

**IMPACT OF TEACHER'S MOTIVATIONAL STRATEGIES ON SECONDARY
SCHOOL STUDENTS' ACHIEVEMENT IN MATHEMATICS IN BOSSO LOCAL
GOVERNMENT AREA, NIGER STATE.**

BY

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2017/3/69330BE

**DEPARTMENT OF SCIENCE EDUCATION,
SCHOOL OF SCIENCE AND TECHNOLOGY
EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY MINNA.**

AUGUST, 2021

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**A RESEARCH PROJECT SUBMITTED TO THE
DEPARTMENT OF SCIENCE EDUCATION, SCHOOL OF SCIENCE AND
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ABSTRACT

The study investigated the impact of teacher's motivational strategies on secondary school students' achievement in Mathematics in Bosso LGA Niger State. The study compared the relative effectiveness of teacher motivational strategies of teaching and teacher centered method of teaching on secondary school students' achievement in Mathematics. Two research questions and two null hypotheses were formulated to guide the study. A Quasi-experimental research design (pre- test and post- test design) was employed, in which student's achievement test was administered to both the experimental and control groups. The population of the study is 5671 which comprised (male 2955, female 2716) the target population was SS 2 students from twenty (20) public secondary schools in Bosso Local government of Niger State. The sample made up of 148 respondents comprising 90 male and 58 female students sampled from two public high secondary schools. The instrument used for data collection was a Mathematics Achievement Test (MAT) which was employed to obtain data for the study. The instrument was duly vetted by specialist in Science Education and Technology. A reliability coefficient index of 0.78 was obtained from Split - half test. A simple descriptive statistical tools of (Mean and Standard deviation) was used to process the data collected from the Achievement Test and answer the research questions. T- test was used to answer hypotheses at 0.05 level of significance using Statistical Package for social Scientists SPSS version 16. The experimental group was taught using motivational strategies method of teaching ; planning and feedback as motivational strategies while the control group was taught using lecture method of teaching. the researcher administered achievement tests to each groups. The results of data analysis showed that: motivational method of teaching was very effective in improving student's achievement in Mathematics. learning achievement differs significantly from planning as motivational strategy. Based on this, it was recommended that teachers should adopt motivational method of teaching in Mathematics class at secondary school level, Senior Secondary classes precisely. Also it was recommended for other researchers to find out the influence of motivational strategies at pre- primary schools in Niger State.

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CHAPTER ONE

1.0

INTRODUCTION

1.1 Background to the study

The study of numbers, symbols, measurement, relationships, and qualities of quantities and sets is known as mathematics. Arithmetic, algebra, geometry, and calculus are all examples of mathematics. Equations, functions, geometric shapes, numbers, and their relationships are all studied in mathematics. It emphasizes a problem-solving strategy. It tries to offer solutions to difficulties that people face on a daily basis. In practice, pure mathematics and applied mathematics are intertwined. Pure mathematics concepts can be used in applied mathematics to find practical solutions. Mathematical teachers' incompetence at the basic, secondary, and tertiary levels also contributed to a higher challenge to mathematics education in Nigeriaa, Ifiokobong Ibanga (2017). Upon this, the background stands to investigate the iimpact of teacher's motivational strategy on the achievement of mathematics in some selected schools in Basso Local Government, Niger State.

Teachers are called the pillar of the nation. They are like models to the students, so their behaviours must be the right ones in front of the students, I think the teachers ought to be so dedicated to their work because they need to pass this enthusiasm to get a better environment in the classroom, so they are like a second parent and we see them a lot of time. The teacher plays different roles in Educational Sectors. There are different roles played by the teacher; sometimes the teacher as a facilitator, teacher as an instructor,

teacher as a friend, also there is another role played by a teacher, which is a teacher as a motivator, SRJIS (2016).

Teaching motivation is a critical component of effective instruction. To make teaching more effective, we must recognize the importance of motivation, inspiration, and guidance in the classroom. Instructors must be motivated in order to educate their student Built by Me (2021). The rest of the process will be simple and comfortable if the motivation is strong. Motivation is a driving factor that aids in the measurement of a certain behavior and the attainment of objectives. The link between ideas, values, and action is central to modern motivational theories. Motivation is the most important tool for doing anything in a formal setting; if it is not used, failure may be the first symptom of adversity. Its presence will inspire, instigate and encourage the subject comprehend better. In any educational setting where it seems students like specific teachers, it's because those teachers consistently use engaging methods of presenting and, on occasion, maintain a pleasant demeanor with their students. We have been employing many smart and active teaching learning approaches in the twenty-first century. Several scholars have been looking for novel concepts that might be implemented in educational contexts. Different motivational strategies must be used in classrooms immediately.

In general, there is still a one-way learning system between teacher and students known as "Teacher Centered Learning" (TCL). Learning systems based on this method can affect students' creativity in mathematics as well as classroom performance. A teacher should involve students in learning activities in class, either in the form of presentations, question

and answer, discussion, or other activities. Teachers give motivation and spirit to their students that can build the confidence of the students. But the teacher will continue to support and motivate students to correct their mistakes. Teachers must be able to build character in their students through a variety of activities that can enhance student creativity in building self-motivation. Teachers should always be constructive to adopt innovative methods to motivate students by placing them at the centre of learning, meaning the extent to which the material presented is not dependent on the teachers and the curriculum but it depends on the teacher provide inspiration to their students.

Lastly, secondary school mathematics achievement in mathematics over the years has been a great challenge, as most secondary school students do not have the prerequisite understanding of mathematics, which has made mathematics to become a difficult subject for them in secondary level. Therefore, for this reason, this research work is carried out to evaluate impact of teacher's motivational strategies on Secondary School students' achievement in Mathematics performance in Bosso Local Government Area, Niger State.

1.2 Statement of the Problem

Mathematics is one of the General Subjects, a compulsory subject that must be obtained during secondary education in Nigeria, and students' low performance in mathematics has been a severe worry over the years. Despite the government's years of investment in curriculum amendments to improve the country's quality of mathematics achievement, the high percentage failure rate of Mathematics students persists year after year. According to BBC News on the 5th of July 2018, the Council's Head of National Office (HNO), WAEC,

Olu Adenipekun, revealed that a total of 786,016 candidates, or 49.98 percent of those who sat for the 2018 Examination, received credits and above in a minimum of five subject including English language and Mathematics in Niger State. According to him, when compared to results obtained in the same examination in 2016 and 2017, the performance indicated deterioration.

Poor quality of teaching staff and teaching techniques in Secondary Schools, according to the Federal Ministry of Education (FME) (2012), are some of the causes responsible for the high failure rate in Secondary School students in WAEC and NECO Examinations in Mathematics. Student mathematics achievement in secondary school has a beneficial impact on their performance in post-secondary education and their future job, according to Ogbonnaya (2017). It has been observed that the teaching method used in mathematics classes is not effective assisting the situation, thereby discouraging the student and instilling in them the belief that mathematics is a difficult subject that not everyone can master.

According to Tracey Garrett (2008), the use of a teacher-centered teaching method in mathematics results in ineffective use of instructional methods and facilities, as well as teachers' inability to effectively implement the curriculum in order to instill student interest and involvement in learning. It is self-evident that the teacher-centered teaching technique is directly accountable for students' poor academic performance in public tests in mathematics (WAEC 2020). As a result, the purpose of this research is to find the impact of

teacher motivational strategy on secondary student's achievement in Mathematics in Bosso Local Government Area, Niger State.

1.3 Aim and objectives of the study

The main aim of the study is to investigate the influence of teacher's motivational strategy on achievement in mathematics for secondary school students in Bosso local government Area, Niger state. The research is carried out with the following objectives:

- i. To determine how planning as a motivational strategy influence learning achievement in mathematics for secondary schools.
- ii. To promote instructional feedback as a motivational strategy on learning achievement in mathematics for secondary school students.

1.4 Research Questions

- i. What is the effect of planning as a motivational strategy on students' learning achievement in mathematics?
- ii. How does feedback as instructional method on motivational strategy influence students learning achievement?

1.5 Research Hypothesis

H₀₁: There is no significant relationship between planning as a motivational strategy and students learning achievement in secondary school Mathematics in Basso Local Government Area of Niger State.

H₀₂: There is no significant relationship between feedbacks as an instructional method and learning achievement of secondary school students in Mathematics.

1.6 Significance of the Study

The study will contribute towards the improvement of theory and practice in Mathematics education. Specifically, it will provide empirical and objective data about teachers planning, learning resources and teacher's feedback strategies/methods on learning achievement of mathematics students in secondary school. Such information will be useful to the following organizations and groups of people. The ministry of education in policy formulation about production of mathematical teaching materials and promotion of instructional approaches that are gender sensitive and those that promote student's motivation to learn mathematics. The directors of education, district education officers and mathematics inspectors of school in their task of enhancing and enforcing effective classroom practices in the teaching of mathematics in Nigeria schools at all level. The faculties of education in the public universities in Nigeria in their task of providing innovative teachers of mathematics who would use sensitive instructional methods and media in mathematics lesson thereby balancing mathematics challenge and success in the subject among boys and girls. The knowledge of students "motivation" to learn mathematics is also useful for teachers and educators. The study will help all teachers of mathematics in understanding and enlightening them on how to enhance student's mathematical self-concept, improve students' motivation to learn, give effective teachers

feedback to students using effective instructional media, use of effective evaluation practices and create classroom environment that is friendly.

1.7 Limitation of the Study

This study was delimited to two major aspects in mathematics topics for secondary schools which are:

SS II Students of Secondary School

Algebra process, Modular Arithmetic

These topics are chosen because it has been observed that students are not always interested in learning these topics and these often leads to their poor performance in Mathematics even from Junior secondary education. The study covers two Senior Secondary School in Bosso Local Government Area, Niger State.

1.8 Definitions of Major Terms

Feedback: This refers to the knowledge of results given by a teacher to a student. It could be a written comment, verbal comments, grades or teacher's behaviour which indicates evaluation of the children's performance in assignments, tests or correctness of learners to questions during mathematical lessons.

Learning achievement: This term refers to the learner's ability to comprehend and retain concepts and principles taught in a formal set-up. This may be in terms of educational benefits to the individual learner which may be seen in differential lifetime earnings, physical productivity or job promotion rates of the educated over the uneducated. In this

study learning achievement will refer to as ability to comprehend and retain mathematical concepts and principle.

Instructional Resources: Any item, living or inanimate used during the learning process or any activities taken deliberately to change an existing school situation. In their broadcast sense “resources can be taken as anything in the school or its environment that may be used to help teaching or learning. These may include people in various buildings and their surroundings, physical plants and actions resulting from a change in any particular situation. A resource becomes a teaching resource if it is physically used for aiding teaching and learning.

Strategy: A designed plan or set procedures that should be acted upon aimed at achieving set goals. **Mathematical environment:** In this study, this referred to a dynamic mathematical classroom ecological system which is an outgrowth of both teacher and student’s interaction under certain instructional organizational factors. This also included classroom physical aspects. Actually this is the context in which teaching and learning activities occurred.

Motivation: The psychological process that determines the direction intensity and persistence of behaviour. In this study it will refer to that which activates or energizes student’s behaviour related to learning mathematics.

Motivational Strategies: These are designed plans or set of procedures that help determine the direction intensity and persistence of a given behaviour. In this study, motivational strategies referred to: Teacher’s planning, teacher’s use of instructional

resources, teacher's feedback (Response to student's work), teacher's instructional method and teacher's mathematical classroom environment.

CHAPTER TWO

2.0 REVIEW OF RELATED LITERATURES

This chapter contains the related literature review on the experimentation of impact of teacher's motivational strategy in secondary school students' achievement in mathematics in Bosso Local government area of Niger state. The literature is reviewed and discussed under the following sub- heading conceptual framework, theoretical framework, empirical of the study and summary of reviewed related literature.

2.1 Conceptual framework

2.1.1 Concept of Mathematics

Mathematics is the science of numbers and their operation. (Martian -Webster, +2018).

Mathematics is from Greek word meaning "knowledge, study, learning" is the study of topics such as quantity, structure, spaces, distance and change. Mathematics is the science that developed from the investigation of figures and computing with numbers Berlin, (2010).

Britannia (2012), reported that Mathematics being the science of structures, orders and relations also includes elementary practice of counting, measuring, describing the shapes of objects.

Okafor (2011), Opined that the knowledge of Mathematics is an important tool in our Society, Mathematics is very important in everyday life, it makes human to be reasonably creative, abstract thinking, critical thinking, problem solving ability and even effective communication skills.

Mathematics is the cradle of which without the world cannot move. In any profession, Mathematics is needed in everyday life and it becomes an aspect for student to acquire before leaving secondary school. NPE (2010), stated that Mathematics is deeply interrelated to science and it should be prioritized.

Schefflee (2011) viewed that Mathematics instruction has been oversimplified because Mathematics has become a subject rather than a process. As a subject, Mathematics must be presented in a numerical, exact, mechanistic and precise manner. For every problem, there must be solution.

2.1.2 Concept of student's achievement in Mathematics

Student's achievement in Mathematics (SSCE, WAEC, NECO) the chief Examiner's report of the result of State public examination (NECO 2011-2013) had shown remarkably a decline in the percentage of passes in Mathematics in Niger State. Tarig Mohammad Ali, (2012). Reported that the most common errors make by the Students were found to be in the basic arithmetical operation.

Fatima Mushtaq (April 2013), viewed that the achievement in Mathematics would seem good, if standard teaching methodology is adopted thereby, give better results for students' performance or scores.

Ogbonnaya (2007), Students' Mathematics achievement in secondary School have a great effect on their academic performance in post-secondary school and their future career, when students have good knowledge of Mathematics, it helps them to develop better idea and offers more career options (Musa, Markus 2018).

Wilkins and Ma (2012), Opined that the important of Mathematics learning has repeatedly been a challenge over decades for Educators and Politicians, both teachers and parents have paid attention to Student's performance in Mathematics and their improvement regularly. Government had also called for improving overall performance and eliminating student's achievement gaps.

For effective Student's academic progress, teachers and parents need to recognize factors influence their Mathematics achievement.

Malcolm (2014), in his reviewed suggests that when examining factors that facilitate achievement in mathematics, a more extensive investigation should be done and considers schools, teachers and learning variables.

2.1.3 Concept of Motivation

In making instruction interesting in science education, there is a need to use methods, strategies, materials, equipment, laboratory and visual aids which make the learning interesting, active, investigative and conducive for the students as much as possible. Such methods also must be ones that consider students' differences, backgrounds, and motivational attitudes towards science as a subject. It is known that to help a student to reach his/her goals the internal drive which is called motivation is needed.

Singh (2011), indicated that the adoption of motivation allows students to have self-determination and a feeling of enthusiasm that leads to realize greater achievement and objectives in life and academic processes. In fact, the issue of learning and achievement through motivation is still a relevant topic in psychology and educational research.



Figure:2.1:

2.1.4 Theories of Motivation

1. Intrinsic and Extrinsic Motivation Theory

Intrinsic motivation, according to Ryan and Deci (2000), is defined as an activity performed for its own reason, without regard for extrinsic incentives, and for the sheer pleasure it brings. Intrinsic motivation can be triggered by the correct level of challenge, as well as adequate skills, a sense of control, curiosity, and fantasy. And when willpower and a positive attitude are combined, motivation is increased. Discoveries indicate that intrinsic drive and academic achievement go hand in hand and yield favorable outcomes. Contero & Pérez-López (2013). Intrinsic motivation allows pupils to enjoy themselves while participating in academic tasks and without any external pressure or force, as well as without any expectations of benefits (Ryan, & Deci, 2000). Extrinsic motivation, on the other hand, refers to activities that students engage in in anticipation of receiving benefits, such as good marks or recognition, or out of compulsion and fear of punishment (Tohidi &

Jabbari, 2012). Extrinsic motivation can be cultivated at an early age, especially in mathematics, as long as the goal is to meet the inner desire as the learning process begins. The rationale for this is that it is completed in a short amount of time and is potentially reliant on rewards. Although extrinsic motivation can lead to a high degree of power and engagement, it does not guarantee success due to hedonic adaptation, however, it does not stimulate endurance and it is difficult to maintain power for a long amount of time. Both sources of motivation have a place in the learning process. While intrinsic motivation can lead to high levels of self-motivation, extrinsic motivation is more likely to provide an initial boost that keeps pupils engaged in the activity and learning process for a period of time (Ti, & Lynch, 2016). It's no easy task to teach kids how to be highly motivated, face hurdles, comprehend the process, and use their newfound knowledge in real-life situations.

There are two sorts of incentive to learn, according to Bandura (1977). Intrinsic and extrinsic motivation are the two types of motivation.

Intrinsic motivation is a response to an individual's internal demands, such as a personal interest in the subject, fulfillment, or delight in a learning assignment that is intrinsically attractive.

Extrinsic motivation is aimed at providing a student with external benefits. This could take the form of praise from the teacher, approbation of a student's participation in a lesson, positive feedback on task completion, or encouragement. As a teacher, you should support both sorts of motivation in your students to help them achieve academic success in

mathematics. Teachers use intrinsic motivation to explain or demonstrate why learning a specific content is important, to arouse and maintain curiosity, to provide a variety of activities and sense of stimulation, to provide games and simulations, to set learning goals, to relate learning to students' needs, and to assist students in developing a plan of action. Teachers that use extrinsic incentive set clear standards, provide accurate feedback, offer good rewards, and make rewards available. There are a number of motivational theories that support the value of rewards in motivating students to learn and understand mathematics. The drive, equity, and valence instrumentality expectance theories are examples of these ideas.

According to Dennis (1993), drive theory asserts that all human activity is induced by a system of drives which are mostly primary and it includes gift, money and praise. Hayes (1994) called the drive theory the homeostatic theory in which drives are seen as a source of motivation that results from homeostatic disequilibrium. For example, the desire to receive praise becomes so high in a learner; this may bring internal homeostatic disequilibrium which will later have to be corrected. For Hayes (1994), stated that the drive-reduction theory which states that all motivation for learning is based on the need to reduce some kind of drive which could be primary or secondary.

Drive theory, according to Dennis (1993), says that all human activity is induced by a system of basic drives, which include gifts, money, and praise. The drive hypothesis, coined by Hayes (1994), is a homeostatic theory in which drives are viewed as a source of motivation resulting from homeostatic disequilibrium. For example, if a learner's desire for

praise gets too strong, he or she may have internal homeostatic disequilibrium, which must be addressed later. According to Hayes (1994), the drive-reduction hypothesis posits that all learning motivation is based on the urge to diminish some form of drive, which could be main or secondary.

1. The goal theory

Pintrich (2010), shows that most of the work on student motivation has been informed by achievement goal theory. The goal theory is a mental theory premised on the knowledge that goals motivate individual learners by providing them with evidence about their successes or failures (Dembo, 1994). Also viewed as the goal setting theory (Schultz and Schultz, 1994), the goal theory informs that people's primary motivation in a work environment or in other ways is defined in terms of their desire to achieve a particular goal. This line of thinking is also supported by Middleton (2004) who brings our attention to the fact that people's actions are mostly motivated by their desire for success. The above assertions echo with the assertion by Dembo (1994) who asserted that students in classrooms are motivated to participate in an activity by a desire to satisfy personal goals which include social goals (e.g., desire to gain approval or acceptance of peers), mastery goals (desire to learn and master new knowledge), and performance goals (desire to demonstrate one's ability to others by getting a good grade or getting a higher mark than peers). According to Dembo (1994), reported that ability of a goal to be motivating is hanging on the following conditions:

- i. Specificity: goal is specific and clear on what is to be achieved;

- ii. Proximity: goal is short term; and
- iii. Level of difficulty: goal is attainable

Harackiewicz *et al.*, (2002) observed two broad sectors of performance goals namely the performance-approach goals and the performance-avoidance goals. The performance-approach goals refer to a situation where students demonstrate favourable ability in comparison with others and they are motivated by this positivity. Performance-avoidance goals refer to a situation that shows students focusing on putting in a least amount of effort in their work just to avoid looking incapable to others.

2. The competence theory

Mwamwenda (1996), reported that the intrinsic desire by all people to want to perform competently or to gain proficiency of their environment or over a body of knowledge or skills is a strong source of motivation to expend more effort in some work. In the context of mathematics, the theory according to Mwamwenda (1996) States that learning tasks that enable learners to feel they have what it takes in terms of skill and knowledge to solve challenged problems are source of motivation and also help to improve confidence in the learners.

3. The achievement theory

The achievement theory of motivation support that all human efforts and emotions are motivated by the desire to a tieplish their goals (Dennis, 1993; Mwamwenda, 1996; Schultz

and Schultz, 1994). This theory is viewed as working on the assumption that every student wish is to avoid failure and to fulfill his/her desire.

2.1.5 Importance of Motivation

Mutitu (2012), postulates that student's motivation is an essential element that's necessary for quality education. Palmerr (2007), affirms that when students are motivated, they pay attention, they begin working on the task immediately, they ask questions, volunteer answers and they appear happy and eager to learn.

As Mazumder (2014) pointed out, motivation is critical for achieving results in difficult circumstances, staying focused on goals, and completing difficult tasks. It is clear that each student's driving force is unique, and that it is usually a combination of elements that leads students to achieve their objectives. The subject of achievement and learning motivation can be approached in a number of ways.

Furthermore, it is anticipated that assessing students' implicit planning the appropriateness of students' long-term goals and their academic achievement in science education. Supporting this assumption, Ward (1997) argued that individuals with high achievement motivation are focused on achievement goals and are generally proactive. According to Zenzen (2002), the students are effected by a need to achieve in a certain level and the students having a high desire of success, work harder to succeed (p.10). Steinmayr and Spinath (2009) reported the significant relation between need for achievement and student performance.

2.1.6 Concept of Motivational Strategies

Motivational strategies are tactics, techniques, or approaches to encourage learners or students to participate in the teaching and learning process.

Virtual Multicultural Education (2021). It is the process, methods, means of encouraging students to productive cognitive activity, to actively master the educational material and depending both on the actions of the teacher and the student himself.

Planning as a Motivational Strategy

Through planning for a lesson makes the teaching-learning encounter valuable and productive impact. Conversely, no planning leads to a wasteful and unproductive lesson.

The motion pervades education at all levels and in all subject areas (Egbe, 2018).

According to the professional leadership of the National Council of Teachers of Mathematics (NCTM, 2000), mathematics teachers and educators must deeply understand the mathematics contents they are teaching, understand how learners learn mathematics, including a keen awareness of their own students' individual mathematical development and common misconceptions, and choose a meaningful instruction. This means that when teaching mathematics, teachers must prepare ahead of time. This will aid in the rational transmission of mathematical knowledge to learners while maintaining their motivation.



Figure 2.2:

A gratifying smile from a teacher is likely to increase a student's degree of appreciation during a mathematics lecture, according to Fola (2021), by (Miller, N.E., 1948). Similarly, a teacher's frown or reprimand will very certainly reduce the likelihood of unwelcome behavior occurring again in the classroom.

Bandura's (1997) research investigations, cited by Fola (2021), indicated that a teacher's belief in his or her ability to instruct pupils had a significant impact on student accomplishment. We also believe that a teacher's self-perceptions, such as self-efficacy, have an important influence in the classroom environment and student learning effectiveness. Conversely, We claim that teacher self-efficacy has an impact on not only students but also the entire school organizational system. Ball (2010) argues that teachers' self-efficacy leads to collective efficacy, which has an impact on the entire school system.

Furthermore, Porter and Brophy (1988) believe that a teacher with a high sense of self-worth is more effective at creating a learning environment. It was also mentioned that the teacher plays a significant role in classroom management, improving students' motivation to complete assignments, and applying effective learning methodologies (Cardenas & Cerado, 2016).

Furthermore, it was mentioned that the motivation of teachers had an impact on achieved positively, enabled the teachers to have better planning and organize facilities (Gowrie & Ramdass, 2014). Based on Rotter's (1966) focus of control theory, it was argued that student learning and motivation were the outcomes of teacher's self-evaluations. Motivational teachers generally have more outstanding students in other classes.

Furthermore, teacher motivational strategy was found to be associated to positive teaching behaviours and strong student achievement since teachers having high self believe used open-ended questions, interactive learning, inquiry methods, and group learning activities in the classroom (Gavora, 2010). More specifically, it is stated that teachers who positive results were achieved, allowing teachers to plan and organize their classrooms better (Gowrie & Ramdass, 2014). It was claimed that student learning and motivation were the result of teacher self-evaluations, based on Rotter's (1966) focus of control theory. Students in other classrooms are more likely to be motivated by their teachers.

Furthermore, it was discovered that teachers with high self-esteem used open-ended questions, interactive learning, inquiry methods, and group learning activities in the classroom, which were linked to positive teaching behaviors and high student

accomplishment (Gavora, 2010). It is asserted, for example, that teachers who are in science, mathematics, and technology education, they are resilient and have a tendency to take chances and apply newly adopted approaches, as well as being innovative (Schunk & Pajares, 2001; Ross, 1992; Midgley et al., 1989). Other studies have found that professors who use a motivating strategy are more willing to adapt new ideas and procedures, promote students' initiative and autonomy, and increase students' interest in science (Brouwers & Tomic, 2003; Ross & Bruce, 2007). Teacher motivation, according to Gavora (2010), can be viewed as a powerful self-regulating trait that allows teachers to use their potentials to improve students' learning.

Finally, previous research has demonstrated that using teacher planning as a motivating technique has an effect on student motivation and accomplishment, which is consistent with the findings of this study.

Feedback Method as motivational strategy

Giving kids feedback entails explaining what they're doing well and badly. However, the feedback should primarily focus on what the pupils are doing well. When students are given an explanation and an example of what is correct and incorrect in their work, it is most beneficial to their learning. Consider using the concept of a "feedback sandwich" to help you structure your feedback: Compliment, Correct, Compliment Teach thought, (2021). Learners desire to know where they stand on their work, according to studies of successful teaching and learning (Dinham, 2002, 2007a; 2007b). Answering the following

four questions on a regular basis will aid in the delivery of high-quality feedback. When giving feedback to parents, these four questions are also useful:

What options do students have?

What is it that the learner is unable to accomplish?

How does the student's work compare to other students'?

What can the student do to improve?

Teach opined that (2021). Laura Reynolds contributed some tips on how to give effective learning feedback.

Feedback should be provided as soon as possible.

Be aware of the student's unique requirements.

Ask yourself the four questions listed above.

A skill or piece of knowledge should be mentioned in the feedback.

Provide comments to keep pupils on track for success.

Organize a one-on-one coaching session.

Feedback can be offered in a variety of ways, including verbally, nonverbally, and in writing.

At the start of class, return any tests, papers, or comment cards.

Praise with sincerity.

Students should be assisted in developing self-control tools. Incentives can be used to manage students' immediate classroom behavior since rewards and punishment work. A pleasant smile from a teacher, according to Mutitu (2012), is likely to increase a child's

degree of appreciation in arithmetic class. A frown or a reprimand from a parent. Similarly, a frown or a scolding by a teacher will, most likely decrease the probability of undesired behaviour being repeated in the classroom. According to (Maslow 1954), teachers could give students stars in their books or high grades once a certain criteria of performance is attained. They could also be given more time to play once a certain task is satisfactorily completed while the reverse will take place in reinforcement. According to Palmer, (2007), encouragement and praise can strongly influence Student's motivation.

2.1.7 Role of Teachers in Motivating Students

Mathematical learning is enhanced when teachers focus on mathematical thinking and reasoning, according to (NCTM, 2009). According to (Ginott, 1976), the teacher is the most important factor in the classroom. He or she has immense power to make a learner's life unpleasant or joyful; he or she can be a tool of torture or an instrument of inspiration; he or she can humiliate or amuse; he or she can injure or heal. The response of teachers in the classroom learning environment determines whether a crisis is exacerbated or deescalated in all instances. According to the (SMASSE Project, 2004), the behavior of teachers in the classroom influences students' motivation. This indicates that it is the mathematics teacher's obligation to understand and meet the needs of his or her students. For all students to achieve excellence in mathematics, high expectations and strong support are required. NCTM (National Center for Technology Management, 2000). As a mathematics instructor, you should encourage your students to view the topic as a whole, rather than a collection of discrete bits and parts. As a mathematics teacher, you must have a profound flexible and

adaptive knowledge of mathematics, according to (Thomas, Friedman, 2007). Possess the ability to keep calm and persevere in the face of adversity.

MOEST (2004) advances that teach in his mathematics module for teaching and learning mathematics in the elementary school advances those teachers with positive attitude teach mathematics in a more successful way and these results in their students liking the subject more. Have a thoughtful temperament as a mathematics instructor; set aside time to be self-aware and reflective. If you don't feel inadequate as a mathematics instructor after honest self-evaluation and reflection, you're probably not doing your job. According to the East African Regional Mathematics Programme (EARMP) 1973, whether you are a pre-service teacher or an experienced teacher, there is more to learn about the subject and methods of teaching mathematics. The ability to evaluate oneself for areas that need work or to reflect on triumphs and difficulties is critical for growth and development. According to the (MOEST, Maths module 2004), the best teachers are always looking for ways to improve their practice by reading the most recent articles, reading the most recent book, attending the most recent conference, or enrolling in the most recent series of professional development opportunities. As a result, the best teachers never stop learning, never become exhausted when the number of new mental and as a result, they never see teaching as a stale, stagnant or a boring job, with every new edition they enjoy the journey.

2.2 Theoretical Framework

In 1954, Abraham Maslow proposed a hierarchy of wants based on two categories: deficiency and progress. This theory is based on two assumptions. The first is that humans

have a variety of needs, ranging from biological needs at the lowest level to psychological needs at the highest level. The second assumption is that these requirements must be met before higher-level requirements can be met. The five levels created can easily be implemented in a school or classroom setting. Physiological needs, for example, are essential for survival; they include food, drink, shelter, and sex. Before the child may learn, he or she must be well fed and cared for while still at home before he/she can learn. Hungry, malnourished youngsters are unmotivated to learn, and safety or security demands imply the urge to protect oneself. Stability and anxiety-free living are two of them. This implies that children should be able to live in peace at home and at school. There should be no bullying, and a welcoming learning environment should be created. We have needs for love, friendship, affection, and social contact under the heading of love and social needs. Peer tutoring and various clubs that students may identify with, such as a mathematics club, should be used to improve this in the classroom.

A need for recognition for well-done labor is required for self-esteem. Praise and awards help to reinforce this. Self-respect is an internal acknowledgement, whereas other people's respect is an exterior recognition. The goal of self-actualization is at the top of the list. This refers to the need to completely develop and achieve one's strengths and potentialities to the utmost extent feasible. At this level, students are assisted in realizing their potentials and working toward their realization through the use of manageable math targets. As a result, this idea is quite important to the current research. Figure 2.3 depicts a maths teacher encouraging a pupil.

2.3 Review of empirical related studies

Oriachi Christiana (2009)'s investigation is relevant to this study because it focuses on the impact of motivation on students' academic performance. The study was guided by four research topics and four null hypotheses. The survey method was used in this investigation. A total of 720 participants were included in the study, including 640 students and 80 teachers from 16 secondary schools, as well as 15 people from other backgrounds. To obtain information from the respondents, researchers used a self-developed motivational questionnaire (IMOAP) for secondary school students and instructors on the influence of motivation on academic achievement, which was thoroughly validated by experts in educational measurement and evaluation, guidance and counseling, and educational psychology. The data was analyzed using the basic percentage method. The findings of the data analysis revealed that student motivation is critical for improved academic performance. The importance of student motivation in academic pursuits cannot be overstated. The motivation of students has a strong positive association with their academic success. The school environment and organization have a tremendous impact on students' motivation. The investigation is related to this study in the sense that the study is concerned with the influence of teachers' motivational strategies on learning achievement in numeracy for Secondary school.

Jane Wanjiru Njogu (2015), the investigation is related to this study in the sense that the study is concerned with the influence of teachers' motivational strategies on learning achievement in numeracy for pre-school children in Ol Joro Orok Zone, A descriptive

survey design with a stratified sample population was utilized in this investigation, In order to create the final sample, simple random sampling was used. Head teachers, pre-school teachers, and pre-school children made up the population, which was based in schools. Questionnaires, interviews, observations, checklists, and examinations were all used to gather information. The study's data was analyzed using descriptive and inferential statistics at the descriptive level, with results expressed as means, frequencies, and percentages. It was discovered that employing a wide range of motivational tactics resulted in improved performance. When numerous motivating tactics were applied effectively in the learning process, this resulted in excellent performance, but a lack of incentive techniques resulted in poor performance, this was clearly reflected by the analysis of t-test.

EURASIA journal of mathematics, science and Technology Education, (2018), This investigation is related to this current study in the sense that it is concerned with the effects of teacher efficacy and motivation on students' academic achievement in science education in secondary and high schools in Iran and Russia using the motivation for academic performance scale (= 0.89) and teacher segregation scale (= 0.91) The Statistics were used to test two hypotheses. Comparative analyses were performed using test results to evaluate the demographical differences of students in terms of their academic achievement in science education. Results showed that gender difference was not significant, but nationality difference was significant in terms of students' academic achievement in science education. Other studies revealed that teacher self-efficacy and motivation have a significant impact on academic achievement in scientific education. Implications,

suggestions, and recommendations were addressed and provided for kids, teachers, school administrators, parents, government, education counselors, and others.

This investigation was conducted by the European Centre for Research, Training and Development in the United Kingdom in 2014. This study is similar to this one since it looked into the concept of motivational methods and how they apply to the teaching of primary school mathematics. The goal theory, achievement theory, competency theory, self-efficacy theory, and general interest theory were among the motivational theories examined in the study as to how primary school learners can be motivated to desire to learn mathematics. A number of motivational tactics were also explored, including expressing confidence, expressing high aspirations, providing feedback, and respecting learners' activities. While the majority of instructors agreed that utilizing motivational teaching tactics to motivate students to learn mathematics is important, the majority of those same teachers do not appear to be employing motivational teaching strategies in the classroom on a regular basis. High workloads and big class sizes in primary schools are two of the major reasons why primary school mathematics teachers do not use motivational tactics in their teaching on a regular basis, according to this study. Data was collected using a standardized questionnaire.

2.4 Summary of Review of Literature

The following summaries the literatures review of "impact of teacher's motivational strategy in secondary school achievement in mathematics". From the reviews so far it has

been discovered that motivational level is very important to effectuate the challenging conditions in mathematics in secondary school level.

Of the above review and concluded in the program Summary. Almost all of the applications agreed internally with the adoption of Motivational strategy in Secondary school as an important method to increase or change the level of achievement in mathematics positively.

It was feasible and cleared from research carry out by almost "ten" researchers that motivational intending working on

The following is a summary of the research on "the impact of a teacher's motivational method on secondary school mathematics achievement." According to the assessments so far, motivating level is critical for achieving difficult conditions in mathematics at the secondary school level.

The above analysis is summarized in the program summary. Almost all of the applications agreed that using a motivational strategy in secondary school is an important way to improve or change the level of mathematics achievement in a positive way, It was possible and obvious from nearly "ten" academics' investigation that motivating intentions acting on the impact of several tactics that can improve mathematics performance in "Senior secondary school" research found that achievement motivation and self-concept were substantially related to students' academic progress in mathematics (Awan, Noureen, & Naz, 2011).

According to Singh (2011), motivation fosters self-determination and passion, which leads to a student's realization of larger significance and aims in personal and academic

processes. Mutitu, Mutitu, Mutitu (2012). It was discovered that student motivation is a critical component of high-quality education.

As Mazumder (2014) pointed out, motivation is critical for achieving results in difficult situations, staying focused on goals, and completing difficult activities. Steinmayr and Spinath (2009), as reviewed by Fola (2021), conducted research and found a significant link between student achievement and need for achievement.

Philippo, George (2014), Fear of failure, self-efficacy, beliefs, and accomplishment goals all influenced student performance and interest in mathematics, according to the findings of a study. In light of all of the findings, it appears that the only way to solve the ongoing difficulty in mathematics is to identify the strategies that are appropriate for each stage of the process.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter comprises of the following as subheadings;

Research design; population of the study; sample and sampling techniques; Research instrument; validation and Reliability of the instrument, Method of Data collection and Method of Data analysis.

3.2 Research Design

The research design for this study was a quasi- Experimental design (pre- test and post test- test) in which the Non - Equivalent Control group design was used. This research design was seen to be the most desirable because the study sought to describe the current situation of instructional delivery in the classroom in terms of teaching strategies being used and their relationship to students' achievement in Mathematics.

3.3 Population of the Study

In this research, the population of the study includes all public Secondary Schools in Bosso Local Government Area. At the time of this study there were twenty (20) public secondary schools. The twenty secondary schools had a population of SS II Students 5671 (male 2955, female 2716) and SS II students were the target population for the study. See appendix C.

3.4 Sample and Sampling Techniques

The study makes use of two stage sampling techniques. First stage a simple random sampling techniques was used to select two schools out of 20 secondary schools in Bosso Local Government Area. The two schools were sampled at random from the 20 public schools. Second stage, the students were sampled using purposive sampling techniques. The sample used of 5%, of the total population of the study, because the study was used experimental design which involved experimental and control groups. The table below shows the two schools selected at random.

Table 3.1: Distribution of sample size by school and Gender.

| Schools | Male | Female | Total |
|------------------------------|-------------|---------------|--------------|
| Day secondary school shatta | 50 | 26 | 76 |
| Bosso secondary school Minna | 40 | 32 | 72 |
| Total | 90 | 58 | 148 |

3.5 Research Instruments.

This study was conducted using one research instrument which is structured students' achievement Test (multiple choice objective tests) as a means of data collection. There is going to be Two: Section "A" response to planning as motivational strategy. Section "B" response to Feedback as a motivational strategy.

3.6 Validity of Research Instrument

The instrument for this study is student achievement test on motivational strategies. The convey and face validity for the research instrument will be done by a Professor and senior lecturer from the Department of Science Education and Department of Educational Technology respectively from Federal University of Technology, Manna. Their observation and suggestions was corrected by researcher. Experimental group were taught using motivational strategies, which are; planning, feedback as motivational strategies, while control group were taught without any strategy.

3.6 Reliability of the instrument.

Pre- test was done in secondary school different from the school selected for sample population. A total of 10 copies of questionnaires was administered to the students at Bosso Local government area. Researcher uses split - half method to generate the data. The score obtained was computed using simple correlation. The overall reliability of the questionnaire is 0.78 indicating that the instrument is reliable.

3.7 Method of Data collection

In this research, the independent variable is “teacher’s motivational strategies while the dependent variable is “secondary school student’s achievement in mathematics. Permission letter was taken to the selected schools which assisted researcher to get the required sample size and cooperation of the students. From principal to vice- principal to teacher they all showed interest and assisted in administration of research instruments for the students

sampled for the study. The researcher administered the achievement tests to the students. The researcher assured the respondents of the confidentiality of the given information.

3.8 Method of Data Analysis

The mean and standard deviation were used to answer research questions, data was analyzed using descriptive statistics and students t- test to answer hypotheses using the Statistical Package for Social Science (SPSS), Version 16, at 0.05 level of significance.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

The data collected was analyzed according to the research questions and hypotheses formulated.

4.1 Research question 1

What is the effect of planning as a motivational strategy on students' achievement in Mathematics?

Table 4.1: Mean and Standard Deviation of Pre-test and Post-test Scores of Experimental (planning) and Control (Conventional) Group in the Achievement Test

| T-test | N | Pre-test | | Post-test | | Mean Gain |
|--------------|----|----------|------|-----------|------|-----------|
| | | Mean | SD | Mean | SD | |
| Experimental | 72 | 41.25 | 9.89 | 43.75 | 9.83 | 2.5 |
| Control | 76 | 25.56 | 9.61 | 26.58 | 9.59 | 1.02 |

Table 4.1 shows that the experimental group had a mean of 41.25 and a standard deviation of 9.89 in the pre-test and mean score of 43.75 and a standard deviation of 9.83 in the post-test making the pre-test - post-test mean gain in the experimental group to be 2.5. The control group had a mean score of 25.56 and a standard deviation of 9.61 in the pre-test and a mean of 26.58 and standard deviation of 9.59 in the post-test, resulting in a mean gain of 1.02. With this result, this implies that students taught T-test strategy method of teaching performed better than those taught without any strategy method of teaching.

4.2 Research Question 2

How does feedback as instructional method on motivational strategy influence students learning achievement?

Table 4.2: Mean and Standard Deviation of Pre-test and Post-test Scores of Experimental (feedback strategy) and Control (conventional)

| Group | N | Pre-test | | Post-test | | Mean Gain |
|--------------|----|----------|------|-----------|------|-----------|
| | | Mean | SD | Mean | SD | |
| Experimental | 56 | 18.52 | 8.41 | 19.55 | 6.49 | 1.03 |
| Control | 43 | 16.18 | 8.09 | 17.09 | 9.08 | 0.92 |

The data in Table 4.2 show the experimental group had a mean of 18.52 and a standard deviation of 8.41 in the pre-test and mean score of 19.55 and standard deviation of 6.49 in the post-test making the pre-test - post-test mean gain in the experimental group to be 1.03. The control group had a mean score of 16.17 and a standard deviation of 8.09 in the pre-test and a mean of 17.09 and standard deviation of 9.08 in the post-test, resulting in a mean gain of 0.92. With this result, this implies that the Feedback instructional as motivational strategy is and has influence on student's achievement in Mathematics.

4.3 Hypothesis Testing

Hypothesis one: there is no significant relationship between planning as a motivational strategy and students learning achievements

Table 4.3: Independent Samples Test for Hypothesis one

| Leven's | | | | | | | | | |
|---|------|-------|-------|---------|---------------|-----------------|----------------------|---|--------|
| test for t - test for Equality of Means | | | | | | | | | |
| Equality of | | | | | | | | | |
| variances | | | | | | | | | |
| | f | Sig. | T | Df | Sig(2-tailed) | Mean Difference | Std Error Difference | 95% confidence interval of the difference | |
| TREATMENT | | | | | | | | Lower | Upper |
| Equal Variance Assumed | 0.19 | 0.656 | -9.62 | 145 | 0.000 | -14.925 | 1.551 | - | - |
| Equal Variance Assumed | | | - | 144.969 | 0.000 | -14.925 | 1.550 | - | - |
| | | | 9.631 | | | | | 17.988 | 11.862 |

Table 4.4: T- test Analysis of planning as motivational strategy and students learning achievement in Mathematics.

| Variables | N | DF | Mean \bar{X} | SD | T-val | P-val | Sig |
|--------------|----|-----|----------------|------|-------|-------|-----|
| Experimental | 72 | 145 | 43.75 | 9.83 | -9.63 | 0.00 | S |

| Variables | N | DF | Mean \bar{X} | SD | T-val | P-val | Sig |
|---------------|----|-----|----------------|------|-------|-------|-----|
| Experimental | 72 | 145 | 43.75 | 9.83 | -9.63 | 0.00 | S |
| Control group | 75 | | 26.58 | 9.60 | | | |

S = Significant

Table 4.4 Shows that t-test results on the comparison of planning strategy and students learning achievement, the result indicates $t = -9.63$, $DF = 145$, P- Value obtained is 0.000 which is less than the significant level of 0.05. This indicates that the test is significant. This means that learning achievement differ significantly from planning as a motivational strategy.

Hypothesis Two; There is no significant relationship between feedback as an instructional method and learning achievement of secondary school students.

Table 4.5: Independent Samples Test for Hypothesis Two

| Leven's test for equality of variance. | | | | | | | | T - test for Equality of Mean | |
|--|------|---|----|-------------------|--------------------|----------------------------|---|-------------------------------|--|
| f | Sig. | t | Df | Sig(2- tailed) | Mean Difference | Std Error Difference | 95% confidence interval of the difference | | |
| | | | | | | | | | |

| TREATMENT | | | | | | | | Lower | Upper |
|--------------|-----|------|-------|--------|-------|--------|-------|--------|--------|
| Equal | | | | | | | | | |
| Variance | .88 | .061 | -8.13 | 97 | 0.001 | 12.941 | 1.581 | -16.07 | 12.171 |
| Assumed | | | | | | | | | |
| Equal | | | | | | | | | |
| Variance not | | | - | 97.602 | 0.001 | 12.941 | 1.577 | - | 12.175 |
| Assumed | | | | | | | | | |
| | | | 8.233 | | | | | 16.074 | |

Table 4.6; T- test Analysis of Feedback instructional as motivational strategy and students learning achievement in Mathematics.

| Variables | N | DF | Mean \bar{X} | SD | T-val | P-val | Sig |
|------------------------|----|----|----------------|------|-------|-------|-----|
| Feedback Instructional | 56 | 97 | 19.55 | 6.49 | -8.18 | 0.001 | S |
| Learning Achievement | 43 | | 17.09 | 9.08 | | | |

S = Significant

The table 4.5; Shows that t - test result on comparison of Feedback instructional method as motivational strategy and students learning achievement, the results indicates; T- Val of - 8.1815, DF of 97, P-val of $0.001 < 0.05$. The P-value shows that there is significant relationship between the feedback as an instructional strategy and learning achievements. The P-value obtained is 0.001 which is lesser than 0.05. This indicates that they both differ significantly.

4.6 Findings of the Study

Motivational method of teaching was very effective in improving students' achievement in mathematics but Normal method of teaching was less effective compare to using motivation method of teaching.

Motivational strategy for teaching is effective in arousing the interest of students in learning mathematics while Normal method does not.

Learning achievement differs significantly from planning as motivational strategy.

There is significant difference between learning achievement and feedback as motivational strategy.

4.7 Discussion of Findings

The findings revealed that the group of students taught with motivational strategies (experimental groups) and those taught with normal method (control group) of teaching were compared based on the mean scores of the t-test. The results justify the comparison of the achievements of the students taught with Motivational strategies and those taught with normal method on an equal level which shows significance difference between them.

This findings on the mean achievement of the group of student taught using Motivational strategies and those taught with normal method is in line with findings of David (2016) and Michael (2017) which stated that knowledge gains were found to be significant with the experimental group using motivational strategy more than their counter part that were strictly taught in the class using normal method for mathematics. The implication here is that the present teacher of General mathematics should see the need to adopt the use of motivational strategy for effective understanding of their subject matter. The analyses and

results of this study showed that the experimental group had higher mean scores than the control group in the t-test. These findings indicate that motivational strategy has a positive effect on students' achievement in Mathematics. This implies that the key components found in motivational strategy when used, are more effective than lecture method in enhancing student achievement.

Therefore, motivational strategy is effective in teaching mathematics student than lecture method. Therefore, the null hypotheses were rejected and conclude that motivational strategy has significance effect on students' achievement in Mathematics. Teacher should also ensure that learning experiences is been effectively incorporate into the student by using motivational strategy and allowing them to participate actively in the lesson through motivational strategy.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the study

The study was carried out to compare the motivational strategies and student's achievement in mathematics in secondary schools in Niger State, Bosso Minna Local government. The study was structured into five chapters.

Chapter one dealt with the background to the study where statement of the problem for this study was presented, objectives, research questions and hypotheses were raised. Significance and scope of the study were presented. Chapter two covers the reviews of the related studies, where numerous materials were assessed. The independent variable, "Motivational strategy" , concept of mathematics, concept of student's achievement in mathematics, Academic achievement in mathematics, concept of motivation, and theoretical literature , several empirical studies were also reviewed.

Chapter three presents the methodology used to carry out this study. An experimental design, the research study was carried out in two senior secondary schools in Bosso local government area Niger State. The population targeted for the study in two (2) secondary schools in Niger state will be used for this research work. A total of number of (148) students was randomly selected. Lesson plan, achievement test were the instrument used for data collection.

Chapter four presents result and discussion. Data collected were statistically analyzed and result presented in tabular form. The test questions answered were analyzed using mean and

standard deviation, t-test result were used to test the null hypotheses that was formulated for study. Summary of the findings and discussion were presented. The two null hypotheses stated were retained.

Finally, chapter five presents summary of the study, where each chapter discussed was summarized in details. Implications of the study were also presented based on the findings. Conclusion is also presented based on the findings and recommendations are also made for teacher, parents and school administration, ministry of education interested on motivational strategy and suggestion for further study was also made

5.2 Conclusion

Okafor (2011) opined that the knowledge of mathematics is an important tool in our society, Mathematics is very important in everyday life, it makes human to be reasoning creative, abstract thinking, critical thinking, problem solving ability and even effective communication skills. However, the academic performance of mathematics students in secondary schools over the year has not been encouraging .These problems can be dealt with if the teaching method of the teacher centre can be change and adopt the motivational method of teaching. This study was step up to investigate the influence of teacher motivational strategy on secondary school student's achievement in mathematics and The investigation therefore reveals that using motivational strategy in mathematics classis better than employing lecture method of teaching.

5.3 Recommendations.

Based on the findings of the study, the following recommendation was made.

1 mathematics teachers in secondary schools should adopt the use of motivational strategy to teach their students.

2 schools should provide funds to teachers to get necessary equipment suitable for motivation of students during mathematics lesson.

3 Workshops and seminars should be organized for mathematics teachers on the effective use of motivational strategy.

4 The use of lecture method should not be allowed among teachers who taught mathematics students.

5 Students should be allowed to participate actively and interact freely with the teacher during mathematics class this will improve their performance and increase their interest towards mathematics.

6 Mathematics subject is not difficult to teach and learn if teacher adopt motivational method of teaching.

5.4 Suggestion for Further Study

The following related areas have been suggested for further research:

Effect of motivational strategy in mathematics for junior secondary school

Effects of motivational strategy on Student Cognitive Ability in mathematics for senior class

Competency improvement needs of teachers in the use of motivational strategies for teaching Mathematics.

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APPENDIX

Table of specification for achievement test on Mathematics subjects

Contents

Objectives

| | Knowledge | Comprehension | Application | Total |
|------------------------------|-----------|---------------|-------------|-------|
| Algebraic process 30% | 3 | 2 | 1 | 6 |
| Word problems 30% | 3 | 2 | 1 | 6 |
| Modular Arithmetic 40% | 4 | 2 | 2 | 8 |
| | 10 | 6 | 4 | 20 |

NOTE: - the percentage of number of items assigned to each cell is decided based on teaching of the different topics or Contents.

MATHEMATICS ACHIEVEMENT TEST (MAT)

Time: - 2 hours

General Instructions: - Attempt All the questions by circling the correct option.

SECTION A (PLANNING METHOD)

1) what number is Five times as big as 20?

A. 100. Answer is A

B. 30

C. 20

D. 14

E. 50

2) Express p meters in centimeters.

A. 12cm

B. 100cm Ans is B

C. 50cm

D. 80cm

E. 70cm.

3) A student has #200, if someone gives her #160, how much will she have altogether?

A. #360. Answer is A

B. # 60

C. #80

D. #120

E. #50

4) How many hours in 120 mins?

A. 3 hours.

B. 2 hours. Answer is B

C. 6 hours

D. 4 hours

E. 0 hour

5) The perimeter of a rectangle is 20m and the length is Xn . Express the Area of the rectangle in terms of x .

A. $(20-x^2)$ m. Answer is A

B. $(2x-x)$ m

C. $(3x-x)$ m

D. $(10x)$ m

E. $(34x)$ m

6) Find the product of 8 and 6

A. 48. Answer is A

B. 32

C. 14

D. 46

E. 30

7) Simplify $2y + 5y - 3y$

A. $3y$

B. $7y - 3y$

C. $4y$. Answer is C

D. $5y$

E. $2y$

8) Evaluate $4(3x - 5y + z)$

A. $(12x-4z)$

B. $(12x-20y+4z)$. Answer is B

C. $(4z-20y)$

D. $20y$

E. $8z$

9) Express $4x/9+x/9$

A. $4x^2/9$

B. $5x/18$

C. $5x/9$. Answer is C

D. $9/5x$

E. $3x$

10) What is the value of x in equation $1/2 = 1/7x$

A. $7/2$

B. $3/2$

C. $2/7$. Answer is C

D. 7

E. 2

11) What is the value of $p^2 - q^2$, if $p = 3$ and $q = 1$.

A. -12

B. -6

C. -3

D. 9

E. 8. Answer is E

12) Solve $51=3+8x$

A. 7

B. 8 answer is B

C. 6

D. 7

E. 5

13) Solve $3x=1(\text{mod}7)$

A. 0

B. 7

C. 5. Answer is C

D. 3

E. 4

14) Solve $5x = 1(\text{mod}8)$

A. 5 answer is A

B. 4

C. 2

D. 7

E. 10

15) find the value of $5*15(\text{mod}4)$

A. $3 \pmod{4}$. Answer is A

B. $1 \pmod{4}$

C. $8 \pmod{4}$

D. $5 \pmod{4}$

E. $2 \pmod{4}$

16) find 32 in its simplest form modulo 4

A. 8

B. 0 answer is B

C. 4

D. 2

E. 3

17) add $39 + 29 \pmod{6}$

A. $2 \pmod{6}$. Answer is A

B. $3 \pmod{6}$

C. $6 \pmod{6}$

D. $4 \pmod{6}$

E. $5 \pmod{6}$

18) find the simplest of $-5 \pmod{6}$

A. $2 \pmod{6}$

B. $1 \pmod{6}$. Answer is B

C. $9 \pmod{6}$

D. $4 \pmod{6}$

E. $5 \pmod{6}$

19) Express 2 and 19 as a numbers $\pmod{7}$

A. $0 \pmod{7}$

B. $3 \pmod{7}$. Answer is B

C. $4 \pmod{7}$

D. $7 \pmod{7}$

E. $14 \pmod{7}$

20) calculate $10 - 29 \pmod{12}$

A. 5

B. 10

C. 7

D. 12

E. 3