilbert et al. (2014), most teachers lack the essential expertise and skills to construct appropriate assessment instruments for evaluating behavioural outcomes in their domains. Kiwanuka, et al., (2017) noted that no one can do their work properly until they understand all of the procedures involved. According to Igwe (2019), some teachers do not have appropriate cognitive expertise of their subject area. As a result, they are all equipped to guide students in the appropriate direction.That teacher should be retrained in a university or institution of education. This demonstrates the need of high-quality training for our mathematics teachers who wish to be experts in their field. This can be accomplished by holding regular workshops and seminars to keep serving teachers' knowledge and abilities up to date. According to (James, et al., 2010), most students enter mathematics class with little or no understanding of what they are supposed to do, such as plot a graph or create a triangle.

According to V. Karimova and J. Salimov (2018).“Learning is the human action that requires the least manipulation by others,” which suggests that everyone has the ability to learn, but only an expert has the ability to master it (a qualified teacher has to manipulate the endowment, otherwise it becomes disused). Mathematics is taught and learned in a variety of ways. According to the National Education Policy.

The following should be the goals and objectives of government junior secondary education:

(1) To give students the mathematical foundation they'll need for their future studies.

(2) To elicit and foster creativity.

(3) To improve one's capacity to recognize and solve problems using related mathematical knowledge

(4) To cultivate accurate, logical, and abstract reasoning

(5) To improve their computational abilities

(6) To pique students' interest in mathematics while also providing a solid basis for everyday life.

(7) To cultivate a desire and aptitude to be precise to the extent that it is relevant to the task at hand.

From the aforementioned mathematical aims, it is clear that the entire world race is reliant on mathematics expertise to attain its goals and ambitions. But, given the high rate of failure among junior secondary school students in the JSCE, how can this goal be met? The

researcher's goal in this study is to understand about the obstacles to effective mathematics teaching and learning in junior secondary schools.

2.1.3 The Concept of Teaching Mathematics

According to James (2017), mathematics is not just the language of science, but it is also the necessary nourishment for thought, logic, reasoning, and thus progress. It is a well-organized, systematic, and precise discipline of science. The science of quantity and space is known as mathematics. He goes on to say, "It is a systematized, ordered, and precise field of knowledge." The notion of take home assignment fulfills numerous educational purposes in the field of take home assignment. It promotes study habits, reduces the amount of curricular information that can be addressed in class, and supplements and reinforces work done in school. It also encourages student initiative, freedom, and responsibility, as well as closing the gap between home and school. Mathematics is a tough topic to teach for many students. Many abstract notions are frequent in mathematics curriculum, and they are essential for further learning in both mathematics and other sciences. K. S. Taber, K. S. Taber, K. S. Taber (2019). Furthermore, teaching mathematics is an activity aimed at promoting meaningful learning through a morally and pedagogically acceptable way (Jazim, et al., 2010). It entails a teacher, a learner, content in the form of knowledge, facts, information, and a skill to be impacted, as well as a deliberate intention on the part of the teacher to teach for learning and on the part of the learners, and finally a method that respects the learner's cognitive integrity and freedom of choice (Ginja, T. G., & Chen, X. 2020). That is to say, in an educational setting, teaching is impossible to envisage without a teacher, a student, and content, as well as learning.Furthermore, the subject of mathematics should not be imposed; otherwise, the requirement of learners' willingness and voluntariness would be broken (Msipha, Z. 2020). Similarly, the learner must be given the freedom to ask mathematics-related questions and

clarify problematic areas, or else his right to autonomous judgment will be invaded, and the entire process will become an indoctrination process rather than a teaching one (Woodman, D., 2019). Despite the widespread belief that teaching is mostly learnt through experience, our thesis is based on the perception of teaching mathematics as unnatural activity (Wilson, et al., 2019). The idea that mathematics instruction is inherently difficult to absorb due to the prevalence of teaching activities. G. J. Hwang, D. Zou, and J. Lin (2020). Parents teach their children, friends and coworkers demonstrate skills, and a variety of specialists supply information, demonstrations, and advice. According to Parvez et al. (2019), Teaching mathematics is a means of assisting individuals in learning the necessary nutrient for thought, logic, and reasoning. Professional classroom teaching, on the other hand, is a specialized field different from casual, everyday demonstrating, explaining, or assisting. Parvez, et al., (2019) By "teaching mathematics" we mean the core tasks that teachers must execute to help students learn mathematics. These include activities carried on both inside and beyond the classroom, such as leading a discussion of solutions to a mathematics problem, probing students' answers related to mathematics, The work of teaching includes broad cultural competence and relational sensitivity, communication skills, and the combination of rigor and imagination fundamental to effective practice (John, 2014). Skilful teaching requires appropriately using and integrating specific moves and activities in particular cases and contexts, based on knowledge and understanding of one's students and on the application of professional judgment. This integration also depends on opportunities to practice and to measure one's performance against exemplars. Performing these activities effectively is intricate work. Professional training should be designed to help teachers learn to enact these tasks skilfully. Such training would involve seeing examples of each task, learning to dissect and analyze the work, watching the way teacher solve mathematics, and then practicing under close supervision of the mathematics teacher and with detailed coaching aimed at fostering improvement (Hébert, C. 2019)

Effective teaching necessitates a thorough knowledge and understanding of the subject being taught by the student teacher, as well as a thorough awareness of the curriculum. Students are taught by exposing them to knowledge, skills, and practical experience as a foundation for professional learning. A partnership between academics and practitioners in the field is required while training a teacher. Observing and copying others helps people learn how to teach. They gain knowledge via thought and experience (Stuart, et al., 2017). Teachers learn by doing, gaining knowledge, and reflecting on their experiences (Elliot, 2013; Tailor et al, 2017). Student instructors can learn more about teaching by conducting their own study and practicing the facts, which is made easier by the teaching practice activity. If teacher candidates are given the opportunity to practice peer teaching and are required to build their own teaching aids, they have the potential to become good and empowered instructors (Kagoda, 2011).

2.1.4 CONCEPT OF STUDENTS' LEARNING

Students

T. Curristine (2006) argued that governments have a responsibility to invest in high-quality educational spaces because they play an important role in increasing access and equity in education, improving educational effectiveness, and promoting the acquisition of key competencies, as well as optimizing building performance and operation. This report will, once again, cite minimal empirical research.

Engagement in learning

Poor environments are linked to detrimental outcomes for students and teachers, according to a large body of evidence (Blackmore, et al., 2011). Student involvement improved in modern, well-designed facilities, according to Reed et al. (2008). According to Blanchette, et al., (2004) research, students' perceptions of classroom structures are important for their motivation, especially if current class work is important for future success, which included how the curriculum was reshaped in new buildings of the few studies of outside school spaces. Black's

studies (a,b,c) of the city as a classroom were a learning experience that transformed education into a public activity with a positive sense of engagement outside of the classroom.

Quality Learning

Collaborative learning experiences

There is a substantial corpus of study on the benefits of well-designed physical locations for cooperation. Several research support the importance of libraries in collaborative learning (Blackmore, et al., 2011). The essence of what was important in terms of design, according to Wolff's (2002) systematic analysis of how physical environments support and encourage collaborative, project-based learning, was extremely difficult to determine, concluding that the interrelationship among the design elements was significant.According to Dzemidzic Kristiansen et al., (2019), grouping students does not always lead to cooperative learning unless there is a shared and common goal that promotes positive interdependence, face-to-face interaction, individual responsibility, social skills, and group processing with a clear pedagogical focus. He quotes a research by Slavin that found that 63 percent of cooperative learning groups improved their success levels. This has ramifications for class size, group size, space, personalisation, comfort, safety, and classroom furnishings, among other things.Students enter any course with a set of beliefs about the nature of learning and what they hope to accomplish (Anders, P. L., & Evans, K. S. 2019) These convictions are based on their previous educational and learning experiences, as well as their current goals and motivations. Understanding how students learn can aid teachers in developing effective teaching tactics. This necessitates the dissemination of learning process research (Salloum, et al., 2019). Students must be helped at the right level to facilitate the growth of their ideas of knowledge.This necessitates the dissemination of learning process research (Salloum, et al., 2019). Students must be helped at the right level to facilitate the growth of their ideas of

knowledge. An exercise that presents a variety of different interpretations will be confusing and useless to a learner who believes there is only one correct answer.

(a) Overload of Students' Working Memory Space

The capacity of working memory is restricted (Bates, et al., 2019). This restricted shared space serves as a link between what has to be kept in conscious memory and the processing activities required to handle, convert, manipulate, and prepare it for long-term memory storage. When students are presented with too much information to handle in a restricted working space, they struggle to distinguish the significant information from the less important information. The latter has been referred to as "noise," with the learner having trouble distinguishing between the signal and the noise (Sirhan, G. 2007).When confronted with fresh and frequently conceptually complex material, the Mathematics student must learn to organize his or her thoughts so that the working area does not become overburdened. Without the organizational structures that an experienced instructor can provide, students are forced to rely on rote learning, which does not ensure comprehension. Sirhan, G. (2007) argues that in order to solve this type of problem, teachers must look more closely at what is known about human learning as well as the nature of the discipline of Mathematics and its intellectual structure in order to harmonize them.The ability to generate solutions to deal with information overload is strongly reliant on the long-term memory's conceptual framework. Although working space cannot be increased, it can be better utilized. This, however, requires a recognizable conceptual framework that allows students to draw on existing material or systematize new material. The concept of "chunking" was proposed by Mathy (2018). (the ability to use some strategy to bring together several items into one meaningful unit, thus reducing working space demands).Working memory space and the concept of chunking have been linked to conceptual understanding difficulties, and the usage of summary frameworks has been discussed, while

Hinkle discusses strategies to remove unneeded excess information ("noise") (Hinkle, et al., 2020) Later, we'll talk about some practical strategies to avoid information overload.

(b) Language and Communication

Another factor contributing to information overload has been identified as language (Johnstone, 2000). Unfamiliar or deceptive jargon, familiar vocabulary that changes meaning as it gets into Mathematics, the use of high-sounding language, and the usage of double or triple negatives are all examples of language issues (Cassels & Johnstone, 2001). The work done to assess working memory space using the students' second language is an interesting example of the effect of language on working memory space overload. They discovered that when a student was using a second language, the amount of useable working memory space decreased by around one unit. It was claimed that this unit had been “used.”to deal with the language translation (Johnstone & Selepeng, 2001). Students' difficulties with Mathematics, according to Niss, M., and Hjgaard, T. (2019) in the United States, may not be related to the subject matter itself, but to the way of talking about it. Badreddine, D. M. N. (2019) investigated the vocabulary skills of secondary school students in Australia. He made word lists to demonstrate which non-technical words pupils couldn't understand at different stages. He also looked at the words and phrases that connect sentences and give them logical consistency (development of logical arguments are impossible without these logical connectives).Many words used often by Science professors were just inaccessible to their students, he discovered. Similar investigations were carried out in Scotland, and they were expanded into higher education. The non-technical words associated with Science were a source of misunderstanding for students and students, according to a study by Semeon, N., and Mutekwe, E. (2021). Learning, according to White (1999), entails the interplay of information received through the learner's sensory system with knowledge previously stored in his or her long-term memory. This enables the learner to recognize, organize, and make sense of the

incoming data.The organizational process is hampered by unfamiliar or incomprehensible terms and phrases. White also stated that cognitive processes might be thought of as including the interaction of two types of memory: working and long-term memory. Language has an impact on the critical thinking processes required to complete any assignment. Cassels and Johnstone make the following observations, which support this (2000). They pointed out that memory span is governed not by the amount of words spoken, but by the grammatical structures (e.g., embedded clauses) that can load the memory.They emphasize that the meaning of the sentence is the most significant component, and that sentences with a negative demand greater working memory capacity than otherwise equivalent sentences without the negative. The entire field of linguistics, including the use of representational symbolisms, necessitates careful consideration. Previous research has proven the problem's reality and character. Language can facilitate or obstruct interactions with long-term memory, and it can also be a source of significant information overload. This may imply that the learner should have more opportunities to speak and discuss ideas as they are taught.This would give opportunities for misunderstandings and confusions to become more apparent, allowing the learner to adjust thinking and clarify ideas.

(c) Concept Formation

Mathematics learning requires much intellectual thought and discernment because the content is replete with many abstract concepts. Unless these fundamentals are understood Therefore, inquiring into students' conceptions of the fundamental concepts in Mathematics has been a research focus of several researchers in many countries for the last two decades Real understanding requires not only the grasp of key concepts but also the establishment of meaningful links to bring the concepts into a coherent whole. Haney, et al.,(2018) has laid the basis for understanding how meaningful learning can occur in terms of the importance of being able to link new knowledge on to the network of concepts, which already exist in the learner's

mind. Concepts develop as new ideas are linked together and the learner does not always correctly make such links. This may well lead to misconceptions. Conceptions or pieces of intellectual thought either reinforce each other or act as barrier for further learning. To overcome obstacles in learning, student conception researchers have been focusing on identifying and assessing students' "misconceptions" (Helm, 1998),

that student' difficulties in learning mathematics may be due to the teachers' lack of knowledge regarding students' prior understanding of concepts makes a salutary point when he notes that, 'We can teach - and teach well - without having the students learn" Alternative conceptions may not be just students' fault. Chemical knowledge structures, for example, in "combustion," "physical and chemical change," and "dissolving and solutions" by their very nature lead to indicated that students had little conceptual understanding of functional groups and their role. This caused difficulties with, for example, esterification, condensation, and hydrolysis. Kempa and Nicholls (2003) found that problem-solving ability, above the algorithm level, depends on the strength of concept interlinking in a student's mind. They also found that a student's ability was dependent on context, such that individual students can do well in some areas and badly in others. Bodner (2001) has listed several factors that may lead to misconceptions in the minds of learners. He notes the problems of rote learning where students possess knowledge without understanding. When the teacher first introduces an idea, the learner may already possess previous experience (derived from the world around, including the media), which leads to confusion. In addition, there is also the problem where the scientific language remains constant while the meanings of the terms change until they become misleading.

2.1.4 REDUCING OBSTACLES TO TEACHING AND LEARNING MATHEMATICS

It is, of course, the aim of Mathematics teachers at all levels to make the subject accessible in such a way that maximum meaningful learning can take place. Salvaratnam (2003) has listed a

number of important aspects to aid such learning. These are consistent with two broad principles:

(1) The need to avoid working memory space overload;

(2) The importance of taking into account concepts already held.

These two fundamental ideas are explored now in some detail:

(a) Working Memory Space Overload

The problems associated with limitations in working memory space have already been outlined. The importance of these limitations cannot be underestimated. The working memory space not only has to hold incoming information, it also has to draw information from long-term memory and process information to make sense of it. The potential for overload is, therefore, considerable. One of the greatest difficulties in avoiding working space overload lies in the fact that the learner does not yet have the experience (such as the development of "schema, tricks, techniques and previous knowledge" which may be called "strategies") to be able to reduce the working space overload (Johnstone& El-Banna, 2000). Unfortunately, the acquisition of such strategies (e.g.Christiansen, M. H. 2019) is a highly personal process. Therefore, it is not easy to teach the learner how to chunk although it is possible to present information in such a way that the learner can more easily develop personal chunking skills.

According to Matusovwe, (2020) chunk the world that is we combine our sensations into a small number of patterns. Therefore, chunking is a function of knowledge. The size and number of chunks perceived in a situation is one of the big differences between the knowledgeable person (e.g. expert, teacher, adult) and the novice (e.g. beginner, student, and child). The knowledgeable person can collect the phenomena or events into a smaller number of meaningful units. The teacher already has such strategies but no students can necessarily apply these. It is important, therefore, to minimize working space demands and to provide several routes to meaningful learning, allowing the learner to seek to develop their own strategies,

which might enable them to reduce the overload. Antonini Philippe, (2020) has pointed out that "The teacher's working memory is already organized, but this is not the case for the learner. Each learner has to analyze the information coming in and organize it for himself, or be helped to organize it, if the learning is to become part of him. If he tries to take on the teacher's information and structure, he has to resort to rote memorization which certainly does not guarantee understanding". In trying to solve a problem, the student may find his working memory under stress. Solving problems is full of "noisy" things, "noisy" in the sense that they distract from the "signal" or "message" that is to be conveyed. The "noise" can occupy a substantial part of working memory leaving little space for the "signal" and even less space for thinking about what they are all trying to say. Information crowds in, from lecture notes, textbooks, workshops, tutorials, peer discussions, things to recall, and then to interpret.

(b) Paying Attention to Incoming Information

Learners have to focus on a specific task within a 'noisy' environment (irrelevant material), but also, within the task, they have to select specific information that is relevant (meaningful) for them. Teachers can only really find out whether learners are attending by ascertaining what they are learning (Hattan, 2020). Learners need to know when and where to pay attention, and to what to pay attention. Fox (2003) claimed that attention is affected by the complexity of the task and the motivation of the individual. The focus of the learners' attention determines what information is processed. Learners can attend to only a very limited number of the demands that compete for their attention.

(c) Recalling Previous Knowledge Easily

To make the material easier for recall, learners actively need to construct, organize, and structure internal connections that hold the information together. The systematic organization of knowledge, which may be considered to be the ordering of the component knowledge items in a logical, coherent, concise, and principle-based manner, is of fundamental importance for

the effective learning, recall, manipulation, and use of knowledge. Rodríguez-Castro, D. Y., & Aparicio, J. (2021). found that effectiveness of knowledge organization is increased if the:

(1) Knowledge stored in memory is principle/concept based, coherent, systematic and concise, and

(2) Organization is around the minimum amount of essential knowledge (number of principles and concepts).

This latter point is one that has been confirmed in very recent work Stoet, G., & Geary, D. C. 2018). It was found that the concept maps generated by medical students at various stages in their learning shows that many students move from a simple, but inadequate, concept maps at early stages of learning through increasingly complex maps until they move back to much simpler but more adequate maps when concepts have been grasped much more fully. It is, therefore, important that unnecessary principles, concepts, definitions, and terms be excluded as concepts are built up in the minds of learners.

All these different terms describe very similar themes and processes, including students having an understanding of their learning; being motivated to take responsibility for their learning; and working with teachers to structure their learning environment.

• There is a consensus in the literature that independent learning does not involve students merely working alone. Instead, the important role teachers can play in enabling and supporting independent learning is stressed.

• There are a number of different ways of defining and describing independent learning, without there being a shared understanding of how these different definitions and descriptions relate to one another.

An understanding of how learners learn, both in terms of theories of cognition and their practical application, is crucial to developing strategies aimed at improving the capacity for independent learning. This contention is supported by a large body of literature - for instance,

the US-based Bransford et al. (2000) and Schunk (2005) and the UK-based Reynolds et al. (2002), Huddleston and Unwin (2002) and Higgins et al. (2007).

These and other writers have shown how new information from many branches of Science has added to our understanding of what it means to know; from the neural processes that occur during learning to the influence of culture on what people see and absorb. The issue of learning styles, originating from the work of the US-based Gardner (1998), is relevant here, though enthusiasm must be tempered by the severe qualifications made by the UK-based White (1998) and Coffield et al. (2004).

2.2 THEORETICAL FRAMEWORK

The target of the study is premised on student, teacher and school's learning environment and some other environmental factors that militate against effective teaching and learning. Therefore, theories that has to do with the characteristics of these entities as they affect the effectiveness of teaching and learning would be applicable. Since the learning of any subject-matter depends on the way it is presented to the learner by his or her teacher, the way the learner interacts with the learning experiences presented to him and the environment within which the learning takes place, it is therefore expected that these entities will be affected by variables that have to do with them; these include laboratory adequacy school location attitudes, and background knowledge of mathematics that will be considered in this study.

The theories of Maslow (2019) and Gogue (2011) would therefore provide theoretical basis for the study. Maslow's motivational theory expresses that there are two groups of needs; these are deficiency needs and growth needs. When the deficiency needs are met, students are likely to function at the higher levels (that is growth needs level). This means that when the deficiency needs are met, self-directed learning or the desire to know and understand would be engaged in more easily. The implication of this is that teachers can encourage students to meet their

growth needs by enhancing the attractiveness of learning situation. In the light of these, when the environment where the child is learning (in this study, class, laboratory, and location of school) is made attractive, effective learning is likely to take place.

Gagne's theoretical formulations are attempts to identify aspects of learning and to match these with the intellectual demands of the individual. While development is subordinated to learning, Gagne's paradigm insists on identifying valid ordered sequences of instruction (pre-requisites) that can facilitate the learning of intellectual skills.

Gagne's theory offers an opportunity for the Mathematics teacher to diagnose students' limitations and strengths more effectively, thus permitting more adequate individualization and personalization of Mathematics instruction. Gagne's teaching hierarchy also offers Mathematics teachers the opportunities of developing and conceptualizing agreed-upon Mathematics goals and objectives in reality-oriented and learner - centered way. It is on this premise that Gagne anchors his belief that children learn an ordered additive capability. That is, the simpler and more specific capabilities is learned before the next more complex and general capability. Gagne therefore considered previous experience to have a major role in determining an individual's performance. It is within this framework that the present study looked into the student's background knowledge in of mathematics vis-a-vis their learning of Mathematics effectively in the junior secondary school.

2.2.1 Learning and Teaching Theories

Science education has come of age and a number of learning/teaching theories have been propounded as a guide to practice. Theories that will be relevant to this report will be categorized under the cognitive acceleration theory, cognitive load theory, the information processing theory, the conceptual change theory and the alternative conceptions agenda. The presentation is in no particular order of evolvement.

The cognitive acceleration theory, championed by Shayer and Adey of King's College, London, s based on the assumption that there is a mismatch between the cognitive capacity of students and curricula demands. It therefore seeks to handle the problem by proposing an acceleration of the cognitive development of the students through intermittent activities.
Research results, however, show that the impact on performance is mediated by a number of other factors and that cognitive capacity does not have a deterministic effect on performance. Most of the suggestions from the literature are to integrate the intervention packages into the curriculum.

Cognitive load theory, pioneered by Sweller of the University of New South Wales, Sydney Australia, is interested in the problems that arise from the interaction between task complexity and cognitive architecture. It engineered a number of instructional strategies that address the issues of the worked example effect, the completion effect, the redundancy effect, the expertise reversal effect, the modality effect, the split attention effect, the imagination effect, the isolated interacting element effect, the element interactivity effect, the guidance fading effect, and the goal-free effect. This is an evolving area for research and holds promises of directing teaching in Mathematics. However, this theory is limited in its focus when a consideration is given to all the variables involved in the teaching/learning process.

The information processing theory: championed by Johnstone of the University of Glasgow, is premised on the fact that manipulating the teaching/learning situation in the light of the way students' process information will lead to a better performance. Research has shown unequivocal results that authenticate this claim. The major message is the need to organize learning to reduce the demand on the working memory, to prepare the learner by pre-lectures or pre-labs and to reduce noise or redundant material while making the signal or important material explicit. A predictive model was developed for Science learning taking into account

other strategies in the learning process. However, much of the research under this agenda has focused on the working memory section of this process, that is, on actual processing, to the neglect of other aspects of the information processing system (e.g perception, and representation). However, recent work is offering some insights into the way information is stored in, and accessed from, long term memory.

The conceptual change theory is the practical implementation of the alternative conception agenda. This was proposed and pioneered by Posner and Strike. It takes its cue from the accommodation and equilibration principles of Piaget's work. Its assumption is that learning is a rational process and that information can be made to be rational and therefore acceptable or understandable to the learner given the learners' prior conceptions. It therefore prescribes the conditions for conceptual change to include dissatisfaction with existing conceptions (presence of anomalous data), intelligibility, plausibility and fruitfulness of a new conception. Research reveals that these are not always positive in bringing about conceptual change as individuals process information in idiosyncratic ways and that the socio/affective perspectives are important in bringing about conceptual change.

The alternative conception agenda has its roots in the work of Ausubel but was granted impetus by Rosalind Driver in Science education. Its major tenet is that children develop alternative explanatory frameworks and conceptions prior to formal Science education. The agenda tries therefore to explore and unravel these frameworks and to apply the knowledge to Science education. Subsumed under this is the generative learning model that takes this further to examine how appropriate links can be fostered between prior conceptions and Science conceptions. The latter has not received adequate attention from the Science education community. Recently, however, a number of studies have tried to concentrate on the representation of Science knowledge and to understand these representations and the reorganization of semantic Science categories. The alternative conception agenda holds

promises for influencing the conceptual sequencing of the Science curriculum; as research results have indicated a progression of students toward adequate conceptualizations and personalization of Science knowledge.

2.3 REVIEW OF RELATED LITERATURE

Empirical studies evaluate the work of other researchers to determine problems and factors affecting the teaching of mathematics in secondary schools. lgwe, I.O. (2003), the researcher formulated five research questions to guide the study. The population for the study was 46 mathematics teachers in the fourteen secondary schools in Awgu Local Government Area. The instrument for data collection was structured questionnaires developed by the researcher and distributed by hand to the mathematics teachers. The reliability of the instrument was measured using Cronbach Alpha, which was used to establish the index of reliability of the instrument used. The data collected were analyzed by use of mean and standard deviation. From the analysis of the result, the following findings were observed; most of the schools have insufficiency of teachers, lack of textbooks, lack of incentives for the mathematics teachers, lack of instructional materials and non-existence of mathematics laboratory. The educational implication and recommendations were made.

Ahmed, M. A. & Abimbola, I. O. (2011).The study investigated the extent of teaching and learning of mathematics in junior secondary school in Ido Local Government Area, Ibadan, Oyo State. Four research questions were posed to guide the study. The study adopted descriptive survey design. Simple random sampling technique was used to select 6 secondary schools. The same sampling technique was adopted to select 30 students from each school and 6 teachers from the 6 schools. Three instruments were developed with the reliability coefficient values of 0.75, 0.71 and 0.76 respectively. The data obtained were analyzed using descriptive statistics and Pearson's product- moment correlation. The results revealed that text books, writing materials, chalkboard and mathematical sets are available in all the schools. The results

also show the mean score and standard deviation of the level of utilization of materials. (X=27.7, S.D =1.84) and students achievement in mathematics (X=61.33, S.D=14.83). There was a positive correlation between the two variables (r=.23, p<.05). It was found that the more the teachers make use of instructional materials, the better the performance of the students in mathematics was enhanced. It was recommended that mathematics teachers should endeavour to utilize the available instructional materials and improvise where necessary.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology of the study under the following headings of the study; population, sampling and sampling technique, research instrument, validity of the instrument, reliability of the instruments, data collection and method of data analysis.

3.2 Research Design

This study will adopt descriptive survey research approach. Survey research design method deals with population, sample, and instruments to collect data and analysis. According to Oni, Yerima and Bananda (2010) descriptive survey research interpret the truth of the nature of a phenomenon being investigated. Richie et al. (2013) opined that by using descriptive method, the researcher will be able to observe the target population of the study and make required conclusions easily. Survey design is considered appropriate for this study because it will enable the researcher to have the opportunity to examine the challenges militating against effective teaching and learning of mathematics in Government junior secondary school in chanchaga local Government.

3.3 Population of the Study

The target population of the study was all the teachers and students of Mathematics in Gover nment junior secondary schools in Chanchaga Local Government Area of Niger State. The number of schools in Government junior secondary school is 16 schools, we're the number of the students were 23279. A simple random sampling technique was used to choose 5 Government Junior Secondary schools in Chanchaga Local Government Area of Niger State out of the population.

3.4 Sample and Sampling Techniques

A simple random sampling technique was used to choose the sample from the target population of some Government Junior Secondary schools in Chanchaga Local Government Area of Niger State), 100 students and 15 teachers was selected at random. The overall total number of respondents was one hundred and fifteen (115).

3.5 Research Instrument

There were two sets of Questionnaire (instrument) used in this study;

(1) The teacher questionnaire which was meant for teachers in the Schools that was selected.

(2) The student questionnaire which was meant for students in the Schools that was selected.

The two instruments had two sections (A and B). A contains the biographical personality of the respondents such as age, status. B section includes the items coined to know some of the challenges militating against effective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area of Niger State, how they cope with them and how they affect student's performances in Mathematics.

3.6 Validity of the instrument

Copies of the questionnaire was presented to two lecturers, The necessary correction was made on the questionnaire before administered to the teacher and student. The questionnaire was validated by two experts. The two lecturers were in department of science education, federal university of technology minna.

3.7 Reliability of the Instrument

Questionnaire will be given in three different selected Government junior secondary schools in Chanchaga local government area to test the reliability of the instruments. A total number of

six (6) copies of questionnaires will be administered to teachers selected at Chanchaga local government area. The overall reliability of the questionnaire is 0.79 indicating that the instrument is reliable..

3.8 Data Collection Procedure

The researcher went to the (5) schools randomly selected and sought the permission of the principals and the full assistance of the mathematics teacher in the schools. A total of one hundred (100) JSS2,JSS1,JSS3 students consisting of 65 boys and 35 girls were selected randomly for the study from the five schools and fifteen (15) teachers were randomly selected in five junior secondary school chanchaga local government area.

After administering the questionnaire, the questionnaire were answered by the student selected and the teachers selected and the questionnaire was collected by the researcher.

3.9 Method of Data Analysis

The method that was used for analyzing data collected will be analyzed using simple percentages, frequency count, mean and standard deviation with the aid of Statistical Package for Social Sciences (SPSS).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The purpose of this chapter is to analyze the data collected in a systematic way so as to facilitate verification and authenticity of the prepositions that were stated earlier which will provide the much needed answers to the research questions and also form a basis of good and reliable recommendations. Simple percentage, frequency count, mean and standard deviation was used for data analysis. A total of one hundred and fifteen (115) research instrument (questionnaire) was distributed, one hundred (100) for students and fifteen (15) for teachers. All questionnaires was completed and returned, which now would serve as basis for data analysis.

4.2 Analysis of Respondent Demographic Characteristics (Bio-Data) for Teacher's questionnaire

Table 4.2.1 Age Distribution

	Frequency	**Percent**
20 – 29years	3	20%
30 – 39years	4	26.7%
40 – 49years	7	46.6%

50years above	1	6.7%
Total	15	100%

From the table 4.2.1 above, 20% of the respondent surveyed represents age 20-29yrs, 26.7% are between the ages of 30-39yrs, while 46.6% represent those who are 40-49yrs and 6.7% of the respondents are between 50years above. The survey here shows that majority of the respondents are vibrant and young adult.

Table 4.2.2 Distribution of respondents by gender

	Frequency	**Percent**
Male	8	53.3%
Female	7	46.7%
Total	15	100%

From the table 4.2.2 above, 53.3% of the respondents surveyed represent male while 46.7% are female. This shows that there are more male teachers in the survey.

Table 4.2.3 Distribution of respondents by marital status

	Frequency	**Percent**
Single	6	40%
Married	9	60%
Total	15	100%

From the table 4.2.3 above table, 40% of the total respondents surveyed are still single while 60% of them are married.

Table 4.2.4 Respondents Teaching Experience

	Frequency	Percent
1 -10years	0	0%
11 – 15years	2	13.3%
16 – 25years	7	46.7%
Above 25years	6	40%
Total	15	100%

From the table 4.2.4 above, 0% of the respondent surveyed represents those who are between 1-10yrs with teaching experiences, 13.3% are 11-15yrs, while 46.7% represent those who had 16-25yrs teaching experiences and 40% are with above 25years teaching experience.

Table 4.2.5 Respondents Educational Qualification

	Frequency	Percent
O-Level	0	0%
NCE	5	33.3%
OND	2	13.3%
HND	5	33.3%
BSC	3	20%
MSC	0	0%
PhD	0	0%

Total	15	100%

From the table 4.2.5 above, 33.3% of respondents surveyed possesses NCE Certificates, 13.3% represents those with OND, 33.3% represents those with HND Certificate and 20% represents those with BSc while O-level, MSC and PhD Certificate holders are respondent with 0% each. The survey indicates that NCE, HND and BSc holders are more populated in the schools considered in this survey.

4.2.6 Analysis of Respondent Demographic Characteristics (Bio-Data) for Student's questionnaire

Table 4.2.6 Age Distribution

	Frequency	**Percent**
8 – 11years	20	20%
12 – 14years	68	68%
15years and above	12	12%
Total	**100**	**100%**

Table 4.2.7 Gender Distribution

	Frequency	**Percent**
Male	52	52%

Female	48	48%
Total	100	100%

From the table 4.2.7 above, 52% of the respondents surveyed represent male while 48% are female.

Table 4.2.8 Class Distribution

	Frequency	**Percent**
Jss1	36	36%
Jss2	36	36%
Jss3	28	28%
Total	100	100%

From the table 4.2.8 above, 72% of the respondents surveyed represent both Jss1 and Jss2 with each of them have 36% each. Students while 28% are Jss3 students.

4.3 Analysis of Research Questions from Teacher's questionnaire

Table 4.3.1: Research question 1

Are Mathematics teachers in Government junior secondary schools in Chanchaga local Government qualified and adequate?

S/N	STATEMENT	MEAN	STD. D	DECISION
1.	There are enough qualified teachers in my school	2.47	0.990	Disagree
2	I have enough exposure to various aspects of mathematics during my higher educational program.	3.07	0.594	Agree
3	I attend workshops, seminars regularly to keep me updated on new development in teaching methodology.	2.27	0.704	Disagree
4	I give my students mathematics assignment often.	2.73	0.458	Agree
5	Recommended textbooks on mathematics in my school are very clear in content and methodology.	3.13	0.516	Agree
6	I maintain discipline in my classroom	3.50	0.3519	Agree
	Grand Mean	2.86		

The table 4.3.1 above reveals the adequacy and how qualified the teachers in Chanchaga Local Government Area are where the table illustrated that statements one, two, three, four, five and six are having the means 2.4700, 3.0700, 2.2700, 2.7300, 3.1300, 3.5000 and standard

deviations 0.990, 0.594, 0.704, 0.458, 0.516, 0.3519 respectively. The above research question has a grand mean of 2.86 which agrees that Chanchaga Local Government area have qualified and adequate teachers.

Research question 2

Table 4.3.2: Students' attitude towards learning Mathematics in Government junior secondary schools in Chanchaga Local Government

S/N	STATEMENT	MEAN	STD. D	DECISION
1	Majority of my students do and submit their assignment when due.	2.73	0.704	Agree
2	My students turn mathematics class to jest making class.	1.67	0.617	Disagree
3	My students have personal mathematics textbooks.	2.67	0.488	Agree
4	My students like mathematics.	3.07	0.594	Agree
5	My students always practice exercise from mathematics lesson.	2.47	0.915	Disagree

6	My students participate actively during mathematics lesson.	3.07	0.594	Agree
	Grand Mean	2.61		

The table 4.3.2 above reveals the students' attitude towards learning Mathematics in Government junior secondary schools in Chanchaga Local Government Area, where table 4.2.7 above illustrated that statements one, two, three, four, five and six are having means 2.7300, 1.6700, 2.6700, 3.0700, 2.4700, 3.0700 and standard deviations 0.704, 0.617, 0.488, 0.594, 0.915, 0.594 respectively. The grand mean is 2.61 which mean the respondents agree with the researcher.

Research question 3

Table 4.3.3: the extent to which societal factors contributes to the ineffective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area

S/N	STATEMENT	Mean	Std.D	Decision
1	There is sufficient period on my schools time table for the teaching of mathematics.	3.27	0.458	Agree
2	Effective teaching and learning of mathematics will	3.47	0.516	Agree

	be hindered if teachers are not motivated to teach the subject.			
3	The population of students in my class makes me boring	2.53	0.834	Agree
4	My schools environment is well managed and conducive.	3.00	0.378	Agree
5	The mathematics syllabus has explicit details related to objectives, content and methodology in mathematics.	3.07	0.594	Agree
	Grand mean	3.07		

The table 4.3.3 above reveals the extent to which societal factors contributes to the ineffective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area, the table shows that statements one, two, three, four and five are having means 3.2700, 3.4700, 2.5300, 3.0000, 3.0700 and standard deviations 0.458, 0.516, 0.834, 0.378, 0.594 respectively. It has a grand mean of 3.07 which show a strong agreement.

Research question 4

Table 4.3.4: Does Government provide adequate facilities for the teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area?

S/N	STATEMENT	Mean	Std.D	Decision
1	My school has a well-equipped and usable library	2.53	0.990	Agree
2	Learning facilities like chalk, chalkboard, chairs, tables etc are adequate and maintained in my school	3.13	0.516	Agree
3	My allowance is delayed when due to be paid.	2.47	0.834	Disagree
	Grand Mean	2.71		

The table 4.3.4 above reveals government's provision of adequate facilities for the teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area, where the table shows that statements one, two and three are having means 2.5300, 3.1300, 2.4700 and standard deviations 0.990, 0.516, 0.834 respectively. It also has a grand mean of 2.71 which shows that government provides adequate facilities for the teaching and learning mathematics in junior schools in Chanchaga Local Government Area.

4.3.5 Analysis of Research Questions from Student's questionnaire

Table 4.3.5: Research question 5

Mathematics teachers in Government Junior secondary schools in Chanchaga local Government qualified and adequate?

S/N	STATEMENT	MEAN	STD. D	DECISION

1	I like my mathematics teacher because he is friendly	2.88	0.868	Agree
2	My Mathematics teacher does not know how to teach	2.16	1.126	Disagree
3	I admire the way my mathematics teachers dresses to class which I am willing to emulate	2.88	0.868	Agree
4	My mathematics teacher motivate his/her students to learn	2.72	1.155	Agree
	Grand Mean	2.55		

The table 4.3.5 above reveals the adequacy and how qualified the teachers in Government junior secondary schools in Chanchaga Local area are. The table 4.3.4 above illustrated that statements one, two, three, four and five are having the means 2.8800, 2.1600, 2.8800, 2.7200 and standard deviations 0.868, 1.126, 0.868, 1.155 respectively. The grand is 2.55 which shows an agreement.

Research question 6

Table 4.3.6: Students' attitude towards learning Mathematics in Government junior secondary schools in Chanchaga Local Government

S/N	STATEMENT	MEAN	STD. D	DECISION

1	The learning of mathematics is not necessary	2.04	1.044	
	Disagree			
2	I study mathematics to pass examination	2.72	0.830	Agree
3	I do not understand mathematics when it is taught	2.20	0.084	Disagree
4	Science students turn mathematics class to jest-making class in my school	1.96	0.828	Disagree
5	I participate actively during mathematics classes	2.68	1.091	Agree
	Grand Mean	2.46		

The table 4.3.6 above reveals the students' attitude towards learning Mathematics in Government junior secondary schools in Chanchaga Local Government Area, the table illustrated that statements one, two, three, four, five and six are having means 2.0400, 2.7200, 2.2000, 1.9600, 2.6800, and standard deviations 1.044, 0.830, 0.084, 0.828, 1.091, respectively. The grand mean is 2.46 which shows a disagreement.

Research question 7

Table 4.3.7: the extent to which societal factors contributes to the ineffective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area

S/N	STATEMENT	MEAN	STD. D	DECISION
1	More lesson period should be allocated to mathematics	2.52	0.858	Agree
2	I have personal mathematics textbook	2.76	0.767	Agree
3	My parents motivate me to learn mathematics	2.52	0.948	Agree
4	My parents provide for my basic needs	2.72	0.726	Agree
	Grand Mean	2.65		

The table 4.3.7 above reveals the extent to which societal factors contributes to the ineffective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area, where the table illustrated that statements one, two, three, four and five are having means 2.5200, 2.7600, 5.5200, 2.7200, and standard deviations 0.858, 0.767, 0.948, 0.726 respectively. The grand mean is 2.65 which indicates agreement.

Research question 8

Table 4.3.8: Does Government provide adequate facilities for the teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area?

S/N	STATEMENT	MEAN	STD. D	DECISION

1	My class is over populated making me dislike mathematics	2.32	0.886	Disagree
2	There is need for practical mathematics laboratory in my school	2.92	0.692	Agree
3	My school has a well equipped and usable library	3.04	0.530	Agree
4	There are adequate learning facilities like chairs, chalkboard, tables in my school	3.20	0.636	Agree
	Grand Mean	2.87		

The table 4.3.8 above reveals government's provision of adequate facilities for the teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government Area. The table 4.3.7 above shows that statements one, two, three and four are having means 2.3200, 2.9200, 3.0400, 3.2000 and standard deviations 0.886, 0.692, 0.530, 0.636 respectively. The grand mean is 2.87 which implies an agreement.

4.4 SUMARY OF FINDINGS

From the discussion above, the following findings were highlighted;

1. Students and teachers do well when they are motivated and when enough teaching and learning facilities are provided for them

2. Teacher have generally shown positive attitude towards the teaching of Mathematics but not well motivated to teach the subject.

3. The failure of the government to adequately provide instructional materials and facilities which are important hinders the effective teaching and learning of Mathematics

4. Teacher are to attend workshops and seminars on Mathematics.

4.5 DISCUSSION OF FINDINGS

The results in the tables showed that factors ranging from student's attitudes towards the learning of Mathematics to societal and government factors, it is now glaring from research question 2 with 48.0% of the students showing positive response to the fact that they study Mathematics to pass examination, which implies they do not understand it, this explains poor students' attitude towards learning Mathematics. According to research question 3, societal factor in the case of parents' social economic status contributes to the ineffective teaching and learning of Mathematics with evidence from the analysis that 48% of the students does not have Mathematics textbooks for further practice of Mathematics exercise to enhance effective learning of it.

It was found out from research question 4 that the government through its new science policy aims at enhancing student's empirical and scientific competence of their secondary education but does not play most notable role in making sure that Mathematics is well taught because it has failed to provide; a well equipped and usable library according to 72.0% of the students responding, practical Mathematics laboratory according to 52.0% of the students responding who showed that there is need for it and also infrastructural facilities like building of more

classroom in order to reduce over population in classes according to 24.0% of the students responding that their class is over-populated.

From research question 1, it was deduced from the teachers that teachers in schools in Chanchaga Local Government are not adequate with 40.0% of them confirming that there are not enough qualified Mathematics teachers in their schools.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of the research, conclusion and recommendation for the study

5.2 SUMMARY OF THE STUDY

This research work focused on the challenges militating against effective teaching and learning of Mathematics in Government junior secondary schools in Chanchaga Local Government of Niger State. Despite the importance accredited to Mathematics with a view of achieving a better understanding about nature causing the need for its teaching and learning to be effective. The study adopted descriptive survey research approach. The findings revealed that numerous problems such as students' attitudes towards learning Mathematics, societal and governmental factors and parent social economic status contributes to the ineffective teaching and learning of Mathematics. The researcher recommended that more qualified teachers should be employed in other to decongest the classroom, students should also be encouraged to learn Mathematics and more instructional aids and media should be provided to schools in other to effect teaching and learning of Mathematics in Government junior secondary schools.

5.2 CONCLUSION

There is no denying the fact that Mathematics teaching can only be effective and result-oriented when students are willing and the teachers are favorably disposed, using the appropriate methods and resources in teaching the students. With the current increase in scientific knowledge all over the world, much demand is placed, and emphasis is laid on the teacher, the learner, the curriculum and the learning environment in the whole process of teaching and learning of Science. Mathematics has come to stay as an effective medium of internal and global scientific and technological development of Nigeria which was one of the reasons why it was made a compulsory subject which calls for the need for its teaching learning to be effective.

This study has shown that learners and teachers do well when they are motivated and when enough teaching and learning facilities are provided for them. The failure of the government to adequately provide instructional materials and facilities which are important hinders the effective teaching and learning of Mathematics in Chanchaga Local Government Area of Niger State. .

Teacher have generally shown positive attitude towards the teaching of Mathematics but not well motivated to teach the subject. The teachers who it is clear from observation are not adequate and even the ones present are grounded in Mathematics and are handicapped by a number of problems such as complex working time for a Mathematics teacher to teach the whole of students with the combination of another science subject like biology without been assisted, non-availabilitiy of instructional materials, over populated classroom in the teaching of Mathematics.

Results of the study should interest educational policy makers in federal, state and local governments, inspectors of Education and practicing classroom teachers. Based on findings from the study, it is apparent that the government must generate policies and guidelines that will introduce effective Mathematics teaching and learning into our schools. For our Mathematics teachers and inspectors of education, diagnostic tools based on findings relating to interest, attitude, cognitive and manipulated skills of the learners could be designed and developed. Such tools will enable them assess the degree of readiness of each student and prescribe appropriate intervention learning programmed when and where necessary.

5.3 RECOMMENDATIONS

The foregoing discussion call for the following recommendations;

(1) More qualified teachers should be employed in order to decongest the classrooms. If a class is over-populated, the teachers will find it difficult to mark tests and assignments given to the students.

(2) Students should be encouraged to Learn Mathematics in order to understand so that they could have better understanding of their world and not just to read to pass examinations.

(3) While it is universally accepted that a well-motivated teaching force is essential for improvement in any educational system. Different teachers use varying motivation factors, a more thorough supervision of teachers should be emphasized as a means of improving the quality of education.

(4) All teachers in a school are role model to students, therefore it is the responsibility of all the teachers in a school to encourage their students through the way they dress, the things they say that would influence students' learning positively, and also encourage one another to attend workshops and seminars on Mathematics.

REFRENCES

Ahmed, M. A. and Abimbola, I. O. (2011).Influence of teaching experience and school location on Mathematics teachers' rating of the difficult levels of nutrition concepts in Ilorin, Nigeria. Journal of Science

Anders, P. L., & Evans, K. S. (2019). Relationship between teachers' beliefs and their instructional practice in reading. In Beliefs about text and instruction with text (pp. 137-153)..

Badreddine, D. M. N. (2019). Middle school students' understanding of non-technical vocabulary found in American science textbooks used in a Lebanese school.

Blackmore, J., Bateman, D., Loughlin, J., O'Mara, J., & Aranda, G. (2011). Research into the connection between built learning spaces and student outcomes.

Blackmore, J., Bateman, D., Loughlin, J., O'Mara, J., & Aranda, G. (2011). Research into the connection between built learning spaces and student outcomes.

Blanchette, M., Kent, W. J., Riemer, C., Elnitski, L., Smit, A. F., Roskin, K. M.,& Miller, W. (2004). Aligning multiple genomic sequences with the threaded blockset aligner. Genome research, **14(**4), 708-715.

Boivin, N. L., Zeder, M. A., Fuller, D. Q., Crowther, A., Larson, G., Erlandson, J. M., ... & Petraglia, M. D. (2016). Ecological consequences of human niche construction: Examining long-term anthropogenic shaping of global species distributions. Proceedings of the National Academy of Sciences, **113**(23), 6388-6396

Chen, Y., Mathy, N. W., & Lu, H. (2018). The role of VEGF in the diagnosis and treatment of malignant pleural effusion in patients with non-small cell lung cancer. *Molecular medicine reports*, **17**(6), 8019-8030.

Curristine, T. (2006). Performance information in the budget process: Results of the OECD 2005 questionnaire. *OECD Journal on Budgeting*, **5**(2), 87-131.

Denham, S. A., Ferrier, D. E., Howarth, G. Z., Herndon, K. J., & Bassett, H. H. (2016). Key considerations in assessing young children's emotional competence. *Cambridge Journal of Education*, **46**(3), 299-317.

Dzemidzic Kristiansen, S., Burner, T., & Johnsen, B. H. (2019). Face-to-face promotive interaction leading to successful cooperative learning: A review study. *Cogent Education*, **6**(1), 1674067

Fleisch, B., Schöer, V., Roberts, G., & Thornton, A. (2016). System-wide improvement of early-grade mathematics: New evidence from the Gauteng Primary Language and

Mathematics Strategy. *International Journal of Educational Development*, *49*, 157-174.

Gilar-Corbí, R., Pozo-Rico, T., Sánchez, B., & Castejón, J. L. (2018). Can emotional competence be taught in higher education? A randomized experimental study of an emotional intelligence training program using a multimethodological approach. Frontiers in psychology, 9, 1039.

Gilar-Corbi, Raquel, Pablo Minano, Alejandro Veas, and Juan-Luis Castejon. "Testing for invariance in a structural model of academic achievement across underachieving and non-underachieving students." *Contemporary Educational Psychology* **59** (2019): 101780.

Gilbert, M. C., Musu-Gillette, L. E., Woolley, M. E., Karabenick, S. A., Strutchens, M. E., & Martin, W. G. (2014). Student perceptions of the classroom environment: Relations to motivation and achievement in mathematics. *Learning Environments Research*, **17**(2), 287-304.

Ginja, T. G., & Chen, X. (2020). Teacher Educators' Perspectives and Experiences towards Differentiated Instruction. *International Journal of Instruction*, **13**(4), 781-798.

Gogue, JM (2011). The influence of merit on salaries and promotions. Local authorities (06), 96-100.

Haggerty, K., Elgin, J., & Woolley, A. (2011). Social-emotional learning assessment measures for middle school youth. Social Development Research Group. University of Washington: Raikes Foundation

Hammer, D., & Wildavsky, A. (2018). The open-ended, semistructured interview: An (almost) operational guide. In Craftways (pp. 57-101). Routledge.

Haney, C. H., Wiesmann, C. L., Shapiro, L. R., Melnyk, R. A., O'Sullivan, L. R., Khorasani, S., ... & Ausubel, F. M. (2018). Rhizosphere-associated Pseudomonas induce systemic resistance to herbivores at the cost of susceptibility to bacterial pathogens. Molecular Ecology, **27**(8), 1833-1847.

Hébert, C. (2019). Assessment in the clinical experience: Student teaching and the TPA. *Teaching Education*, **30**(4), 415-436.

Hinkle, J. T., Holoien, T. W. S., Shappee, B. J., Auchettl, K., Kochanek, C. S., Stanek, K. Z., ... & Thompson, T. A. (2020). *Examining a Peak-luminosity/Decline-rate Relationship for Tidal Disruption Events. The Astrophysical Journal Letters*, 894(1), L10.

Hwang, G. J., Zou, D., & Lin, J. (2020). Effects of a multi-level concept mapping-based question-posing approach on students' ubiquitous learning performance and perceptions. *Computers & Education*, *149*, 103815.

Igwe, B. N., & Orluwene, G. W. (2019). Test-Taking Strategies as Predictors of Students' Mathematics Achievement In Rivers State.

James, U. I., Odo, E. B., & Okpube (2010), N. M. problems and factors affecting the teaching of mathematics in secondary schools.

James, U. I., Odo, E. B., & Okpube, N. M. (2017) problems and factors affecting the teaching of mathematics in secondary schools.

Jazim, J., Agustina, R., Nurlaila, S., & Farida, N. (2018, July). Bahan ajar matematika berbasis RME pada siswa tunagrahita. In *Prosiding Seminar Nasional Matematika dan Pendidikan Matematika* (**Vol. 1**, No. 2, pp. 469-473).

JOHNSTONE, A. H., & Selepeng, D. (2001). A language problem revisited. *Chemistry Education Research and Practice*, **2**(1), 19-29.

Kabongo, J. D., & Okpara, J. O. (2010). Entrepreneurship education in sub-Saharan African universities. *International Journal of Entrepreneurial Behavior & Research*.

Karimova, V., & Salimov, J. (2018). Approaches, Methods, Procedures and Techniques of English Language Teaching and Learning.

Kiwanuka, H. N., Van Damme, J., Van Den Noortgate, W., Anumendem, D. N., Vanlaar, G., Reynolds, C., & Namusisi, S. (2017). How do student and classroom characteristics affect attitude toward mathematics? A multivariate multilevel analysis. *School Effectiveness and School Improvement*, **28**(1), 1-21.

Kumavat, S. D. (2017). Academic achievement motivation among Junior College Science Faculty Students. *The International Journal of Indian Psychology*, *4*(2), 88-92.

lgwe, I.O. (2003): Principles of Science and Science Teaching in Nigeria. Jonnes Communication Publishers.

Marusch, F., Koch, A., Schmidt, U., Zippel, R., Kuhn, R., Wolff, S., ... & Lippert, H. (2002). Routine use of transrectal ultrasound in rectal carcinoma: results of a prospective multicenter study. Endoscopy, **34**(05), 385-390.

Maslow, A. H. (2019). A theory of human motivation. General Press.

Modebelu, M. N., & Ogbonna, C. C. (2014). Reform-Based-Instructional Method and Learning Styles on Students' Achievement and Retention in Mathematics: Administrative Implications. *International Journal of Education and Literacy Studies*, **2**(2), 48-52.

Msipha, Z. (2020). *Fostering self-regulation through positive discipline during free play in early childhood education* (Doctoral dissertation).

Niss, M., & Højgaard, T. (2019). Mathematical competencies revisited. Educational Studies in Mathematics, 102(1), 9-28.

Oyelola, O. T., Ajiboshin, I. O., Raimi, L., Raheem, S., & Igwe, C. N. (2013 stated that some teachers lack adequate cognitive knowledge of their subject area. *Journal of Sustainable Development Studies*, **2**(2).

Parvez, K., Khan, M., Iqbal, J., Tahir, M., Alghamdi, A., Alqarni, M., ... & Javaid, N. (2019). Measuring effectiveness of mobile application in learning basic mathematical concepts using sign language. *Sustainability*, **11**(11), 3064.

Ratamun, M. M., & Osman, K. (2017). The Effect Of Gender And Gdare Level On Rural Sarawak Indigenous Secondary School Students'attitudes Towards Chemistry Lesson To Enhance Learning. The Eurasia Proceedings of Educational and Social Sciences, 6, 87-98.

Reed, B. W., Kumar, M., Minich, R. W., & Rudd, R. E. (2008). Fracture roughness scaling and its correlation with grain boundary network structure. Acta Materialia, **56**(13), 3278-3289.

Reynolds, C. R., Altmann, R. A., & Allen, D. N. (2021). The problem of bias in psychological assessment. In *Mastering Modern Psychological Testing* (pp. 573-613). Springer, Cham.

Rodríguez-Castro, D. Y., & Aparicio, J. (2021). Introducing a functional framework for integrating the empirical evidence about higher education institutions' functions and capabilities: *A literature review. Journal of Entrepreneurship, Management and Innovation*, **17**(1), 203-230.

Salloum, S. A., Alhamad, A. Q. M., Al-Emran, M., Monem, A. A., & Shaalan, K. (2019). Exploring students' acceptance of e-learning through the development of a comprehensive technology acceptance model. IEEE Access, 7, 128445-128462.

Sangguroa, S. A., & Surifa, J. (2019). A Conceptual Framework for Enhancing Problem Solving Skills in Chemistry. Copyright© 2019 Universiti Teknologi Malaysia., 7.

Semeon, N., & Mutekwe, E. (2021). Perceptions about the use of language in physical science classrooms: *A discourse analysis. South African Journal of Education*, **41**(1).

Sirhan, G. (2007). Learning difficulties in chemistry: An overview.

Stoet, G., & Geary, D. C. (2018). The gender-equality paradox in science, technology, engineering, and mathematics education. Psychological science, 29(4), 581-593.

Taber, K. S. (2019). Experimental research into teaching innovations: responding to methodological and ethical challenges. Studies in Science Education, 55(1), 69-119.

Thornton, K. (2013). Supporting self-directed learning: A framework for teachers. Research and practice of mathematics teaching in Asia, 59-77.

Valtonen, T., Hoang, N., Sointu, E., Näykki, P., Virtanen, A., Pöysä-Tarhonen, J., ... & Kukkonen, J. (2021). How pre-service teachers perceive their 21st-century skills and dispositions: A longitudinal perspective. *Computers in Human Behavior*, *116*, 106643.

Virtanen, P., Niemi, H., & Nevgi, A. (2017). Active learning and self-regulation enhance student teachers' professional competences. Australian Journal of Teacher Education (Online), **42**(12), 1-20.

Wilson, J., Nazemi, M., Jackson, K., & Wilhelm, A. G. (2019). Investigating teaching in conceptually oriented mathematics classrooms characterized by African American student success. *Journal for Research in Mathematics Education*, ***50***(4), 362-400.

Woodman, D. (2019). *Middle School Paraprofessionals Describing Their Experiences Teaching Students in Inclusive Classroom: A Case Study* (Doctoral dissertation, Capella University).