

**Classroom Management Practices and Teaching Methods as Predators of Senior
Secondary School Students' Academic Achievement in Mathematics in Oyo
Town, Oyo State**

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Education, Faculty of Education, Lead City University, Ibadan, Oyo State,
Nigeria**

**In Partial Fulfillment of the Requirements for the Award of Master of Education
Degree (M.Ed) in Educational Management**

Certification

This is to certify that Moses Bamidele AKINLOYE with matriculation number LCU/PG/000529 carried out this research work titled' Influence of Classroom Management Practices and Teaching Method on Senior School Students Academic Achievement in Mathematics in Oyo town, Oyo state' in Department of Educational management, Faculty of Education, Lead City University, Ibadan, Oyo State, for the award of Master of Education Degree (M.Ed) in Educational Management and that this has not been previously submitted.

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Dedication

This research work is dedicated to my wife, Temitope Yetunde, Akinloye.

Thank you for your words of encouragement, usual support and co-operation.

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Acknowledgement

I appreciate the University Librarian of Lead City University, Ibadan for providing me with the needed resources that I used to complete this work. I also want to appreciate the Department of Arts and Social Science Education, Faculty of Education, Lead City University for the opportunity given to me to gain new knowledge and insight in the field of Educational Management.

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“Even though the above mentioned institutions and persons have assisted in the process of this research work, I alone stand responsible for errors that are found in this work.”

Abstract

The study examined the influence of Classroom Management Practices and Teaching Methods on the Academic Achievement of Secondary School Students in Mathematics in Oyo Town, Oyo State. The study was based on the Theory of Planned Behavior and Theory of Reasoned Action. The descriptive survey research design was adopted for this study. The sample size was 2185 students, using a multi-stage sampling technique. A modified questionnaire was used as the research instrument with a reliability coefficient of 0.86. The results showed that the secondary school students' average academic achievement in mathematics in Oyo Town was low ($\bar{X}=2.35$). The majority of teachers used Teacher-centered methods (weighted mean=3.18), while student-centered (weighted mean=1.99) and teacher-student interactive (weighted mean=1.97) methods were used less. The results also indicated that Classroom Management Practices and Teaching Methods have a significant influence on Academic Achievement in mathematics ($R^2= 0.413$, $F= 190.74$, $p<0.05$). Where R^2 is the coefficient of influence, together they contribute or determine 41.3% of student Achievement in Mathematics. Classroom rules (41.7% or 0.417), teacher-student interaction method (35.0% or 0.318) and classroom design (31.8% or 0.318) had major influence while student centred (19.5% or 0.195), teacher centred (9.5% or 0.095) and discipline (2.5% or 0.025) had lesser influence. Male students ($\bar{X}=2.33$, $Std=0.979$, $p<0.05$) had higher achievement compared to female students ($\bar{X}=2.13$, $Std=0.828$, $p<0.05$). The study concluded that teacher-centered methods are mostly used to teach Mathematics, and classroom rules have the most significant influence on students' academic achievement. Classroom Management Practices and Teaching Methods have a significant influence on students' Academic Achievement in mathematics in Oyo Town. The study recommended that teachers adopt teacher-student interaction and that there should be provisions made for workshops on classroom management practices to improve learning.

Keywords: Classroom Management Practices, Teaching Methods, Academic Achievement, Teaching, Learning

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Chapter One

Introduction

1.1 Background to the Study

Mathematics is a subject that affects every aspect of human life at different levels. It is seen by society as the foundation of scientific and technological knowledge that is important in the socio-economic development of a nation. A study described Mathematics as the "queen" of the sciences, without which it would be difficult for people to study other sciences like Physics, Chemistry, Biology, and Computer Science/Information Technology¹. It is compulsory for all students to take to Mathematics in all secondary school in Nigeria. This is in line with the National Policy on Education, which emphasizes Mathematics as a "vehicle" of science and technology².

Unfortunately, students' achievement in Mathematics over the years has not been encouraging at the primary and secondary levels of education in Nigeria³. This failure in students' academic achievement in Mathematics in Nigeria is no longer news in the recent years. This was noted in the public's unhappiness, which becomes more prominent following the annual release of the West African Senior School Certificate Examination results, which seemed to not meet the expectations of the government and parental investments in education. The situation is so pathetic that stakeholders keep on wondering why this continues to occur.

This has been a major concern for the government and society. It is then obvious from the foregoing that one of the major problems facing the educational system in Nigeria is the abysmal failure of students who take part in public examinations, especially in secondary school. According to a research, the low number of applicants who satisfy the standards for university admission is caused by the large

percentage of candidates who fail the WASSCE each year. The reasons for learners' widespread failure in public examinations have been the subject of ongoing observation among stakeholders. Some individuals assigned the majority of the responsibility to the instructors, while others placed it on the government, parents, society, and even the students themselves. Even though there will continue to be accusations and denials about who is to be blamed for the widespread failure of students, the fact remains that all parties involved must work together to find a solution to the issue of the students' appalling performance in public examinations, particularly in Mathematics.

This research began with a broad overview of the many opinions on the reasons of students' widespread failure in public examination particularly in important subjects like English language and Mathematics. Several variables have been identified as impacting students' academic progress in mathematics, including teacher and students' attitudes, study habits, teachers' credentials, teaching techniques, school atmosphere, government policy, school location, and family types⁵. The study came up with the idea of Classroom Management Practices and Teaching Methods as two important factors that influence Academic Achievement in Mathematics in Oyo Town.

Every activity a teacher makes to establish a setting that promotes and encourages both academic and socio-emotional development has been generally described as classroom management. The processes are what give the classroom its structure, promote good conduct and lessen the likelihood of incorrect behaviour. Classroom management is the process of improving the learning environment through physical interaction between teachers and students, student to student, parents, and others, stimulating and motivating students to learn, control and supervision throughout the school to facilitate and encourage cooperation in teaching and learning activities⁶, and so on. Good classroom management is a complex social, psychological,

and emotional process that involves interactions and connections between instructors and students. It goes beyond simple acts necessary to establish and sustain a learning environment conducive to effective teaching. The management of a classroom also entails developing a connection with each student and working within that relationship⁷.

It is impossible to disregard the importance of instructors in helping students develop their cognitive and social-emotional skills. The basis for this growth is good classroom management. In unorganized and chaotic classes, virtually little learning is discovered to take place. It has been noted that behavioural issues among students pose a persistent danger to the learning environment. On the role of instructors in forming successful education, several research have been conducted. It is commonly accepted that the practices of the relevant instructors in class with their students have a significant role on how well students do at the school level. According to research findings, improving and fostering a healthy learning environment is essential for successful teaching. Schools with excellent procedures but poor management did not have successful academic outcomes⁸.

According to a research, good class management techniques are essential for ensuring strong academic performance and learning at the secondary level⁹. By establishing rules for the classroom, instructors may create effective policies that will guarantee that their students are learning. According to a related research, primary school instructors believed that positive classroom management approaches were useful for maintaining excellent classroom discipline whereas negative tactics were useless. Similar to this, a research found that instructors' class management duties and techniques can decrease students' hostile, negative, sluggish, and inattentive learning styles in the classrooms¹⁰.

Effective classroom management techniques enable teachers to anticipate more success in their classroom teaching. Additionally, according to a research, managing a classroom comprises taking steps that a teacher may do to improve the supportive and conducive atmosphere for both instructors and students. They listed five key elements of a successful classroom that teachers should ensure via their behaviours. These qualities included a more nurturing environment, cordial relationships between students, teachers, and learners, the planning and delivery of instruction in a way that maximizes learning, encouraging student engagement in academic work, fostering the development and promotion of student sociological skills, and the use of appropriate and suitable interventional techniques to assist students with behavioral issues¹¹.

The effectiveness of teachers' classroom management is directly related to students' learning. It has been shown that good classroom management dramatically raises kids' academic progress and lowers their behavioural issues. According to the research, students would always gravitate toward learning activities if the learning environment were more conducive and effective, and they would avoid tasks like showing little or no interest in the teaching-learning process and diverting their focus away from the classrooms¹². They discovered substantial variations in the classroom management strategies used by experimental and control teachers. Less disruptive and violent conduct were shown by children in treatment classes compared to control classrooms¹³. As fewer students are acting disruptively, positive reinforcement is provided. By identifying constructive connections between instructors and students and holding them responsible for their behaviours, the research also emphasized the significance of well-managed classrooms. The study compared learning environments in schools that were conducive to learning and those that were not. According to their study, the learning outcomes are closely related to the classroom environment.¹⁴

The classroom, design, rules and discipline are the classroom management indices taken into account in this research. Upon entering a classroom, particularly one in an elementary, secondary, or high school, the first thing one will notice is how it looks and how it is set up. The layout of a classroom, while seeming unimportant, is essential to a student's education. The way a classroom is set up may have an impact on how students behave and how hard they work. The effects of furniture layout, the possibilities activity centres provide, and the value of a literature centre are just a few of the numerous factors to take into account while planning a classroom.

The configuration of the furniture in the classroom has a significant impact on student conduct. A research found a connection between student conduct and how the furniture is arranged in the classroom. A research found that clear divisions between various regions in the classroom and desk clusters of two to three desks were the most efficient arrangements¹⁵. The desk clusters were successful because they allowed the kids to socialize while yet remaining focused on their work and paying attention to the instructor. Since the instructor can offer directions from his or her desk, positioning the desk in the corner proved beneficial. The instructor was very active in the classroom, ensuring that all of his or her focus was on the children. The instructor must offer the students their complete attention without being distracted by other work, just as the students must be free from outside distractions to give the teacher their full attention¹⁶.

The lesson for the day should be taken into account while arranging furniture. Desks should be arranged in a circle if the instructor has a lesson scheduled that is more focused on discussion. The circular setup encourages students' spoken contributions that are focused on the task¹⁷. Due to the open atmosphere this arrangement fosters, students are more inclined to share their ideas and opinions with their classmates. The fact that the students are aware they are expected to contribute

and that their opinions should be relevant also helps to concentrate the atmosphere. It is crucial to have clear divisions between regions in the classroom because it makes it harder for students to get sidetracked from the job at hand. For instance, if the toys for free play are adjacent to the desks and the students are seated at their desks listening to a math lesson, it is extremely possible that they will choose to play with the toys rather than pay attention to the teacher¹⁸. The students may concentrate better on the lesson being taught if there is a physical barrier between both regions, such as a bookshelf functioning as a wall¹⁹.

Setting aside space for various activity centers is a second crucial aspect of classroom design. Activity centers are unique spaces reserved for brief activities with a specific subject. These centers provide kids the chance to discover their passions and greatest activities²⁰. Children should do this because it will help them take their knowledge and interests beyond the classroom by allowing them to explore their possibilities and choose what they love the most. A scientific center is an example of an activity center. This could include doing tasks like seed-planting or watching a rotten apple change. An art center is yet another illustration of a centre.

In this setting, children might create crafts and artwork to convey their problems and emotions. When kids can take pleasure in an art piece they created themselves, it truly gives them a feeling of success. Also, there may be a theatre centre where kids might play out scenarios and events in class using their imaginations. Students in special education may find this helpful in calming down and processing their anger. The instructor should give the kids roughly thirty minutes to explore these activity areas on their own if they are to be successful. Since they may pick what to do instead of being instructed, students are more creative during this self-guided period. With the help of these activity centers, students have the chance to learn about these topics in a more practical way. The kids get the chance to express their creativity and

utilize their imaginations at each of these places. The students find it to be incredibly entertaining and are inspired to study more as a result²¹.

A literature or library section is one activity center that was not listed before but is likely the most significant. Early exposure to reading and writing is crucial for developing literacy skills in kids. Daily reading to children makes it simpler for them to learn to read and they often have a more sophisticated vocabulary than their peers²². To encourage reading, it was advised that instructors set up a library section in their classrooms. A shelf or two should be present in this area so that students may choose a book to read. Also, it needs to be in a peaceful location that is possibly somewhat isolated from the rest of the classroom. Adding beanbags or soft seats to the reading area also helps to make it more comfy. These components work together to make the reading area appealing and welcoming to kids. A research in which a library corner was introduced to a classroom that hadn't previously had one found that following the installation of the library corner, students read more books during their leisure time. This demonstrates how providing children access to a nice library area and a variety of books boosts their interest in reading and their use of literature in daily life²³.

The aforementioned information suggests a strong connection between students' academic success and the efficient coordination of the classroom design. It is thought that a well-designed classroom would not only support the achievement of the desired educational learning goals but will also guarantee a friendly Teacher-student relationship. Some of the elements that are likely to improve the caliber of education in schools include the availability of adequate classrooms and instructional materials in a proper learning environment.

Classroom rules are described as a set of guidelines for behaviour that aims to instill self-discipline in students and provide a peaceful atmosphere conducive to efficient

teaching and learning²⁴. A scholar views classroom rules and regulations as disciplinary guidelines for how students should behave both within individual classes and across the whole classroom²⁵. The same source lists these as prohibitions against running through the halls, using derogatory language, deliberately disobeying teacher instructions, and, for older students, public displays of affection. Therefore, rules and regulations are disciplinary measures taken by classroom management for effective and peaceful interactions between teaching and learning, possibly in the form of documentation²⁶. Rules are the cornerstone of efficient classroom management, and according to a study, each classroom-wide discipline plan should be created as a tool of inclusion and support for students rather than one of exclusion and isolation, and it should be proactive in encouraging students to meet pre-established behavioural goals. The same source asserts that excellent conduct and, by extension, strong academic achievement are favourably connected with students' knowledge of the rules and their ability to follow them²⁷. Therefore, prior to establishing set rules, one must first identify the student behaviours that are helpful and desirable for a conducive learning environment and foresee any problematic behaviours that may disrupt the environment²⁸. Setting some ground rules is essential for effective classroom management. This promotes effective classroom discipline in addition to assisting instructors and students in moving ahead in a well-organized and methodical manner. In actuality, this is a collection of principles that are essential to arranging learning activities and providing a framework for classroom tasks. To prevent misunderstandings among students, instructors should make careful to maintain consistency while establishing and enforcing classroom rules. Teachers are also expected to lead by presenting an excellent example.

These are some of the greatest classroom guidelines that may be used to enhance students conduct and maintain order. Keep your classroom clean, never

disrupt the class during lessons, arrive to class prepared to learn, never cheat, always be on time, pay attention to teachers as they teach, no vandalism is permitted in the classroom, you must always wear a full uniform to class as specified in the classroom policy, you are responsible for arriving to class after finishing your daily homework and assignments, and you are not permitted to eat in the classroom other than during breaks. If these guidelines are strictly adhered to, students will do better academically in arithmetic.

Classroom rules are the backbone of any proactive strategy to reduce problem behaviors in classroom compounds in general and in classrooms in particular. There should be a minimum expectation for behavior for every student in the classroom and the classroom that the rules describe. All students should be expected to follow these rules without an exception. This opinion holds that if exceptions exist to the rules by creating a "special" student, a double standard will develop, which will make the rules worthless. Therefore, is necessary to backup rules with consequences for flaunting the rules. Consequences are things that come as a result of an action. Determining consequences in the issue of classroom rules and regulations consists of stating what will happen if students break a rule.

A student needs to know, up front, what would happen if he or she were to break a rule. She can then choose to follow the rule or break the rule and incur the negative consequence. Helping students realize this cause and effect relationship and that they have the power to choose the resulting "effect" is one of the many ways managers of classrooms can empower their students and help them develop self-discipline. If a student chooses to break a rule, then that student chooses the consequence.

Classroom discipline is one of the key variables of classroom management. Discipline is a function of the interaction between teacher and student that brings about self-control and respect for authority. It entails creating and keeping rules based on reciprocal understanding limits that must not be breached²⁹. What is common at present is students breaching the limits, turning violent in the classroom, and exhibiting extreme unruly behavior. The result is a class full of arrogance and unruly students, resulting in a noisy and chaotic classroom that does not support effective teaching and learning³⁰. Students' performance seems to have been affected in classrooms where discipline and behavior issues are not properly handled this may be why a scholar expressed similar worries when he said that the importance of students feeling safe in the classroom is linked to students' learning³¹. He said that without this feeling of safety, students will likely develop anxiety and become uneasy in the classroom. A safe and orderly environment protects students from physical and psychological harm and maintains order so learning can take place³²

Teaching is a set of events that occur outside the learners which are designed to support the internal process of learning. The main purpose of teaching at any level is to bring about a significant change in the learner. Transferring knowledge requires teachers to use the appropriate method or pedagogy that best suits the learner and suits the objectives and desired outcomes. Most of the traditional methods were teacher-centered with no activity for the learners making them passive and therefore obtaining knowledge from the teacher without building their engagement level with the subject matter. The approach is least practical, more theoretical and memorizing³³. Student-centered approaches, which are more effective, are more encouraged because they embrace the concept of discovery learning. Most teachers today apply the student

centered approach to promote interest, analytical research, critical thinking, and enjoyment among students.

The effectiveness of teaching methods on students' learning has consistently raised considerable interest in the thematic field of education research³⁴. Most of the teaching methods today have embraced modern technology, and this has brought tremendous changes in the field of learning. The poor academic performance by majority of the students in various subject areas is basically linked to the application of ineffective teaching methods by teachers to impart knowledge to learners and therefore teachers need to be conversant with numerous teaching strategies³⁵. This study considers student-centred, teacher-centred, and teacher-student interactive methods.

Under teacher-centred method, students simply obtain information from the teacher without building their engagement level with the subject being taught. The approach is the least practical, more theoretical and memorizing. It does not apply to activity-based learning to encourage students to learn to solve real-life problems based on applied knowledge. Since the teacher controls the transmission and sharing of knowledge, he should attempt to maximize the delivery of information while minimizing time and effort. As a result, both the interest and understanding of students may get lost. To address such shortfalls, a study specified that, teaching should not merely focus on dispensing rules, definitions and procedures for students to memorize, but should also actively engage students as primary participants³⁶.

With the advent of the concept of discovery learning, many scholars today widely adopt more agile student-centred methods to enhance active learning. Most teachers today apply the student-centred approach to promote interest, analytical research, critical thinking, and enjoyment among students. The teaching method is

regarded more effective since it does not centralize the flow of knowledge from the lecturer to the student. A study opined that for better student performance, the use of an activity-stimulating and student-centred approach like the demonstration method, instead of depending on the conventional approach like the lecture method, needs to be embraced. Student-centered approaches, which are more effective, are more encouraged because they embrace the concept of discovery learning.

This interactive teaching method applies the strategies used by both teacher-centred and student-centred approaches. Most teachers today apply the teacher-student interactive approach to promote interest, analytical research, critical thinking, and enjoyment among students³⁷. The method encourages the students to search for relevant knowledge rather than the lecturer monopolizing the transmission of information to the learners. According to a study, the discussion along with learning material method when properly used can develop in the students' higher learning skills. It can give the students increased capability for generalization and transfer, a sense of the relevance of learning, and the ability to analyze, synthesize, and apply what is learned³⁸.

A study referred to gender as an analytic concept that describes sociological roles, cultural responsibilities, and expectations of men and women in a given society or cultural setting³⁸. The study explained that gender describes the personality traits, attributes, behaviour, values, relative power, influence, roles, and expectations (femininity and masculinity) that society ascribes to the two sexes on a differential basis. Therefore, gender is a psychological term and a cultural constant developed by society to differentiate between the roles, behaviours, and mental and emotional attributes of males and females³⁹.

In conclusion, mathematics is a compulsory subject that student must pass at all level including secondary school and the low performance of student in the subject is worrisome. Therefore, this study seeks to investigate student academic achievement in mathematics considering classroom management practices and teaching methods as a factor that could influence students Mathematic Academic Achievement in selected secondary school in Oyo town. The misconception about mathematics is the notion that mathematics is about formulas and computations that need to be memorized. This view has trifled and thwarted the efforts of students more than anything else. This misconception has gone further to identify Mathematics as a male subject in schools in Nigerian society. Our nation has made great strides towards achieving gender mainstreaming in education over the past years. Now, more than ever before, the door is wide open for women to seek and obtain careers that their mothers would never have thought possible⁴⁰. The issue of gender permeates different settings. It was reported that the African patriarchal societal view point favors boys over girls because boys maintain the family lineage. Moreover, the report opined that the brains of male and female children are wired differently for learning. Their findings indicate that the components of the brain that focus on words and motor skills develop a year ahead for girls than for boys, thus giving the female child opportunities and advantages in reading and performing small motor tasks such as using pencils⁴¹.

1.2 Statement of the Problem

Growing concern about poor academic achievement, particularly in compulsory subjects such as Mathematics, has been expressed by practitioners, educational researchers, parents, and education stakeholders worldwide. However, in Nigeria, this concern is particularly pronounced owing to the high rate of students' failure, as evidenced by poor performance in external examinations. While previous

studies have examined factors that may influence students' academic achievement, such as instructional materials, subject mastery, teacher qualifications, and gender, limited research has been conducted on the impact of classroom management practices and teaching methods on mathematics performance in Oyo town. The lack of attention given to these factors may be linked to several causes, including inadequate teacher training and the persistence of classroom management issues despite government efforts to address them. Additionally, one might expect that recent trends in teacher education programs and teaching methods would lead to improved student performance, but this has not been the case^{43,44}. This therefore led the researcher to ask whether classroom management practices as well as teaching methods influence students' academic performance in Mathematics. This study therefore seeks to address this by assessing the influence of classroom management and teaching methods on secondary school students' academic achievements in Oyo town.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the influence of classroom management practices and teaching methods on secondary school student's academic achievement in mathematics in Oyo town. Specifically, the study intends to achieve the following objectives:

- i. assess the level of academic achievement in Mathematics among secondary school students in Oyo town.
- ii. identify the mostly used methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) for teaching mathematics in secondary schools in Oyo town.
- ii. determine the significant combined influence of classroom management practices (Classroom Design, Rules, Discipline) and teaching methods Teacher-centered

- methods, Student centered method, Teacher-student interactive method) on secondary school student's academic achievement in mathematics in Oyo town.
- iii. establish significant relative influence of classroom management practices (Classroom Design, Rules, Discipline) and teaching methods Teacher-centred methods, Student centred method, Teacher-student interactive method) on students' academic achievement in mathematics in Oyo town.
 - iv. ascertain significant gender difference in academic achievement in mathematics among secondary school students in Oyo town.

1.4 Research Questions

1. What is the level of academic achievement in Mathematics among secondary school students in Oyo town?
2. Which is the most used methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) for teaching mathematics in secondary schools in Oyo town?

1.5 Hypotheses

H₀₁: There will be no significant combined influence of classroom management practices (Classroom Design, Rules, Discipline) and teaching methods Teacher-centered methods, Student-centered method, Teacher-student interactive method) on secondary school student's academic achievement in mathematics in Oyo town.

H₀₂: There will be no significant relative influence of classroom management practices (Classroom Design, Rules, Discipline) and teaching methods Teacher-centered methods, Student-centered method, Teacher-student interactive method) on students' academic achievement in mathematics in Oyo town.

H₀₃: There will be no significant gender difference in academic achievement in mathematics among secondary school students in Oyo town.

1.6 Significance of the Study

The results of this study will provide valuable insights for head teachers and other educators in schools across Oyo town on effective classroom management practices and teaching methods that can enhance students' academic performance. By reviewing the factors that impact these areas and shedding light on their effects, this study will contribute to improving teaching and learning in the region.

The Ministry of Education will also benefit from the study's findings, which will provide a better understanding of the current situation regarding classroom management practices and teaching methods. This information will be useful in the development and refinement of policies aimed at improving learning outcomes across Oyo town and the wider Oyo state.

In addition, students will also benefit greatly from this study, as issues related to their academic achievement will be addressed. This, in turn, will enhance the effectiveness of teaching and learning in the region.

Finally, the findings of this study will also provide important guidance for head teachers on how to improve learners' achievement in national examinations. This is a critical step towards enhancing overall academic performance and achieving better educational outcomes for all students.

1.7 Scope of the Study

Contextually, the study will be limited to the influence of classroom management practices and teaching methods on secondary school student's academic achievement in Oyo Town. Classroom management practices indices will be limited to (Classroom Design, Rules, Discipline) while teaching methods will be limited to (Teacher-centred methods, Student centred method, Teacher-student interactive method).

Geographically, the study is limited to secondary schools in Oyo town. Oyo town is a historic ancient town in Nigeria, especially to the Yoruba race. It is located in Oyo state and has four local governments which are Afio, Atiba, Oyo East and Oyo West. SS2 students would be useful for this work because SS1 students are beginners of senior secondary school and SS3 is a revision class. On this SS 2 might have covered major part of syllabus.

1.8 Limitation of the Study

Some students from the selected schools experienced difficulty coming together for the achievement test owing to test anxiety, while others did not take the test seriously.

1.9 Operational Definition of Terms

1. Classroom Management Practices: Classroom management practices as used in this study is any action a mathematics teacher takes to create an environment that supports and facilitates both academic and social-emotional learning during mathematic class in secondary schools in Oyo town. The ones considered in this study are (Classroom Design, Rules and Discipline)

Classroom Design: This entails the positioning of students' desks, displays, storage and equipment to create a warm and welcoming room for teaching and learning of mathematics in secondary schools in Oyo town. For example, arrangement of chair and table in the class, neatness of the classroom and so on.

Rules: This has to do with developing regulations that foster respect, care for self and others in the classroom during teaching and learning Mathematics. For example, always be in the class with intention to learn, do not ever cheat, be punctual to class, be attentive to teachers while teaching, no vandalism is allowed in the classroom. Always wear a complete uniform to class, as specified in the classroom policy, keep your classroom clean, Do not ever distract the class during lessons, Students are

responsible for coming to class after completing their daily homework and assignments, no food is allowed in the classroom other than breaks.

Discipline: This refers to measures put in place as consequences attached to classroom rules during teaching and learning of mathematics classes in secondary schools in Oyo town such as any student who did not bring his/her Mathematical instruments will not be allowed to borrow, any student that did not do his/her homework will kneel down at the back of the classroom throughout the lesson period, any student caught making noise in the classroom will kneel down at the back of the classroom, five mark will be deducted from any student caught cheating during test while any student caught cheating during examination will be suspended.

Teaching Methods: This refers to the method adopted by mathematics teachers in secondary schools in Oyo town to facilitate teaching and learning of mathematics. The ones considered in this study are (Teacher-centred methods, Student-centred method, Teacher-students' interactive method)

Teacher-centred: A method where students simply obtain information from the teacher without building their engagement level with mathematics when being taught

Student-centred Method: This refers to activity stimulating method of teaching mathematics when students are being given activities during mathematics classes

Teacher-student Interactive Method: This is an interactive approach where teacher and students interact for the purpose of teaching and learning mathematics in secondary schools

Academic Achievement: This is the level at which senior secondary school students have achieved stated objective as measured by scores obtained in achievement test in mathematics administered on the candidates.

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Chapter Two

Literature Review

This chapter contains review of related literatures. It shall be discussed under the following subheadings:

2.1 Conceptual Review

2.1.1 Mathematics

2.1.2 Academic Achievement

2.1.3 Classroom Management Practices

2.1.4 Teaching Method

2.2 Theoretical Framework Theory of Planned Behavior and Theory of Reasoned Action

2.3 Review of Empirical Studies

2.3.1 Classroom Discipline Management and Learners Academic Achievement

2.3.2 Classroom Management and Students' Academic Progress

2.3.3 Classroom Discipline and Learners' Academic Achievement

2.3.4 Classroom Instruction Methodologies and Learners' Academic Achievement

2.3.5 Classroom Environment and Students' Academic achievement in Mathematics

2.3.6 Instructional Supervision and Learners' Academic Achievement

2.3.7 Classroom Instruction Methodologies and Learners' Academic Achievement

2.3.8 Supportive Feedback and Students' Academic Achievement

2.3.9 Teacher-Student Relationships on Students' Academic Achievement

2.3.10 Gender and Students' Academic Achievement

2.3.11 Other Factors Influencing Students' Academic Achievement in Mathematics

2.4 Conceptual Model

2.5 Summary of Literature Reviewed

2.1 Conceptual Review

2.1.1 Mathematics

Mathematics is the study of numbers, shapes, and patterns. It is a branch of science that deals with logic, reasoning, and the calculation of quantity, structure, space, and change. The origins of mathematics can be traced back to ancient civilizations, such as Egypt, Babylon, and Greece, where mathematical concepts were developed to solve practical problems, such as measuring land, keeping track of goods, and predicting astronomical events. Today, mathematics is used in a wide range of fields, including science, engineering, finance, and computer science. Mathematics is the study of abstract concepts such as quantity, structure, space, and change. It encompasses a wide range of mathematical disciplines, including number theory, algebra, geometry, and analysis. Mathematics is a methodical and logical subject which helps to understand and interpret the phenomena of the world. It is also a tool to describe, model and predict various systems. It encompasses both pure Mathematics, which is concerned with abstract concepts and theoretical results, and applied mathematics, which deals with the application of mathematical concepts and methods to solve problems in other fields¹.

Mathematics is a broad field that encompasses a wide range of disciplines, including number theory, algebra, geometry, and analysis. It is the study of quantity, structure, space, and change, and it is used in many different fields, such as science, engineering, finance, and computer science. It is also defined as is the science of numbers and their operations, interrelations, combinations, generalizations, and abstractions and of space configurations and their structure, measurement, transformations, and generalizations, the study of patterns, shapes, numbers and their relationships, and how these patterns change over time", the study of structure, quantity, and change in the world around us, the study of logical systems and the principles that govern them, the study of relationships and connections between numbers, shapes, and patterns, using logic and reasoning to solve problems and a way of thinking, a way of problem-solving and a way of understanding the world^{2,3}.

Mathematics is divided into two main categories: pure mathematics and applied mathematics. Pure mathematics is concerned with abstract concepts and theoretical results, and it is usually studied for its own sake. Topics in pure mathematics include number theory, abstract algebra, and geometry³. Applied mathematics, on the other hand, deals with the application of mathematical concepts and methods to solve problems in other fields⁴. It is used to model and predict phenomena in fields such as physics, engineering, economics, and biology. Overall, mathematics has played a crucial role in the development of human civilization and continues to be an essential tool for understanding and interpreting the world around us⁴.

Mathematics is a subject that affects every aspects of human life at different levels, it is seen by society as the foundation of scientific technological knowledge that is important in socio-economic development of a nation. A study described

Mathematics as the “queen” of the sciences without which it would be difficult for people to study other sciences like Physics, Chemistry, Biology and Computer Science/Information Technology⁵. The National Policy on Education in Nigeria mandates all secondary school students to take mathematics as a compulsory subject, as it is considered a fundamental tool for the study of science and technology⁵.

Unfortunately, students’ achievement in Mathematics over the years has not been encouraging at the primary, secondary and tertiary levels of education in Nigeria⁶. Pathetically, shameful failure in Students’ Academic Achievement in mathematics in Nigeria is no longer news in the recent years. This was noted in the public’s unhappiness which becomes more prominent following the annual release of the West Africa Senior School Certificate Examination results which seem not meet the expectations of government and parental investments in education. The situation is so pathetic that stakeholders keep on wondering why this continues to occur.

2.1.2 Academic Achievement in Mathematics

Academic Achievement refers to the level of performance or proficiency that a student demonstrates in their coursework, tests, and assessments. It is often measured by grades, test scores, and other indicators of educational progress. It is the level of proficiency or mastery demonstrated by a student in their coursework and assessments, as measured by grades, test scores, and other indicators of educational progress⁷. The extent to which a student meets or exceeds the standards and expectations set by the educational system in terms of knowledge, skills, and abilities. The degree to which a student's learning outcomes align with the goals and objectives of their educational program. The progress and attainment a student makes in their educational pursuits, including their acquisition of knowledge, skills, and abilities. The overall performance

and success of a student in their academic pursuits, including their ability to meet or exceed academic standards and to achieve their educational goals⁸.

It is important to recognize the importance of instructors in helping students improve their cognitive and emotional learning abilities. This is due to the fact that instructors' efforts often provide the groundwork for good classroom management. Due to behavioral hazards, schools that often have an unorganized and chaotic classroom atmosphere typically struggle to achieve appropriate student performance. As a result, plausible academic accomplishment results from a positive learning and teaching environment⁹. The degree to which a learner, instructor, and institution accomplish their planned short- and long-term educational goals is known as the learner's academic achievement. Exam results or ongoing evaluation are often used to do this. The academic success of a learner is often impacted by a number of variables, including peer groups, school kind and nature, family history, parent education levels, student effort, and self-motivation. Nonetheless, a lot of schools of thought emphasize how important a student's educational history is in predicting their future success¹⁰. There must be a cordial relationship between the students and the instructor for the pupils to provide convincing results. The qualifications and experience of a teacher have a big impact on how well students do in school. A system of education should make sure that kids acquire the abilities that will make them competent and productive members of their communities. It is the responsibility of the instructors and administrators to provide the best conditions for students to succeed in their academic pursuits since the abilities of the students translate into their future academic greatness, social-emotional transformation, and economic transformation. Consequently, little to nothing can be accomplished without effective classroom management since instructors have a significant impact on students' academic performance¹¹. Results on

classroom management and learner academic success developed against the backdrop of earlier research that focused primarily on the contribution of instructors to students' academic accomplishment.

Academic Achievement in Mathematics refers to the level of knowledge and proficiency that a student has attained in the subject of mathematics. This can be measured through various means such as standardized tests, classwork and homework, and final exams. Factors that can impact a student's academic achievement in mathematics include the quality of instruction, the student's individual aptitude for the subject, and their level of engagement and motivation. It refers to the extent to which a student has attained the mathematical knowledge and skills specified in the curriculum. It is the outcome of the interaction between cognitive, motivational and environmental factors. Academic achievement in mathematics can also be defined as the degree of success that a student has in learning mathematical content and skills. It can also be described as the extent to which students demonstrate their understanding and application of mathematical concepts and skills. It is a combination of the knowledge, skills and attitudes that a student has acquired in the subject area¹².

There is an indication that students' performances on the average were below 50% which was not too good.. This has been a major concern for government and the society¹³. It is then obvious from the foregoing that one of the major problems facing the educational system in Nigeria is the abysmal failure of students in public examinations, particularly at the secondary level of education. The consistently high rate of failure in the yearly WASSCE exam is reflected in the low percentage of candidates meeting university admission requirements¹⁴. The issue of mass failure among students in public examinations has been the subject of ongoing blame-shifting among various stakeholders. Government, parents, society, students themselves, and

teachers have all been blamed to varying degrees. Despite these accusations and counter-accusations, it is clear that all stakeholders must take responsibility for solving this problem. Therefore, it is necessary to identify the major causes of this issue and find lasting solutions. This study aims to explore the perceived causes of mass student failure in public exams from various perspectives¹⁵.

2.1.3 Classroom Management Practices

Every activity a teacher makes to establish a setting that promotes and facilitates both academic and social-emotional learning has been generically referred to as classroom management¹⁶. The processes are what give the classroom its structure, promote good conduct, and lessen the likelihood of incorrect behavior. The term "classroom management" refers to the numerous methods and procedures that instructors use to provide a supportive learning environment and maintain discipline and order in their classrooms. This might include things like establishing precise guidelines and objectives, successfully controlling student conduct, and creating a respectful, active learning environment in the classroom.

Classroom management is defined as the process of enhancing the learning environment, physical interaction between teachers and students, student to student, parents, and other stakeholders, stimulating and motivating children to learn, control and supervision throughout the school to facilitate and encourage co-operation in teaching and learning activities in the classroom smoothly, and will as a result, improve the quality of students' performance¹⁷. More than just setting up and maintaining a favorable learning environment are necessary for effective classroom management. Classroom management also entails developing close bonds with students and working within them since it is a difficult social, psychological, and

emotional process that involves interactions and connections between instructors and students¹⁷. In order to manage a classroom,

Clearly communicating and enforcing norms and expectations for conduct in the classroom is the responsibility of teachers. This may include guidelines for speaking and moving about the classroom as well as requirements for student involvement and engagement.

Managing student conduct: Techniques for dealing with disruptive behavior and encouraging good behavior are part of effective classroom management. This might include things like giving constructive criticism, outlining clear consequences for wrongdoing, and taking preventative measures to avoid disturbances. Fostering good ties with students: Effective classroom management may be facilitated by strong relationships with students. Teachers who can establish rapport and trust with their pupils are better able to maintain discipline and order in the classroom. Fostering a pleasant learning environment: A positive learning environment may support engagement and learning. By supporting student autonomy and ownership, building a feeling of community, and advancing a culture of respect and inclusiveness, teachers may promote a healthy classroom culture.

Classroom management is a continual process that calls for instructors to regularly assess their methods and revise them as necessary. The success of a teacher's classroom management strategies should be constantly evaluated, and modifications should be made as necessary. By doing so, it is possible to make sure that the classroom is always actively teaching and that kids feel protected and valued.

It is impossible to disregard the importance of instructors in helping pupils develop their cognitive and social-emotional skills. A strong sense of classroom discipline lays the groundwork for this growth. Inefficient and chaotic classroom

environments, it has been proven, significantly reduce learning. The learning environment is often threatened by the behavioral issues of students. On the function of the instructor in forming successful education, several research have been conducted. It is commonly accepted that the practices of the connected instructors with their pupils in class have a significant role in how well students do at the school level. According to research findings, a healthy and modernized learning environment is a prerequisite for successful teaching. Schools with excellent procedures but poor management did not provide strong academic outcomes. According to the research, effective class management techniques are urgently needed in order to guarantee strong academic performance and learning at the secondary level. By establishing rules for the classroom, instructors may create effective policies that will guarantee that their students are learning. According to the research, primary school instructors believed that positive classroom management strategies worked well for maintaining excellent classroom discipline whereas negative strategies were ineffective¹⁹.

According to a research, instructors' classroom management techniques and assignments had a favorable impact on lowering students' aggressive, negative, drowsy, and inattentive classroom behavior. Effective classroom management techniques enable instructors to anticipate their students to attain higher levels of learning. According to a research, managing the classroom involves taking steps in the classroom to create an atmosphere that is more encouraging and conducive to learning for both instructors and students. They listed five key elements of a successful classroom that teachers should ensure via their behaviors. These qualities included creating a more supportive environment, fostering cooperative relationships between students, teachers, and learners, planning and carrying out lessons in a way that maximizes learning, encouraging learners to engage in academic tasks, developing and

promoting learners' sociological skills, and employing suitable and appropriate interventional measures to assist learners with behavioral issues²⁰. A research offers a similar description of the optimal learning environment for students and learners in schools. Due to the quick advancement in every subject, this sort of learning environment may also increase the effectiveness of the teaching and learning processes for students today.

The development of effective classroom management techniques is essential for high level student performance

The academic performance of the pupils is directly correlated with the classroom practices²¹.

It is obvious that classroom management by teachers affects pupils' performance. Effective classroom management has been demonstrated to greatly improve kids' academic performance and lessen their behavioral issues. According to a research, students are more likely to focus on learning activities if the environment is more conducive to learning. They abandon duties like showing little or no interest in the teaching-learning process and devoting their attention away from the classroom. They discovered substantial variations in the classroom management strategies used by experimental and control teachers. Students in treatment classes behaved less disruptively and violently than in control classrooms. Positive reinforcement reduces students' disruptive behavior²².

A research also demonstrated the importance of well-managed classrooms by highlighting the importance of the teacher-student connection and holding students accountable for their behavior²³. It was discovered through their study of schools with positive and negative learning environments. They discovered substantial variations in the classroom management strategies used by experimental and control teachers.

Students in treatment classes behaved less disruptively and violently than in control classrooms. According to their research, the learning outcomes are closely related to the classroom environment²⁴.

A related research indicated that instructors may lessen aggressive, violent, and highly hostile conduct in their classes by using good behavior game interventions, such as altering cognitive abilities, social problem-solving skills, and anger control²⁵. According to a research, school-based social and emotional initiatives were mostly to blame for the improvement in students' cognitive development. Also, it improves kids' behavioral and emotional skills as well as their capacity for making wise decisions at the right moment²⁶. According to the research, pupils' social and emotional competencies have a favorable impact on their academic performance as primary school students. The results of earlier studies demonstrate that instructors' methods of classroom management have a substantial connection to kids' academic success²⁷.

The most important tools for determining a student's academic proficiency are tests and exams. While the majority of students, particularly those in secondary school, feel pressure and anxiety when asked to participate in an evaluation procedure. To complete that process successfully at this point, kids need a lot of care and attention from their instructors. This investigation² focuses on classroom management and how it relates to students' academic performance²⁸.

While sometimes disregarded, the first component of classroom management is conscious design. Utilize the placement of your workstations, displays, storage, and other furnishings to make the space seem cozy and inviting. Make sure you have cleared your classroom of any extraneous and distracting materials. Moreover, this is a good time to evaluate your room for any safety issues.

Create ground rules for your classroom that promote community, respect, and compassion. Reviewing these guidelines with students at the start of the year can help them understand your expectations for their conduct. During the course, keep reinforcing your rules and posting them in a prominent place²⁹.

Arrive to class fully prepared to learn: This suggests that students should always go to class fully prepared to learn. This entails bringing all the necessary supplies for the day, such as water, lunch bags, textbooks, notes, pencils, and pens. Make sure you complete any lesson preparation assignments the instructor has given you before entering the classroom. Moreover, check the daily schedule to make sure you don't miss any topic books.

Never, ever cheat: It is never advised to engage in academic dishonesty. You should constantly uphold moral principles like honesty. Sometimes failing an exam is not a huge issue, but getting an A via cheating is never acceptable. Also, it is never a good idea to lie to someone; always tell the truth.

Always arrive on time: Being punctual is a habit that should be formed from the first day of school. Be aware of the start time for your lesson and leave early from home to be there on time. Establish a schedule so that you can arrive in the classroom before the bell sounds and take your seat before the warning bell.

Be attentive to instructors when they are instructing: As teachers are instructing, it is essential that you pay close attention. You may unwind during breaks and concentrate on listening when the lesson is being taught. This will enable you to ask the instructor any questions right away and ensure that you don't miss any important parts of the class.

The act of intentionally causing harm to property is not permitted in the classroom under any circumstances. Recognize that the classroom's seats, desks, blackboards,

and cabinets are common items. Always treat it gently, and nothing, not even writing on desks, is permitted. Feel as if the next group of students will be reusing these items, and it is your duty to offer them a fresh start.

As stated in the classroom rules, students must always arrive to class in full uniform. It is advised to cover long hair with a hat and to refrain from wearing jewelry. Be sure to wash garments properly and replace your socks every day. You can remain alert all day if you arrive to the classroom looking decent.

Maintain a clean classroom: You are responsible for maintaining a clean classroom. It is not recommended to leave trash cans about your classroom; instead, utilize them to dispose of rubbish. Make sure you don't spill any food or drink while having lunch, and ask the cleaning staff for help if you do.

Never interrupt a lecture: Pupils should be aware that they should never interrupt a lesson by any means. Even quietly sharpening a pencil in the middle of class may interrupt the flow of instruction. Never leave your seat during a lecture and refrain from approaching other pupils. Just raise your hand to seek permission before speaking if you have any questions for the instructor.

Students are responsible for doing their daily homework and assignments before class. Always complete your homework the night before rather than rushing to class in the morning and copying from others. Be organized while reviewing each day's teachings and getting ready for the next.

Except during breaks, no food is permitted in the classroom. In each classroom, a defined period of time will be set out for lunch or brunch breaks. It is encouraged that students only eat at that time since it is impolite to eat when lecturers are teaching.

No dozing off in class without permission: Students are expected to be alert and engaged while the instructor is teaching. If you start to feel drowsy in between

sessions, warm up and make sure you're getting enough water. But, unless you are sick and have permission to do so, avoid sleeping in class.

Engage in active participation in class activities: A variety of games and activities will be played in class as part of the learning process. Every student should deliberately show up to all of them and engage in them all. They should never fall behind. At this age, you need to develop your potential and never refuse a teacher's request to take on a minor responsibility.

Respect for other students' personal property: It's just as vital for students to respect the property of other people as they do their own. Pupils are required to treat other people's property with respect and not take it without their consent. If you utilize them, you must get their consent.

Follow all classroom rules outlined in the handbook: Before the first day of class, students and their parents should discuss the classroom rules outlined in the handbook. All of these rules must be followed at all times and in all situations. If you have any questions or concerns about any of the rules, speak with the instructor.

You must abide by all guidelines in the handbook for the classroom. Before the first day of class, you should sit down with your parents to discuss the classroom rules included in the handbook. All of these rules must be followed at all times and in all situations. If you have any questions or concerns about any of the rules, speak with the instructor.

Do your best at all times: Regardless of the challenges life throws your way, always have a positive outlook on things and give it your all. Failures are possible, but you shouldn't allow it get you down. Despite your setbacks, you should remain steadfast in your resolve to try again and produce your finest work. Implementing these thorough classroom regulations as part of daily activities may significantly alter how students

behave throughout the course of the lesson. To make the procedure easy for pupils, instructors should take the initiative. It's crucial to provide appropriate openness while establishing and applying the regulations. Similar to this, students should be given the opportunity to provide their input when establishing these regulations. This not only offers kids a sense of significance in the classroom but also encourages more sensible and responsible effort on their part.

But, be careful not to impose too many strict regulations in the classroom or to create excessive standards that put unnecessary strain on students. Just following a few fundamental guidelines may create a pleasant and collaborative learning environment. In order to serve as a reminder, teachers could consider writing out these principles on charts and posting them around the classroom. So, one must first identify the student behaviors that are helpful and desired for a conducive learning environment and foresee any problematic behaviors that may disturb the environment before setting defined norms.

Effective regulations should be articulated in positive words, highlight suitable conduct that should be discouraged or encouraged, and be detailed enough to avoid any misunderstandings or ambiguity about its intended meaning. Things ought to be measured and observable. It is clear if a rule has been followed when it refers to actions that can be seen and evaluated in terms of precise performance. These are age-appropriate and basic. The target audience may probably learn the terms off-hand since they are short and simple to understand. They are not excessively numerous since they are maintained to a minimum.

Discipline: Rules in the classroom must have real-world repercussions. Starting on the first day of class, students will put each teacher's limits to the test. Be firm, equitable, and constant. Ask a student to ensure that they are aware of the classroom rules before

issuing the warning. assigning demerits, detention, or other formal reprimands as a follow-up to persistent disturbance. Never strike, harass, humiliate, or shout at pupils; doing so is unethical and counterproductive²⁹.

While the word "classroom management" is widely used, there are a number of diverse perspectives on what it really means. The term "activities and tactics instructors take to address the issue of order in classrooms" was used to describe classroom management³⁰. The research was interested in how classroom rules were efficiently applied when issues arise³¹. The definition of classroom management has been broadened by an author to include "the creation and maintenance of the classroom setting in order to achieve educational objectives," in a broader and more widely accepted sense³¹. This suggests that classroom management is the immediate response of teachers to issues that arise in the classroom, as well as a proactive strategy that benefits student learning. The study emphasizes that discipline and classroom management are distinct concepts that should not be confused. Classroom management, as an "umbrella," can be employed by teachers to manage a range of educational activities, including social interaction and student conduct³². Although classroom discipline focuses on behavior and self-control, classroom management is more concerned with rules and routines that have the potential to become rituals. It is clear from this difference that Doyle's concept of classroom management is also the notion of classroom discipline. In conclusion, it is generally agreed that establishing a task-oriented atmosphere that is predictable and consistent is tied to effective classroom management³³.

Classroom management and discipline are often used interchangeably. Discipline, however, is simply one of many facets of classroom management. It has been suggested that classroom management is more than just a "bag of tricks" that is

employed in the same way by successive teacher generations, but that it is a multifaceted enterprise that extends beyond regulating students' behaviour³⁴. Classroom management, as a multifaceted construct, consists of three major aspects: instructional management, people management, and behavior management³⁵.

Sub-aspects of instructional management include controlling the physical setup of classrooms, defining daily routines, and allocating supplies. The manner in which these duties are carried out has an impact on the overall classroom climate and classroom management styles³⁶. According to one author, instructors must have solid instructional abilities in order to design and arrange activities more effectively and to make transitions between them smooth³⁷. Teachers, for example, may offer teaching step by step, beginning with structure and then modeling it. Teachers may help pupils stay on target by doing so.

In terms of people management, it is well acknowledged that managing a big group of students is a difficult undertaking. It is necessary for instructors to consider the various personalities of their pupils while interacting with them. In other words, instructors' goal is to get pupils to collaborate and obey. To be more explicit, people management involves what instructors feel about students as individuals as well as the behaviors they engage in to persuade students to do something in order to achieve certain outcomes³⁸. For example, if a teacher feels that her pupils prefer self-discipline, she may allow them to create their own daily routines. Notably, the teacher-student interaction is the most important part of people management. Moreover, many researches have agreed that a good teacher-student interaction in the classroom environment promotes students' academic progress and appropriate behavior³⁹. "The most successful teacher-student interactions are defined by particular teaching

behaviours: demonstrating acceptable degrees of dominance; exhibiting suitable levels of collaboration; and being aware of high-needs students³⁹.

Lastly, although behavior management and discipline are similar, they vary in that behavior management focuses on prevention rather than rapid responses to students' conduct. Specifically, behaviour management entails defining norms, implementing a reward system, and allowing for student input⁴⁰. For example, at the start of the school year, a system of rewards and punishments might be established. The research differentiated between productive and inefficient classroom managers depending on how those managers developed and applied rules⁴¹. The classroom order is analogous to a discussion that can only be carried on if both instructors and pupils agree to participate. As a result, classroom regulations only take effect when pupils are eager to follow them⁴².

Types of Classroom Management Styles

While it is true that classroom management styles vary based on the unique personalities and beliefs of individual teachers, researchers have identified four broad categories based on two key dimensions: the level of control exerted over students and the teacher's level of involvement with students. One author has also included the variable of Knowledge in their Classroom Management Styles Inventory, as it can influence a teacher's approach to managing their classroom. In this study, the researchers have also included the Knowledge variable in each classroom management style to account for its potential impact.

There are several different taxonomies for categorizing classroom management styles, but the researchers have opted to use the widely accepted classification developed by Baumrind, which includes four types: Authoritative, Authoritarian, Indulgent, and Permissive⁴³.

Authoritative

This teaching style involves setting high expectations for acceptable behavior, clearly articulating reasons for specific behaviors to be accepted or not, and maintaining positive relationships with students. This aligns with Baumrind's classification, but he provides a more detailed description of this style⁴⁴. An authoritative teacher maintains control over their students while also promoting independence and autonomy. They use informal language and communication with their students. This style is also referred to as "Autonomy-Supportive," as the primary goal is to create a classroom environment that fosters students' independence in thinking and decision-making, with the support of their teacher. For example, authoritative teachers may involve their students in discussions about establishing classroom rules or expectations, taking into account their needs, interests, and preferences⁴⁵.

Authoritarian

In contrast to the previously described style, authoritarian teachers adopt a more commanding approach in classroom settings. This style is commonly referred to as the "Highly controlled" teacher by some authors. It involves the use of strict limits and controls over students. Authoritarian teachers rarely explain the reasons for acceptable or unacceptable behavior, even though the rules are clearly stated to students. Additionally, this style often relies on rewards as a means of motivating students⁴⁶. Besides, punishment or negative consequences are also used when students refuse to comply with the rules.

Indulgent

According to the author's classification of teacher classroom management style, the style described above is known as the "Laissez-faire" style. Indulgent or laissez-

faire teachers typically impose few demands and controls on their students. They may be reluctant to enforce rules and may display inconsistent discipline. These teachers often strive to befriend their students rather than serving as role models or educators. In indulgent classrooms, students are frequently given permission to do as they please and enjoy a great deal of freedom. The author notes that indulgent teachers actively encourage their students to pursue their own goals by any means necessary⁴⁷

Permissive

Teachers who exhibit the Permissive or Indifferent style are characterized by a lack of both involvement with students and control over them⁴⁸. This style is similar to the Indulgent style in that teachers set few or no limits and controls over students⁴⁹. However, unlike Indulgent teachers, Permissive teachers often neglect classroom preparation and tend to use the same lesson plans year after year. Additionally, discipline is usually not enforced in the classroom of permissive teachers⁵⁰. In other terms, a no punitive classroom is facilitated. As can be seen, this style of teacher reflects an uninterested and the lack of dedication to pedagogic career.

2.1.4 Teaching Method

"Teaching method" refers to the general principles, strategies, and tactics that a teacher uses to deliver instruction and facilitate learning in a classroom or educational setting. It is a systematic way of approaching the task of educating students, based on a particular philosophy of education and a set of assumptions about how students learn. It is a way of organizing the learning process so that students can acquire the skills, knowledge, and attitudes they need to be successful. It is a theoretical framework that describes the means by which teachers will achieve the objectives they have set for their students. They are techniques and strategies used by teachers to present information and facilitate learning in a classroom. It can be as simple as using lectures

or as complex as using technology, projects, and other interactive methods to engage students in the learning process⁵¹.

Teaching is a series of activities that take place away from the students and are intended to aid in the learning process. At whatever level, the basic goal of instruction is to significantly alter the learner⁵². Teachers must employ the methodology and approach that best fits the learner, the goals, and the expected results in order to transfer information. The majority of old approaches were teacher-centered, keeping the students passive and allowing them to passively receive information from the instructor without increasing their degree of involvement with the topic. This method is least practical, more theoretical, and remembering⁵³. Student-centered approaches which are more effective are more encouraged because they embrace the concept of discovery learning⁵⁴. In contemporary education, many teachers employ the student-centered approach to foster students' interest, analytical research, critical thinking, and enjoyment of the learning process. The efficacy of teaching methods on student learning has continuously garnered significant attention in educational research⁵⁵. Today, most teaching methods incorporate modern technology, bringing about substantial changes in the learning landscape. However, the prevalent poor academic performance of many students in various subject areas can be attributed to the use of ineffective teaching methods by teachers. Therefore, it is imperative for teachers to be knowledgeable about various teaching strategies in order to effectively impart knowledge to their students⁵⁶.

Rewritten: The teacher-centered method involves a passive approach where students receive information from the teacher without actively engaging with the subject matter being taught. This approach is more theoretical and relies heavily on memorization, with little emphasis on activity-based learning that encourages students

to apply their knowledge to real-life problems⁵⁷. As the teacher is solely responsible for transmitting and sharing knowledge, the focus is often on delivering information quickly and efficiently, which can result in a lack of interest and understanding from students. To address these shortcomings, it is important for teachers to go beyond simply dispensing rules, definitions, and procedures for memorization, and instead actively engage students as key participants in the learning process⁵⁸.

The student-centred method has gained popularity with the introduction of the discovery learning concept. Many scholars and educators today use flexible and adaptable student-centered methods to facilitate active learning. This approach focuses on promoting interest, analytical research, critical thinking, and enjoyment among students^{59,60}. Unlike teacher-centred methods, the student-centred approach does not limit the flow of knowledge from the lecturer to the student. It has been observed that using activity-based and student-centred approaches such as the demonstration method can lead to better student performance as compared to conventional approaches such as the lecture method. As a result, student-centered approaches are more effective and are encouraged as they promote the concept of discovery learning⁶¹.

Teacher-student interactive method: This teaching method applies the strategies used by both teacher-centered and student-centered approaches. Nowadays, the majority of instructors use the teacher-student interactive method to encourage students' attention, analytical investigation, critical thinking, and enjoyment⁶². Instead of the lecturer controlling how much information the students get, the strategy encourages the students to look for pertinent knowledge on their own. A research found that using the discussion approach in conjunction with learning materials effectively may help students build their higher level learning abilities. It may boost the students' capacity for generalization and transfer, as well as their feeling of the

importance of what they are learning and their capacity to evaluate, synthesize, and apply what they have learned⁶³.

2.2 Theoretical Framework

2.2.1. Theory of Planned Behaviour and Theory of Reasoned Action

Two theories led this study: The Theory of Planned Behavior and the Theory of Reasoned Action. These theories use a cognitive approach to behavior explanation, concentrating on people's attitudes and beliefs. The Theory of Planned Behaviour originated from the Theory of Reasoned Action, which suggested that the greatest predictor of conduct is intention to act⁶⁴. Attitudes toward conduct and subjective norms, which are social pressures originating from views of what others believe should be done, impact intention. The TPB adds a third component, perceived behavioral control, which relates to how easy or difficult it is to do the activity. Since it emphasizes the relevance of purpose in predicting behaviour, this theory was selected for the research. Teachers' intentions to properly manage their classrooms may have an influence on their teaching effectiveness and, as a result, their students' academic progress in public secondary schools⁶⁵

2.2.2. Social Learning Theory

The Social Learning Theory, also referred to as the Social Cognitive Theory, highlights the significance of observation and imitation in acquiring new behavior. This theory was formulated by Albert Bandura and asserts that individuals learn by observing and imitating the actions of others. The theory proposes that people learn through observing the actions of others and their outcomes. This observation process enables individuals to acquire new skills, attitudes, and knowledge by emulating the behavior of others. Additionally, the theory suggests that individuals can learn new

behaviors through vicarious reinforcement and punishment⁶⁷. The theory posits that individuals also have cognitive processes that mediate learning such as attention, retention, reproduction and motivation. Attention refers to the process of selecting some aspects of the environment to focus on. Retention is the ability to store and remember the information. Reproduction is the ability to execute a behavior after observing it, and finally motivation refers to the drive to perform a behaviour.

Social Learning Theory has been applied to a variety of fields, including education, psychology, and criminology. It has been used to explain the development of aggression, addiction, and pro-social behavior, and has been used to design interventions to change behaviour⁶⁶.

In the classroom, Social Learning Theory suggests that students learn by observing the behavior and actions of their teachers and peers. Teachers can use this theory to create a positive learning environment where students are exposed to positive role models and behaviors, which they can then imitate to achieve academically. Therefore the theory is useful for the study since it suggest that a classroom with well-managed behavior and adoption of appropriate teaching method will lead to a positive learning environment where students are more likely to engage in positive behaviours and achieve academically⁶⁷.

2.3 Review of Empirical Studies

2.3.1 Classroom Discipline Management and Learners Academic Achievement

The Latin word "discipulus," which meaning "teaching and learning," is where the English word "discipline" originates. The phrase "to educate someone to follow rules and manage their conduct or to punish someone in order to retain order and control" is what the word "to control someone" really means, and as a result, it is often associated with punishment for disobedience. According to the "concept that isolation

allows the culprit time to think on what occurred, recognize the mistake of his or her ways, and return to the same scenario with a change of conduct and attitude", punitive techniques like detention are utilized in schools⁶⁸.

There is significant evidence from studies that the classroom environment helps children by creating supportive learning contexts⁶⁹. Many studies have shown that students' academic and social development is influenced by the quality, consistency, and effectiveness of their interpersonal and social interactions⁷⁰. More academic articles have been produced on student indiscipline and its impact on learning outcomes and students' advancement in schools⁷¹. According to a research, successful schools exhibit good inclusive policies, such as promoting student behaviour management and group leadership. The conduct expectations for instructors and students are therefore prescribed by the school's disciplinary policies⁷². A research claimed that although a law-abiding instructor is supposed to respect all the time allotted to him or her on the schedule, a law-abiding student is expected to appear on time for lectures and wait for the teacher⁷³. It was believed that improved academic success is closely related to the effective utilization of time by instructors and students⁷⁴. The research agrees and goes on to demonstrate that more study time has a significant impact on academic achievement⁷⁵. He also emphasized that managing one's time may be seen of as a technique to keep an eye on and control how many things one is able to do in a given amount of time. As a result, a fundamental time management practice requires both student and staff engagement and self-attitude in order to boost academic achievement⁷⁶.

According to a research, there is a link between a supportive classroom environment and students' social conduct, such as less bullying and conflict as well as more collaboration and achievement⁷⁷. At the same time, it was found that when the

classroom climate is favorable, instructors are more successful with a varied variety of pupils who vary in their abilities, learning styles, and cultures⁷⁸. According to a research, pupils' impressions of a fun classroom contributed to their improved arithmetic performance. The research also discovered that when there are no interruptions in the classroom and a nice atmosphere, children learn and think about themselves. Reduced dropout rates, greater attendance rates, enhanced engagement, deep rather than surface learning, better grades, and enthusiasm to study were all shown to be correlates with a favorable classroom climate⁷⁹. A suitable level of classroom discipline is required to provide an environment that supports students' learning, according to studies on effective teaching, since students' misconduct diverts attention from the learning process. Teaching and undermines even the most meticulously prepared courses' efficacy.

Punitive techniques, however, seem to be of little benefit in fostering responsible student conduct and academic performance, and they should be replaced with proactive and participatory disciplinary practices, according to recent study on the topic of discipline methodology⁸⁰. According to this concept, discipline is seen as being related to the process of teaching pupils self-control via a contract that unites a teacher and a class of students to maximize learning⁸¹. In order to enable the group assume responsibility for guaranteeing the appropriateness of all of its members' conduct, instructors and students negotiate, debate, and sign contracts with one another⁸². This places a focus on student self-regulation.

The capacity of instructors to establish a suitable tone, win students' respect, and foster collaboration in the classroom are clearly related to effective classroom management. The way instructors discipline their classrooms has a significant influence on how they present themselves as competent teachers, just as teachers'

visible instructional conduct in the classroom is a good indicator of how effective they are. In an effort to avoid disciplinary issues, it is clear that more sympathetic instructors prefer relationship-based discipline approaches (such as talking with students about their wrongdoing) over coercive ones (such as hostility and punishment. Students see more successful instructors as being more compassionate and using relationship-based punishment techniques, which enhances classroom discipline and student academic results⁸³.

Students behave more responsibly in class, have a more favorable impact on their instructors, and report a larger sense that the intervention was essential when professors include them in decision-making or reward excellent behavior⁸⁴. As class discipline shields students from interruption and, by extension, emotional and cognitive harm, teachers' proper disciplinary approaches also aid pupils in learning more effectively⁸⁵. According to research, effective teacher management techniques boost students' academic performance, keep them focused, include them in the learning process, and have an impact on their motivation and achievement⁸⁶. According to this cycle, "Such students will be more interested in the subject and more likely to pay attention in class, which will lead to their acquiring more course material."

As part of a revolutionary empirical analysis of classroom discipline, researchers in Australia investigated the role of classroom punishment in creating student responsibility for learning. The data revealed that students see aggressive punishment by instructors as one of the primary reasons that stops students from becoming responsible adults and diverts them from their academic work.⁸⁷ In a separate study, a researcher compared the disciplinary tactics used by instructors of various nations across cultures. While Chinese students often listen to their professors

and disobedience does not occur very frequently in their classes, they indicated that Chinese teachers employ fewer harsh approaches in their courses compared to their Australian counterparts⁸⁸.

In a related research, it was determined how much students of various nationalities believed that the methods used by their instructors to enforce discipline had a significant influence on how they felt about the teacher and their homework. Regardless of their ethnicity, all students said that punitive punishment methods affected how they felt about their professors and distracted them from their studies⁸⁹. Less distraction from academics was also shown to be associated with the adoption of the strategy of responsible conduct recognition and discussion with the pupils. In a research conducted in Singapore, the effects of caring and behavioral control, two classroom management techniques, on student involvement, misbehavior, and school satisfaction were evaluated. The study's findings demonstrated a favorable relationship between caring and behavioral control and student involvement. Care was shown to be a facilitator of children' school happiness while behavioral control was found to be a barrier to classroom misbehavior⁹⁰.

A research in Africa looked at the use of physical and verbal punishment to control student conduct in Sudanese schools. The results showed that instructors utilize punitive methods as a consequence of the stress and dissatisfaction they feel at work because of the unfavorable school environment and lack of resources. Yet, the author did not make a connection between student success and punishment measures⁹¹. According to a research, big classes in secondary schools are linked to issues with class control, management, and discipline, and instructors tend to provide fewer exercises and practice opportunities in crowded classrooms to lessen the amount of marking required⁹². There is also a limited amount of free time for group projects that

would improve efficient content coverage. According to a research carried out in Ghana, teachers' tardiness, absenteeism, and failure to finish the curriculum all substantially contributed to students' poor academic performance. While the examined studies accept that classroom discipline is a crucial element impacting students' academic progress, they do not identify which classroom discipline approaches result in students doing well and which ones do not⁹³.

From several angles, the connection between classroom management, coping mechanisms, and academic accomplishment has been explored. For instance, the correlation between instructors' coping mechanisms and the methods they use in the classroom to deal with disruptive students was discussed⁹⁴. Based on their results, coping mechanisms are used to both prevent and treat behavioral issues in students. Also, instructors who are more concerned with student misconduct use more forceful (i.e. punitive) classroom management techniques. Coping styles serve as mediators of instructors' classroom management strategies, although the evidence is still lacking in terms of how these two factors affect students' academic progress.

In a research conducted in 10 randomly chosen secondary schools, the author looked at the link between effective classroom management and students' academic accomplishment in physics to better understand the relationship between classroom management and students' achievement. The results showed that efficient classroom management techniques, which may be directly related to coping mechanisms, had a large and favorable effect on students' performance in physics⁹⁵. More than 397 junior high school instructors were researched to see how their use of different classroom management strategies, such as punishment, recognition and reward, hinting, discussion, and aggressiveness, related to how they dealt with student misconduct. He said that instructors who use passive avoidance tactics employ more aggressive and

punitive methods to deal with student misconduct. Teachers who use more social problem-solving and relaxation tactics, on the other hand, favor inclusive management practices like praise and reward, conversation, and hinting. Yet Tran doesn't see the connection between these actions and academic success.

The author made an effort to investigate how instructors' coping mechanisms differed when they were concerned about the mismatch between their preferred and actual approach to classroom management. He also looked at the factors that prevented instructors from putting their own ideas about good classroom management into practice. Their study's main finding was that instructors seek for coping mechanisms when they believe that there is a significant gap between their understanding of actual and intended classroom management procedures. These techniques had components that, in their opinion, prevented them from considering them to be best practices. 294 secondary-school instructors took part in their research for this reason.

The findings showed that the identification of both individual inhibitory variables (such as time and job constraints) and generic components was more closely associated with coping styles that use tactics like self-blame and hopeful thinking (e.g., accountability to parents). Interestingly, however, there was no connection between instructors' use of socially embedded problem resolution and the perceived importance of inhibitors to desired management strategy. Despite the lack of a distinct relationship pattern, a number of studies have recorded instructors' coping behaviors and their classroom management strategies⁹⁶. Studying the potential relationships between and effects of these two teacher characteristics in regard to students' success tends to provide positive outcomes. In light of this, this study expanded research on the effects of coping on the link between classroom management and accomplishment among EFL instructors and their students' academic success. With a better knowledge of the

interplay between these three constructs, we approached the problem by using a structural equation modeling (SEM) technique, which would enable the discovery of cause-and-effect relationships.

2.3.2 Classroom Management and Students' Academic Progress

The mechanism a teacher uses to put teaching and learning into action is called classroom organization. Making choices and taking charge of what happens during a teaching and learning session is the science behind it. The established learning goals and objectives are often met via the collaboration of students and their teacher⁹⁷. The idea of classroom management is broad, and many studies that have been done have produced contradictory results that have an impact on students' academic performance. For instance, it can be shown that school features, the principal's leadership style, the effectiveness of the instructors, the demands of motivation, and the number of students all have an impact on student outcomes⁹⁸.

In accordance with the above, obtaining successful educational results depends on instructors' capacity to manage classrooms and their students' behavior. This is due to the complexity of classroom organization, which calls for either structuring or disorganizing activities that may encourage or discourage certain circumstances that can develop in the learning environment. Moreover, the author said that excellent classroom organization encourages autonomous learning and accomplishment for all students in classrooms that are creative, tidy, and welcoming⁹⁹. As a result, focusing on good classroom discipline reduces discipline conflicts and leaves the classroom with fewer interruptions and disturbances. Students' success is impacted by how well procedures are laid out and taught to them by teachers. Rules are a "strong, preventive component of classroom organization and management

plans." The goal of rules is to determine expected habits, reinforces, and penalties for unacceptable conduct¹⁰⁰.

Meeting the demands of students with different degrees of previous experience and learning rates is the biggest organizational challenge for schools¹⁰¹. According to the study's author, some pupils could not comprehend the lesson since they don't have a thorough understanding of the topic. Hence, if instructors wish to significantly impact students' accomplishment, they must concentrate on continuity, appropriateness, motivation, and time. Instructors in particular need to be careful that solving one set of issues does not lead to the emergence of new issues with another. A frequent loss of teaching quality, motivation, and time on duty at the appropriate level of instruction contributed to the collapse of the personalized training programs of the 1970s¹⁰². The preservation of contextual variables for further analysis via a database-driven record-keeping method that preserves disaggregated data from a series of brief observational segments helps the instructor exercise successful teaching, research indicates that observational classroom organization, through data management, can help teachers better understand the different learning practices and experiences of gifted children in regular classroom settings¹⁰³.

2.3.3 Classroom Discipline and Learners' Academic Achievement

The word has the essence of discipline, which means "to educate someone to obey rules and manage their activities or to punish someone in order to keep order and control" ¹⁰⁴. The word "discipline" stems from the Latin "discipulus," which means "to teach and learn." It is often associated with punishment for disobedience as a consequence. Detention and other punitive measures are "based on the idea that isolation allows the offender time to think on what occurred, acknowledge his or her mistake of judgment, and return to the same circumstance with a change of conduct

and attitude"¹⁰⁵. A classroom setting, which provides supportive learning conditions, enables pupils to learn more effectively. In addition, various research have shown that learners' personal and social experiences have an impact on their academic and social development.

Discipline issues among students should not be underrated since they have a detrimental impact on their academic performance and development. For instance, one scholar made the case that successful schools exhibit sensible inclusive policies, which emphasize the need of enforcing school rules and teamwork¹⁰⁶.

So, the conduct expectations for both instructors and students are prescribed by the school's disciplinary policies. A comparable source claims that although a law-abiding teacher is supposed to respect all of the time allotted to him or her on the schedule, a law-abiding student is expected to appear on time for class and wait for the instructor¹⁰⁷. According to one source, effective time management on the part of both students and instructors is linked to greater academic success, and having more time has a favorable impact on academic performance¹⁰⁸.

An author stressed in a related evaluation that time management may be seen as a way to regulate and manage one's own execution of several duties within a certain amount of time. As a consequence, in order to improve academic accomplishment, both student and staff self-attitude and engagement are required as a pattern of time management practice. It's crucial to keep in mind that instructors are more effective when working with a broad group of students who have a variety of talents, learning preferences, and cultural backgrounds.

The opinion that students did better in arithmetic when they were in a more enjoyable classroom is, on the other hand, another significant factor to consider in relation to learners' academic progress. As a result, students are more likely to

participate in self-reflective thinking and learning when the classroom setting is productive and free of distractions. Reduced dropout rates, higher attendance records, more involvement, deep learning rather than surface learning, better grades, and increased drive to study are all indicators of a positive learning environment, according to other researchers¹⁰⁹.

Also, research shows that effective teaching often results in a suitable degree of classroom discipline, which helps to create a welcoming environment that discourages students' misconduct, which may obstruct the teaching and learning process. Moreover, effective instruction reduces dropout rates, encourages better attendance and involvement, and results in deep rather than superficial learning. Punitive approaches should be complemented with proactive and engaging disciplinary strategies since they often have little impact in promoting responsible student behavior and academic achievements. In order to maximize learning in this environment, discipline is understood to be the teaching of self-control to pupils based on a contract that binds a teacher and a group of students. Student self-regulation is emphasized via teacher-student contracting, negotiating, and debating¹¹⁰.

Every time a student misbehaves in class, they should be called out on it and made to accept responsibility for their actions¹¹¹. Students act more responsibly in class, have a favorable impact on their instructors, and think the intervention was appropriate when teachers are engaged in their decision-making or acknowledge their excellent behavior¹¹².

Also, a research claims that instructors' effective disciplinary techniques help kids learn more effectively since orderly classroom behavior reduces disruption, which is a risk to students' emotional and cognitive health¹¹³. According to the findings of the research mentioned above, teacher management styles influence motivation and

accomplishment as well as improve and maintain students' academic performance. According to this cycle, students will care more about the class and are more likely to pay attention in class if they feel that their teacher cares about them. In a research, it was examined how kids were disciplined in Sudanese schools using physical and verbal punishment. According to the findings, teachers utilized disciplinary measures as a consequence of the anxiety and rage they experienced at school as a result of the unfavorable school climate and a lack of adequate facility management. On the other hand, the author claims that there is no correlation between student success and disciplinary measures¹¹⁴.

A research found that wide classes, especially in secondary schools, are associated with poor class control, difficult management, and indiscipline. Lessons and practice sessions are cut short, and there is less time for group projects and content review because of the congestion. One research indicated that students' poor academic success was also influenced by tardiness, absences, and incomplete syllabi. While the examined research concur that classroom discipline is a significant element influencing students' academic progress, they do not identify which classroom discipline approaches have favorable outcomes and which ones have negative effects. Due to this, the current study examines specific classroom disciplinary measures and how they effect students' academic progress in public secondary schools.¹¹⁵

2.3.4 Classroom Instruction Methodologies and Learners' Academic Achievement

The methods a teacher utilizes in the classroom are his or her instruments for ensuring that teaching and learning go as planned. Effective classroom instruction and mentorship often help children explore their surroundings with a feeling of trust and autonomy with the ultimate objective of developing intrinsic self-regulation and

improving academic performance. Classroom management techniques help teachers create a positive and productive learning environment that supports students' secondary education. Teachers need to be able to utilize and use these techniques in a variety of situations that might arise in the classroom as a result¹¹⁶.

To guarantee that pupils successfully complete their goals, a teacher may also use a variety of instructional tactics. Successful instructors differentiate their instruction according to the requirements of their pupils as a consequence. An expert offered advice on how to identify students' needs and talents in a regular classroom. In order to provide the greatest learning environment possible, a teacher may differentiate instruction by altering his or her teaching style¹¹⁷. Depending on the readiness, interests, or learning profiles of the students, teachers may often discriminate between four classroom components. Teachers can typically identify four elements in the classroom, depending on the student's preparation, interests, or learning profile: (a) content, or what the student wants to learn or how he or she can obtain information; (b) process, or activities in which the student takes part to understand or master the material; (c) products, or culminating assignments that give the student the opportunity to practice; and (d) learning environment, or how the classroom operates and feels¹¹⁸.

Learners perform better when instruction is focused on their individual readiness levels, interests, and learning profiles. A research found that pupils who are uninterested in a subject do worse academically than those who are. As a consequence, students that show a lot of curiosity experience an improvement in their marks. To succeed, teachers need to be aware of the distinctions among students and show a sincere interest in each student¹¹⁹. Instructors need to determine what and how much their pupils are capable of. Learning assignments that are either too demanding or too easy might impede students' learning. Whereas those that are too fast are a waste of

time, those that are too sophisticated require too much time and do not increase efficiency¹²⁰. Obviously, pupils who are participating in extracurricular activities are more likely than those who are not to do well academically. As a consequence, in order to engage a diverse group of pupils, instructors require a sophisticated collection of teaching approaches. Hence, choosing an effective education approach results in great efficiency. Teachers can only do this, it was further asserted in a research, if they are "adequately equipped with knowledge and skills that boost their efficacy and, as a consequence, improve learning efficiency¹²¹."

Moreover, cooperative teaching and learning techniques in the classroom are crucial for improving reading ability and academic success among kids with reading difficulties. When students study in mixed-ability groups, cooperative learning is most successful. Instructors want their pupils to collaborate in small groups to support one another's learning. Groups of four are given daily opportunity to teach one another once the teacher has finished their session, and they are chosen based on how well the community as a whole has learned.

A writer who highlighted the need of thorough and focused education and said that standardized tailored tuition for failed readers is more effective than eclectic methods offered structured teaching as a strategy for teaching reading to kids with reading impairments. Direct instruction combines fundamental concepts of successful education to aid learners with reading issues in academic development. Interactive teaching is one kind of instruction that works well with the culturally sensitive pedagogy model¹²². Using student-centered learning strategies that call for communication between the instructor and the students constitutes interactive teaching¹²³. According to the examined works, several academics concur that instructional approaches will have an impact on learner efficiency. Yet, few of them

examined specific instructional strategies that provide the desired outcomes in learners' success. The purpose of this research is to determine how classroom instructional techniques, used by instructors as a means of classroom management, impact students' academic progress in public secondary schools.

2.3.5 Classroom Environment and Academic Achievement in Mathematics

Since mathematics is seen to play a crucial role in speeding social, economic, and technological growth, teaching and understanding mathematics is given the highest significance around the globe. The teaching of mathematics is given significant emphasis in Nigerian educational policy, and all students in primary and secondary schools are required to take the subject, in addition to all scientific and technology courses in university institutions¹²⁴. The 40th General Conference of UNESCO, convened on November 26, 2019, accepted the proclamation of March 14 (Pi Day) as the International Day of Mathematics to honor the wonder and significance of mathematics and its crucial role in everyone's life¹²⁵.

Unfortunately, a significant minority of students detest or are terrified of mathematics rather than celebrating it, despite the fact that mathematics is in fact beautiful and deserving of celebration. It is well established that a negative attitude toward mathematics and a dread of the topic negatively affect learning and have a negative impact on students' success in the subject¹²⁶. A study of 784 upper secondary school students in West Bengal's southern region to determine how they felt about math across the three academic disciplines of science, art, and commerce revealed a good correlation between the students' views and their math achievement¹²⁷. High mathematics failure rates among high school students in internal and national exams continue to be a serious worry for educational authorities and parents, despite the

considerable focus given to the subject. The West African Senior School Certificate Examination, for instance (WASSCE)

The Chief Examiner's report for the academic years 2006–2016 made explicit mention of how poorly pupils performed in mathematics as a whole. According to the study, more than 50% of test-takers scored below the credit threshold for mathematics (WAEC, 2016). Mathematics performance factors have been extensively researched, but more study is still needed, particularly in nations like Nigeria where mathematics failure rates are still high.

Recent research conducted in Nigeria have highlighted nonconductive learning environments, poor teacher-student relationships, and a lack of application of instructional resources in the teaching of mathematics as variables that may be causally connected to math fear and poor student performance¹²⁸. Another research conducted in the nation discovered that low student performance in mathematics was correlated with a lack of qualified mathematics instructors, insufficient instructional facilities, huge classrooms, mathematics phobia, and a lack of labs and libraries¹²⁹.

In another part of Africa, a study of public secondary schools in Kenya that looked at how pupils' attitudes affected their math performance revealed that those who thought math was difficult were less motivated to learn it and more likely to score badly in it¹³⁰. Another research that examined the impact of people and material resources on mathematical literacy looked at socioeconomic, cultural, and cultural status as well as total educational spending.

The classroom atmosphere is one of the several elements that are known to affect pupils' arithmetic performance studies have implicated¹³¹. A study of university students revealed that how they felt about the learning environment had an impact on a variety of learning outcomes, including academic success, the development of

important skills, and learning satisfaction. The research came to the additional conclusion that past academic performance at school was a weaker predictor of learning outcomes at university than how students perceived their present learning environment. Another study conducted in Cross River State with 1200 Junior Secondary 2 (JS2) students from 48 secondary schools revealed that the following classroom environment variables—time used by the teacher, classroom layout, climate, use of instructional materials, classroom management abilities, teacher-student classroom interaction, and student-student classroom interaction—were individually and collectively predictive of student achievement¹³². Two aspects of the classroom that stand out as important changeable elements are the size of the class and the availability of appropriate educational materials¹³³.

Inefficient classroom management prevents effective teaching and learning. Bad learning environments, overcrowding, inadequate seating, and a lack of teaching tools are characteristics of poor classroom environments. It is well known that many public schools in Nigeria lack instructional facilities or utilize them inefficiently, and that many of these schools have huge class sizes. The West African Senior School Certificate Examination recorded significant failure rates in mathematics, which are indicative of the continuing of these classroom deficiencies in Nigerian public institutions¹³⁴. Our analysis of the literature in this field reveals that having a big class has a negative impact on learning outcomes.

According to a research done on 337 senior secondary school students in Yobe State, Nigeria, who were chosen at random, pupils who were taught in an ideal learning environment outperformed those who were taught in a boring one on math performance tests by a substantial margin¹³⁵. Other recent research of senior secondary school pupils in Nigeria indicated that biology students' academic performance was

negatively impacted by big class sizes¹³⁶. Large class sizes were shown to have a negative psychological and social impact on pupils, which may have indirectly impacted their academic performance, according to the research. Also, a cross-sectional study conducted in Nigeria among 520 final-year students and 30 lecturers at tertiary institutions showed that big class sizes have a negative impact on both the teaching and learning of business education¹³⁷.

A study of high school students in Uganda, another African nation, found that, along with parental support, peer pressure, past mathematics success, and attitude toward mathematics, students' assessment of a good classroom was a major predictor of their achievement in mathematical¹³⁸. Classroom size reduction (CSR) usually had beneficial benefits on students' performance across all subject areas, according to a meta-analysis of research that evaluated the impact of class size on student achievement¹³⁹. Students in tiny classrooms outperformed their counterparts in classes of conventional size, according to a longitudinal study of kindergarten kids and instructors who were randomly allocated to big and small classes within participating schools¹⁴⁰.

The notion that the use of instructional materials can enhance learning is widely acknowledged and supported by research. However, given the contextual differences and the intricacy of subjects such as mathematics and related sciences, there is a need for continuous research in this area to discover intervention techniques that may provide new possibilities to improve learning outcomes.

It was found that instructional materials and school facilities had a greater impact on students' academic achievement than teacher qualities in a study on institutional variables influencing students' performance in public secondary schools in Somaliland¹⁴¹. The quality of the instructional facilities in the classroom setting had a

substantial impact on students' performance in biology and social studies, according to two different studies conducted in Nigeria. Results from studies cited in the previous review of the literature on the effects of class size and instructional materials suggest that efforts to improve learning outcomes in mathematics in settings where these conditions are currently suboptimal could be aided by improvements in these classroom variables, specifically the provision of adequate instructional materials and a reduction in class sizes.

2.3.6 Instructional Supervision and Learners Academic Achievement

It is the duty of principals to make sure that lessons are taught in classrooms in an efficient manner. Hence, principals must make sure they efficiently perform their supervisory tasks in secondary schools if they want good classroom management to exist there. Keeping records is a crucial part of learning. It is expected of teachers to create and keep records, such as lesson plans, mark books, progress record books, and attendant registers¹⁴².

In addition, the principals are in charge of overseeing classroom education. So, supervision at work in educational institutions is a dynamic process where a person is not only in charge of the group's responsibilities but also actively searches out members to help the group achieve its objectives in a given situation¹⁴³. In that context, instruction supervision seeks to ensure effective performance in schools because it looks beyond the roles to be performed or the people who carry them out and instead aims to include stronger reinforcement traits like appreciation and recognition, service conditions and morale-boosting, coercion, and compensation¹⁴⁴.

Several African educational institutions lose a significant amount of teaching time due to ineffective instructional monitoring. In badly run schools, 25% or more of the school year may be lost¹⁴⁵. To find out how instructional supervision was

implemented in classrooms, a researcher conducted a study on assessments of it in secondary schools in Botswana. The study's conclusions revealed that the atmosphere in which instruction supervision occurs in classrooms is threatening and antagonistic to instructors. The significantly enlarged secondary school system, which has witnessed a significant rise of students in a very short period of time, places restrictions on the efficacy of instructional supervisors¹⁴⁶. According to a survey, few secondary school administrators have backgrounds that would adequately equip them to supervise education. Exercise books and lesson plans written by students reflect the material that professors addressed in class. It is the responsibility of the principal to frequently check the students' exercise books and class notes to make sure that the curriculum is being covered correctly and that assignments are being marked¹⁴⁷. In a research on the effect of instructional supervision on pupils' academic performance in senior secondary schools in Nigeria's Ondo State. According to their research, examining students' notes has a big influence on their academic achievement in English. In Kenya, principals are responsible for supervising teachers' work by checking documentation such as lesson plan plans, records of work completed, and attendance registers. The principal does a lot of oversight at schools with excellent performance¹⁴⁸. An investigation on the principal's instructional role in KCSE academic attainment was conducted in the Vihiga area of western Kenya. They discovered that 8% of principals at high-performing schools reviewed lesson plans, instructional plans, and attendance records¹⁴⁹.

A research found that the administrator should stop by the classroom regularly to support the instructors. He claimed that if principals execute their duty of instructional oversight, schools will have overall good performance. Checking student books to ensure that lesson notes are taken, checked by subject instructors,

assignments given are noted and corrected, and the teacher is clearly present in class should be included in this. In order to ensure that students are routinely given assignments by their subject instructors and that their books are checked, marked, and corrected, the principal should regularly and irrationally engage with students and request their exercise books. The only way a principal can learn about the quality of teaching and learning in the school is via direct observation of lesson delivery¹⁵⁰. The only way an instructional supervisor can see whether a teacher has the potential to be exceptional is by observing them deliver a lesson they have prepared¹⁵¹. The researcher noted that the supervisor may get knowledge regarding performance and quality benchmarks via this visit. Walk-throughs and unofficial classroom inspections are part of the classroom visitation supervision of instruction¹⁵². A walk-through is a brief period of observation that gives a short overview of the classroom's surroundings and the performance of the teachers. This approach is better since it is spontaneous as opposed to formal and informal settings, which are planned and organized by the instructor and the supervisor¹⁵³. According to the analyzed research, principals have an impact on how well students are managed in the classroom and accomplish academically. The examined research, however, are of a generic character since most of them do not tie their conclusions to a specific group of students. Although the present research is only interested in secondary schools, several studies assess the impact of principals' instructional supervision on students' success in secondary and post-secondary schools¹⁵⁴.

2.3.7 Classroom Instruction Methodologies and Learners Academic Achievement

The ultimate objective of effective teaching and mentoring is to enable students explore their environment with a feeling of trust and autonomy toward increased academic performance and intrinsic self-regulation. The effectiveness of instructors in

establishing a secure and productive learning environment for secondary students' excellent education depends critically on their use of classroom management techniques. Teachers should thus be familiar with the approaches that will enable and support students in learning¹⁵⁵. Differentiating teaching is advised by best practices so that learners may be addressed via a range of techniques and activities. Good instructors adapt their lessons to the requirements of their students¹⁵⁶. One continuous challenge is how to differentiate and individualize instruction for the variety of student needs and skills in a shared classroom¹⁵⁷. According to a research, differentiated teaching is a methodical way to developing curriculum and instruction for students with a range of academic abilities. It is a technique of approaching the classroom that aims to maximize each student's learning potential while also acknowledging their individual learning requirements. Differentiated education is a style of approaching teaching and learning that emphasizes the worth of the individual and has several applications in the classroom¹⁵⁸. At its most fundamental level, differentiation refers to instructors' attempts to address differences among students in the classroom. Differentiating instruction is the practice of a teacher altering their approach to the classroom in order to foster the greatest learning environment possible¹⁵⁹.

According to the study, teachers can typically differentiate four classroom elements based on student readiness, interest, or learning profile: (a) content, which is what the student needs to learn or how the student will access the information; (b) process, which are activities the student participates in to make sense of or master the content; (c) products, which are culminating projects that ask the student to practice, apply, and extend what he or she has learned in a unit; and (d) assessment. According to research, kids do better when their learning is based on their individual readiness levels, interests, and learning profiles¹⁶⁰.

According to his theory, pupils who are uninterested in a subject often do worse than those who are not interested. High interest students often show improvements in their academic performance. Effective instructors must be sensitive to the differences among students and show a sincere interest in each one of them¹⁶¹. Instructors must decide what and how much students are prepared for. Learning might be hampered by exercises that are either too difficult or too simple. Although those that are too simple are a waste of time, those that are too difficult take too much time and do not improve achievement¹⁶². Students who are actively engaged are unquestionably more likely to achieve well academically than pupils who are not. Consequently, in order to engage a wide range of pupils, instructors need to have a big inventory of instructional methodologies¹⁶³.

The teachers' use of accommodations, modifications, and adaptations in the classroom, such as modified instructional techniques to provide differentiated instruction and materials to meet students' individual needs; assigning peer buddies, peer tutors, or cross-age tutors; providing alternate ways to complete assignments; adapting how the student can respond to instruction so that questions are allowed to be answered verbally; and limiting unneeded disruptions in the classroom.

A research looked at what discourages technical and vocational students from acquiring English as a foreign language. The participants said that one of the things that discourages them from studying English as a topic in school is instructors and the quality of their instruction¹⁶⁵. According to a similar research, the classroom teaching strategies used by instructors may either have a beneficial or negative effect on students' academic achievement¹⁶⁶. Similar research results were found among Mexican fifth-graders, which demonstrated that pupils who were taught using these

methods either outperformed or were on level with their control group peers academically¹⁶⁷.

For both children with and without reading issues, a research found that systematic, explicit phonics instruction methods are much more successful than nonsystematic methods. There is a very substantial body of scientific data to support the idea that children would benefit tremendously from systematic, explicit direct teaching on how to read aloud a word they have never seen before utilizing knowledge of the relationship between letters and sounds in their reading training¹⁶⁸.

2.3.8 Supportive Feedback and Students Academic Achievement

According to a growing body of research, positive student-teacher relationships that are marked by concern and high expectations for students' success may be the first manifestations of universal advantages like student academic development and achievement¹⁶⁹. According to a research, student performance is significantly impacted by how much instructors care for and engage with their pupils, as reported by both parents and teachers¹⁷⁰. A longitudinal study was conducted by a researcher to examine how teachers supported student progress and engagement. Positive teacher-student relationships have been linked to higher academic performance, whereas bad teacher-student relationships have been linked to reduced motivation, self-regulation, and autonomy, which ultimately leads to worse performance¹⁷¹. A research made the case that by emphasizing what has to be done to improve and precise specifics about how to improve, good feedback aids learners in understanding how to move ahead with their learning. Good instructors point out to their pupils what they are doing well, why, and provide advice on how to improve¹⁷².

Effective feedback, according to the research, uses a "double barreled strategy" to address both motivational and cognitive elements. The knowledge pupils need to

comprehend their level of learning and what they can do to improve that learning is the cognitive benefit¹⁷³. Gaining the perception that individuals have control over their own learning serves as motivation. The method of evaluating teachers should include giving the observer constructive criticism. It was argued that the primary duty of monitoring and assessing should be developing a system that offers feedback. Discussing what was seen in relation to the school's expectations should also take place between the evaluator and evaluate¹⁷⁴. A research found that while developing teacher evaluation systems, objective performance data and subjective assessments by skilled experts are crucial components. This was established via a quantitative analysis of the effect of new instructors in New York City on pupil success. According to the research, instructors who participate in a mentor program before being hired or who obtain more favorable subjective assessments during their first year of instruction boost student achievement¹⁷⁵.

According to a study, learning may be enhanced by research classroom evaluations that provide learners precise, descriptive feedback and include them in the assessment process. Assessment in the classroom that includes the students and aims to improve learning may inspire students rather than just gauging their performance. The input from the classroom evaluation is used simultaneously by the instructor and the student to alter the teaching and learning activities¹⁷⁶.

He suggested that in order for feedback to be useful, the learner must be aware of three criteria: (a) the task's learning objectives and success criteria; (b) the degree to which they have attained those objectives; and (c) steps they can take to move closer to achieving those objectives or to close the gap between what they have done and what they could have done. Timely student feedback on their development often encourages them to exert more effort¹⁷⁷. Providing detailed feedback on competence and goal progress, he found, boosts self-efficacy, curiosity and perseverance, and

intrinsic motivation. On the other hand, unhelpful performance comments may lower motivation. Compared to students who get negative feedback, individuals who receive positive feedback are more likely to start positive contacts with teachers and participate in learning activities¹⁷⁸.

Teachers used to seem to think that students' motivation came from their fear of failing, but current research suggests that this just serves to encourage low self-esteem. While giving feedback that is corrective in nature, teachers must explain to pupils what they are doing well and what they are not doing correctly¹⁷⁹. Corrective criticism delivered correctly will always be constructive. It has been shown that positive reinforcement increases both general education students' academic engagement and the proper conduct of disruptive pupils. He noticed that a number of factors, including instructional efficiency, teacher-student connection, and student cooperation, all predicted successful learning. Similarly, a comparable research involving university students found that the adoption of self-regulated techniques by students increased in a setting with encouraging feedback and well-defined goals¹⁸¹. Effort feedback has a direct influence on students' connections with their instructors, according to a research that looked at how often teachers in New South Wales gave pupils feedback and praise as methods of reinforcement¹⁸².

According to a study conducted in Nigeria, students who are inspired to learn by their teachers may experience increased anxiety because they want to please the person who is inspiring them. As a result, they may have high expectations for their performance on the test and focus on the negative effects of not living up to those expectations. In addition to disappointing the person who is encouraging them, schoolchildren may have test anxiety and worry of receiving a poor grade¹⁸³. He assumed that reinforcement in Kenyan secondary school classrooms attempts to

support students' good academic performance, teacher effectiveness, and, to put it simply, successful teaching and learning.

The results showed that instructors often and elaborately employed positive reinforcement to control their classes¹⁸⁴. Another research looked at the reinforcement techniques used by English language teachers and students in urban secondary schools. The results showed that positive reinforcement was more effective and was often utilized by the instructors to control the classroom¹⁸⁵.

In regard to how encouraging feedback affects students' academic progress, the new research aimed to expand on the conclusions of the studies it had previously analyzed. The research methodology, target demographic, and even sample sizes of the evaluated studies place restrictions on their capacity to generalize their results to the present study site. It's also not known how much or if instructors in Kenya use positive reinforcement for classroom management. So, the researcher attempted to evaluate how classroom feedback from teachers influences students' performance on exams in public secondary schools¹⁸⁶.

2.3.9 Relationship between Teacher-Student and Students' Academic Achievement

Positive student conduct in the classroom may be influenced by effective teacher-student connections. Positive connections may sustain student interest and active involvement in learning, which can assist preserve student desire to study, which is significantly influenced by the learning environment¹⁸⁷. On the other side, it will have a detrimental effect on students' behaviour if the basis for a positive connection is absent. If students feel that their professors don't regard or respect them, they will rebel against norms and procedures and won't trust them or pay attention to

what they have to say. Students need to feel that their professors are emotionally invested in them in order to reinforce the self-determination hypothesis¹⁸⁸.

Moreover, pupils who get along well with their instructors are less likely to skip School¹⁸⁹. Positivity in relationships and conduct is highly influenced by feeling a sense of belonging.

The quality of relationships between instructors and students is influenced by the nature of their contacts; teachers have more unfavorable encounters with students who are less academically and behaviorally capable or who are rejected by their peers. Regrettably, this encounter not only affects the teacher-student connection but also how the student's classmates see him; this unfavorable interaction may damage other relationships in the classroom¹⁹⁰. Teachers need to be more aware of their contacts with their impact on pupils in order to change this. Positive connections predict school adjustment and may operate as a protective factor for kids who are at a greater risk of having poor academic and developmental results, therefore teachers need to be aware of this¹⁰⁵. Spending time cultivating a rapport with kids may have a significant impact on their schooling, both inside and beyond the classroom.

2.3.10 Gender and Student's Academic Achievement

The word "gender" covers a broad variety of biological, behavioral, physical, and mental traits pertaining to and distinguishing the female and male populations¹⁹¹. The terms "sex" and "gender" cannot be used interchangeably since "sex" refers to the fixed biological difference between the two genders. Hence, gender is a factor that affects the obligations, duties, opportunities, limitations, and demands of men and women in all facets of social context ¹⁹². Since gender equality is a priority in all spheres of life, gender is a crucial problem that has caught the attention of teachers in particular. Due to the socio-cultural differences between men and women, the present

research placed a lot of emphasis on analyzing the degree to which learners' academic success is influenced by gender.

One important factor in determining how well students achieve academically might be their gender. The dynamics of gender interaction between the student and the instructor, particularly to gender combinations of students and teachers, is one of the fascinating theories for the variance in gender on academic success of students. Recent insights from studies on how students and instructors interact according on their gender have had a significant impact on worldwide educational policy¹⁹³.

Boys are more engaged than females in the teaching and learning process in the classroom because of gender bias¹⁹⁴. An examination found that teachers often treat kids of different genders differently and have made assumptions about the abilities of males and girls. The study also showed that, despite the fact that females do better academically, their potential is undervalued, which lowers morale and limits how they behave¹⁹⁵. This is probably going to encourage gender-biased perception, which will lead to unfair treatment and poor self-esteem in females. Would this result in females having lower academic success? All individuals participated in this research, which employed a multi-scale attitude questionnaire as its primary instrument¹⁹⁵.

The average accomplishment score between male and female students who were taught stoichiometry with the use of hands-on activities was insignificantly different, according to a research on the effect of gender on senior secondary Chemistry students' academic achievement on the subject. The research also discovered a substantial correlation between the trainees' average accomplishment score in stoichiometry and their method. The research suggested that as hands-on activities do not take gender into account, students of both sexes should participate in them in order to improve learners' academic progress in stoichiometry. The research

design for the study was quasi-experimental¹⁹⁶. A research found that gender does influence interaction patterns to some degree. One of their recommendations was to look at self-esteem and the societal ideals shared by both genders to understand why guys talk more in classrooms with more female students than males. In-depth interviews, however, may disclose more and add to this study's conclusions.

In the present research, observational schedules were combined with interview schedules, a learners' questionnaire, and observational schedules¹⁹⁷. Another author conducted a case study with the aim of examining how the instructor and students in an EFL class perceived gender and how that appeared in their conversation patterns. Boys and girls behaved differently during teaching and learning, according to the results. The research also discovered that females had poor self-esteem as a consequence of their male peers' perceptions of their replies as lacking respect and worth. The research found that stereotypes had a significant role in instructors' and students' ideas of gender and were fiercely upheld. The instructors' attitudes tend to favor guys when it comes to gender. The female students seemed to be aware of the professors' intentional or unintentional disregard for them, which had an impact on their interactions, sense of self-worth, and confidence in their ability to learn English. This might have an impact on learning quality and result in poor academic performance¹⁹⁸. Boys were more engaged in social contacts than females, according to another study¹⁹⁹. Although guys prefer to work alone and often "fight over who will lead when working in a group," research from a different author indicated that girls are more likely to connect among themselves than boys by working effectively in small group settings and discussing a problem or task ideas²⁰⁰. Consequently, given equal chances, females are just as capable as boys. According to this research, it is difficult

for instructors to alter students' perceptions of gender despite being the world's change agents.

A research was done to ascertain the impact of previous knowledge and classroom interaction on students' academic progress. Two schools were intentionally sampled while a quasi-experimental approach was used. The research found that therapy had a good, substantial impact on students' chemistry performance. Yet, there was no evidence that gender had an impact on students' academic performance in chemistry. The research also found a negligible mean difference in previous knowledge between the control and experimental groups. To enhance learning quality and increase the likelihood of good academic accomplishment, the research made the suggestion that instructors should be attentive to gender and ensure that chemistry is taught in an interactive classroom environment²⁰¹.

In addition, despite the fact that females were less engaged in classroom interaction during teaching and learning than boys, the findings of a research showed no statistically significant difference in both genders' academic success. It suggests that students of any gender may earn great academic grades. Hence, teachers should foster an atmosphere that supports equitable and active contact between students of both genders throughout the teaching and learning process. To verify these findings, this research focused on the same topic but in the Kenyan environment. Few studies have been done to compare the behavior of male and female students in the classroom, and those that have been done demonstrate that there are clear-cut variations related to gender²⁰². For instance, it was stated in a study named Gendered EFL Classroom Interaction: Case of China Senior Middle School that although studies that show boys and girls working together in the classroom are often few, a few of them do exhibit clear gender bias²⁰³.

According to the findings of a research on gender and academic accomplishment of secondary school students studying social studies in Abakaliki, Ebonyi State, males' learners had lower mean academic achievement scores than girls' learners in post-primary education. Further findings from the same study indicated that students in post-primary schools who were taught social studies by male teachers demonstrated better performance compared to those who were taught by female teachers, and vice versa. Additionally, female students who were taught social studies by male teachers exhibited better academic performance in comparison to those who were taught by female teachers.

The survey also showed that there are significant gender-based differences in the mean academic performance of post-primary school students in Social Studies. While the current study concentrated on the effects of gender interactions and learners' academic achievement in Chemistry, the previous study focused on the effects of gender on students' mean academic achievement and the effects of teachers' gender on the mean academic achievement of boy and girl learners²⁰⁴. Yet, a researcher conducted a study in Croatian elementary schools with the aim of examining the impact of teacher-pupil gender interaction on students' school academic progress. The research measured the students' academic performance using standardized knowledge exams and school grades for practically all topics on the curriculum. The research found that the outcomes of the standardized examinations were the same for all test-takers, regardless of gender, and that all students made the same academic progress. Yet, it was found that female instructors performed better on standardized achievement exams alone, which was how the impacts of teachers' gender on learners' accomplishment were determined.

As a result, it can be inferred from this research that there is little correlation between student gender and the impact of educator interactions. Girls tend to perform better than boys during elementary and early post-primary education, even in subjects like mathematics and science, which are always thought of as "masculine subjects," according to the results of this study.²⁰⁵ From the results of this study, it can be argued that, if teachers avoid gender biasness, then both genders have the same intellectual capacity to perform the same. The goal of the present research is to verify the validity of its findings by employing secondary school students from diverse cultural backgrounds to gather data mostly via observation.

Are instructors' implicit beliefs another factor in a research on how gender affects students' enthusiasm for physical science? The study found that students are more motivated by professors who are their own gender since they may serve as role models for them. The research also revealed that teachers preferred assigning assignments in situations that are linked with their own gender and that benefit same-sex pupils²⁰⁶. In addition, a research found that the stereotype held by educators that men are better at science had a favorable correlation with men's self-concept but a negative correlation with women's motivating beliefs.

The study's findings supported the notion that gendered educational choices and teacher stereotypes led to different motivating ideas among the sexes. Boys are more likely to choose science-focused courses than girls, who are more likely to choose humanities-based courses. Such notions might influence how students of different genders perform academically in various subjects²⁰⁷. The results of a research on how gender and school location influence secondary school students' accomplishment in English vocabulary in junior secondary schools in the Akoka South Education Zone of Ondo State showed that gender had a positive and substantial impact on these students'

performance. As a result, on the English vocabulary accomplishment exam, female students' average scores were lower than those of male students. One of the study's recommendations was that stakeholders, including teachers, school officials, and parents, adjust and provide students of both genders an equal chance to learn²⁰⁸.

Using problem-based learning, an author conducted a research to examine gender variations in mathematics performance and retention (PBL). Students of both genders may compete and work together in mathematics, according to the study's results, which indicated no significant differences between pupils of the two sexes when algebra was taught using PBL. Hence, it can be inferred from the results of this research that learners' academic progress depends on orientation rather than gender²⁰⁸. The results of a research, however, showed that students' academic success in social studies is influenced by both the gender of instructors and students²⁰⁹. The researchers believed that if teachers and other education stakeholders paid attention to gender concerns, the issue of inequalities in students' academic success in school would be properly handled. The three studies did not discuss the study's main topic, which was the effect of gender interaction on students' academic progress.

In a Swedish research, both boys and girls in single-sex and mixed-sex courses participated in a scientific practical. The goal of the research was to raise instructors' awareness of the male predominance in physical sciences and assist them in developing techniques to organize their instruction in a manner that was more gender-neutral. The results revealed that females in mixed-sex groups in the control group spent the majority of their time observing and listening rather than actively participating in the task. Even though the hands-on job time was more evenly divided in the experimental groups, the females still spent more time looking and listening than the guys did. Boys were, on general, more active than females, but the research did not examine the impact on students' academic ability. Another finding of the

research was that the kids cooperated better when they could choose who they wanted to work with. Nevertheless, the study did not reveal which gender the kids liked to engage with. The researchers also saw a tendency where the guys would often be the first to pick up the necessary scientific supplies before sharing them with the girls in the teacher-formed mixed-sex small groups. Just one set of tools was provided to each group, so the females began working with them after the guys had done, but they often ran out of time to complete their assignments in class. The findings of this research demonstrate that throughout scientific lectures, females continue to feel inferior to guys. Teachers have continued to support females, although girls still prefer to take a conventional back seat while working in the same space as boys. Further research must be done to determine the causes of the female child's inactivity in the company of the boy child²¹⁰. The present research looked more closely at how gender interacts with academic success from the perspective of chemistry and in the Kenyan environment.

According to other research, guys engage with others more than girls do. For instance, a researcher who looked at how boys and girls perceived the teaching and learning of mathematics discovered that males used group work much more than girls did, and that boys were more engaged in the lesson. Boys were given more attention since it is thought that they are more disruptive, and giving them more attention was a preventative strategy to stop them from being distracted. This might be the reason why females' academic achievement in mathematics was often lower than boys' since girls were seen to be less important than boys and to be less engaged in class. One of the study's suggestions for bridging this gap was for instructors to support females' increased classroom interaction throughout the teaching and learning process²¹¹. Chemistry was the subject of the present research, even if mathematics was the subject.

According to research findings, there is no statistically significant difference in the talking and teaching styles of the two sexes.

2.3.11 Other Factors Influencing Student's Academic Achievement in Mathematics

2.3.11.1 Attitude, Learning Engagement and Student's Academic Achievement in Mathematics

As students begin and complete learning activities, their level of behavioral participation and emotional experience is referred to as their level of learning engagement²¹². The three key characteristics of students' cognitive, emotional, and behavioral engagement are utilized to assess the level of their learning engagement²¹². Students' learning engagement has drawn the attention of academics both domestically and internationally over the years, not only because it can affect academic performance but also because it is a process that adds value and can help students have more positive learning experiences, like higher self-efficacy, positive academic emotions, and the right learning value, to further promote the improvement of students' academic performance and individual development, and pro²¹³.

Individuals progressively begin to focus on the particular area of learning engagement. It is both theoretically and practically important to investigate the particular area of learning engagement if you want to advance teaching and learning²¹⁴. The field of mathematics is significant and has raised certain issues. The term "students' mathematics learning engagement" refers to the involvement of students in the process of learning mathematics on a cognitive, emotional, and behavioral level²¹⁵. When analyzing gender differences to boost individual math academic performance, mathematics learning engagement is a crucial indication of pupils' academic quality²¹⁶. According to the self-determination theory, kids develop their own motivation for

studying mathematics depending on their own requirements²¹⁷. The exterior behavior of mathematics learning engagement will be further modified from both internal and external incentive. In order to encourage the effect of mathematics learning engagement on academic success to become a self-determined behavior, students then enhance their academic performance by setting accomplishment targets. The development of an individual's mathematical proficiency and classroom involvement both increase with their level of engagement, which has a significant influence on the growth of kids' achievement²¹⁸.

The idea that males are stronger at science and girls are more drawn to the liberal arts has long persisted in the minds of people. This naturally leads to gender stereotypes being studied as subject matter. In the mathematics field, learning engagement typically emerges in mathematics texts, instructors' attitudes and students' peer group²¹⁹. Several researchers put forward their idea to eradicate the topic stereotype which has produced some progress. Yet, learning topics will also employ the stereotype of the subject to increase their motivation or avoid learning activities in addition to external variables. The way mathematics is reflected in girls' lives relies on their values and how well they comprehend the material necessary to excel in this profession. When learning is challenging, they often get frustrated and quit up. In contrast, males believe they can follow and have in-depth learning strategies²²⁰. Nowadays, there are two schools of thought about this issue. Some contend that since men and women possess diverse skills, their mathematical aptitude might also vary. They contend that males are more mathematically adept than women. But others argue that the difference is mostly the result of socialization into gender roles, where there is some societal influence²²¹. Given these disparate viewpoints, further study on the impact of gender stereotypes on mathematics learning engagement is necessary.

The association between mathematics learner engagement and academic achievement has been shown in several studies²²². The majority of studies are restricted to the analysis of the prediction effect of mathematics learning engagement on academic performance under the influence of other factors, and they only consider the relationship between the antecedent variables and the consequence variables (including external and internal factors).

2.3.11.2 Teacher-student Relationship and Student's Academic Achievement in Mathematics

Most studies start out by assuming that teacher-student interactions may predict academic success and then gauge how these interactions affect accomplishment. For instance, some researchers discovered that teacher-student disagreements had an impact on kids' academic performance²²³. In actuality, the majority of these research and examinations into how the teacher-student interaction affects academic attainment are founded on the self-determination theory²²⁴. According to the hypothesis, student involvement and teacher-student contact both influence how well students do academically. The fundamental needs hypothesis was developed on this foundation²²⁵. According to them, students' three different types of psychological needs—autonomy, ability growth, and relatedness—are essential for instructors to be involved in their learning. The effectiveness of students' interpersonal connections is also impacted by these demands. It has been amply demonstrated that there is now a connection between students' psychosocial needs and academic success²²⁶. These studies demonstrate the connections between academic results, such as positive effect, effort, self-efficacy, engagement, and academic performance, and school atmosphere, teacher-student interactions, and school belonging²²⁷.

2.3.11.3 Psychological Factors and Students' Academic Achievement in Mathematics

Despite being one of the basic courses suggested in the National Strategy on Education, the issue of underachievement in mathematics among pupils has been an increasing source of worry among parents, teachers, researchers, and the whole society²²⁸. According to research, the majority of secondary schools consistently report the same trend of poor arithmetic achievement. Mathematical success or failure is often predicted based on cognitive factors that are typically measured using the Wechsler IQ scale. Recent years have seen a rise in interest in non-cognitive factors including self-efficacy, self-concept, emotion, locus of control, interest, anxiety, self-esteem, and self-identity, to name a few, in an effort to enhance such predictions. Studies have demonstrated that some psychological or non-cognitive elements have a significant impact on how pupils behave, particularly in respect to the sciences generally and mathematics in particular. For instance, it was discovered that students' success is influenced by their self-perception, attitude toward mathematics, sex stereotyping, confidence, motivation, and problem-solving habit. Additional psychological variables that affect how well secondary school kids succeed in arithmetic include self-concept, locus of control, study habits, career plans or aspirations, examination anxiety, attitude toward math, motivation, and enthusiasm in education²²⁹. In a study on students' self-perception, the author demonstrated

Students who had a good self-image of themselves fared better in mathematics, according to the idea and Mathematics achievement²³⁰. The youngster who has a positive self-perception and is confident in his or her talents will gain the most from school learning experiences and do well. Several studies have also shown that a student's attitude toward a topic might affect how well they succeed in that area. He

discovered, for instance, that there is a clear correlation between students' attitudes toward mathematics and their results in a comparative study of the elements affecting mathematics success. As a result, pupils who have a negative attitude about arithmetic will operate in a very inconsistent manner. Test anxiety has a crippling impact on kids' academic progress, according to earlier studies²³¹. High test anxiety has been linked in several studies to poor performance.

Children with severe examination anxiety had considerably lower results, according to a study²³². Similar findings were made by another author who discovered that test anxiety affected student learning results and that high test-anxious students could not directly benefit from planned teaching but that organized training helped boost students' enthusiasm to show up for subsequent sessions. Another key element in predicting pupils' results is their drive for success²³³. It became shown that academic performance was favorably impacted by achievement motivation. Students that are extremely driven outperformed less motivated individuals academically, and female students are more highly motivated than their male counterparts²³⁴. The degree to which students ascribe success or failure to internal or external variables, that is, those within or not under their control, may also help to limit the effect of achieving objectives. Internals feel that events predominantly come from their own actions. This attribution, known as locus of control, has been widely researched using Rotter's scale that categorizes respondents as either "externals" or "internals." For instance, internals attribute their effort to their test accomplishment. Externals think that luck or someone else's actions are mostly to blame for happenings. An outsider in an academic setting would probably believe that failing an exam was the consequence of a biased test.

(A teacher's error, for instance). Locus of control by itself has significant ramifications. For instance, a study discovered that college freshman who were

classified as internals had GPAs that were much higher. The research discovered that internals reported superior academic accomplishment than externals and had considerably less academic procrastination, crippling exam anxiety, and other negative traits²³⁵.

2.3.11.4 Interest in Schooling and academic achievement

The development of interest-related research has been seen during the last several years. Several research looking at how interest elements affect academic success in secondary schools have produced encouraging findings. The significance of interest in whatever one undertakes cannot be overstated, according to one author. He contends that interest plays a significant role in decision-making²³⁶. A substantial connection between interest and academic success was discovered in earlier studies²³⁷,²³⁸. There is a favorable association between mathematical expertise and curiosity, according to the results of a related study²³⁸. He said that since mathematics is regarded as a highly difficult topic and motivating elements are crucial for boosting academic accomplishment, the function of interest is especially pertinent in this field. According to research on the empirical relationships between interest, learning, and accomplishment, motivation based on interests has positive impacts on both the process and the result of learning too²³⁹. Similar to this, a study revealed a substantial correlation between interest in education and academic success²⁴⁰. He discovered that students' learning outcomes and attitudes toward the English language are well predicted by their enthusiasm in school, together with other socio-psychological characteristics²³⁹.

2.3.11.5 Students' Attitude towards mathematics and academic achievement

According to literature, attitude is a person's taught propensity or inclination to react favorably or unfavorably to an item, circumstance, idea, or other person. This

sensation, whether it is pleasant or negative, has a moderate level of intensity and decent stability; sometimes, it is very resistant to change. There are two basic categories among the many definitions of attitudes toward mathematics (ATM) that have been put out in research studies. ATM may be defined as just a favorable or unfavorable emotional inclination toward Mathematics²⁴⁰. According to a multidimensional definition, ATM consists of three elements: a behavioural propensity with relation to mathematics and an emotional reaction to mathematics, either good or negative. The idea that all pupils can learn is the motivation for the current reform attempts in mathematics education. The desire for motivation has prompted academics to investigate the link between ATM and success. A meta-analysis of 113 primary papers was done by an author to determine the size of this association. They discovered a weak but favorable correlation between attitude toward mathematics and mathematical achievement. There was no statistically significant link. Studies have shown a substantial and significant correlation between mathematics performance and attitude²⁴². Positive correlations between student attitudes and academic achievement were discovered in a study of primary school students. It was discovered that student ideas and attitudes might either encourage or prevent learning²⁴³.

There is a clear correlation between students' attitudes toward mathematics and their results, according to a comparative research of the determinants impacting mathematics achievement²⁴⁴. A favorable link between attitude and mathematical performance was found in a different research. The association revealed that a student's success level increased in direct proportion to attitude²⁴⁵. According to a research, children typically have favorable attitudes toward science and mathematics, and there is a positive correlation between these two variables²⁴⁶. In a different research, it was shown that those with favorable views about mathematics do better in

this field²⁴⁷. In contrast to these results, a study of third-grade pupils found no connection between students' attitudes about mathematics and their performance in this subject²⁴⁸.

2.3.11.6 Self - concept and academic achievement

According to studies, there is a consistent and strong link between academic success and self-concept, and when one changes, the other seems to follow,²⁴⁹. A study found that children who had a positive view of themselves did better in arithmetic. Also, studies have shown a strong correlation between academic success and greater self-concept, which is related to better academic performance²⁵⁰.

2.3.11.7 Achievement Motivation and Students' Academic Achievement

According to research, motivation influences attitudes by making pupils more self-assured and cheerful. A research found that motivation has a favorable impact on accomplishment and that the two factors are interdependent, increasing as one does²⁵². An author's study, which included a number of field surveys and laboratory trials, found that academic performance was favorably impacted by achievement motivation. It was discovered that children's standardized test results were predicted by motivational orientation²⁵³. Compared to their extrinsic counterparts, kids with an intrinsic incentive orientation performed better in reading and arithmetic as well as overall achievement²⁵⁴. Academic success and motivation are significantly correlated, and females exhibit higher levels of motivation than boys do. In a different research, highly motivated students outperformed less motivated students academically, and motivation had an influence on secondary school students' academic ability in mathematics regardless of gender²⁵⁵.

2.3.11.8 Test anxiety and students' academic achievement

According to one author, mathematics anxiety is a kind of stress and anxiety that prevents people from manipulating numbers and from finding solutions to mathematical issues in a range of real-world and academic contexts. It may also make people forget things and lose confidence. It is possible to unlearn the taught habit of test anxiety. It is created when pupils don't sufficiently prepare for evaluation programs. Test anxiety may be brought on by a variety of factors, including prejudice from parents, friends, or professors who want the student to think that grades affect one's self-worth, fear of alienating friends or family because of bad results, and anxiety brought on by a sense of helplessness²⁵⁶.

In a research like this, it is crucial to take into account three common elements of the cognitive theory of test anxiety. The first is that a high degree of test anxiety is thought to negatively affect how pupils see their own performance in evaluation situations. Second, pupils who are test-anxious are more likely to have negative internal dialogue when doing evaluation activities. Lastly, it's thought that high levels of test anxiety have an impact on how pupils attribute their performance. Cognitive exam anxiety has been linked to subpar performance in cognitive activities, according to studies²⁵⁷. It was discovered that there was a negative correlation between it and the results of cognitive tests²⁵⁸.

The results of a research also support the idea that test anxiety significantly lowers academic performance. His research used an experimental one-shot case approach. A random sample of 80 seniors from the public secondary schools in the Calabar municipality was taken. The findings showed that test anxiety is a major independent predictor of students' mathematical success. Results from the literature also show that the sort of test or examination given significantly influences cognitive test anxiety. Students exhibit minimal cognitive test anxiety when the chosen item

format is utilized to administer the exam, and this results in high scores in cognitive tests²⁵⁹. This is so that such test forms, particularly multiple choice exam formats, which merely involve the selection of the right answers, do not demand a lot of cognitive processing. As a result, students do not need to spend hours studying for these examinations.

2.3.11.9 Locus of control and students' academic achievement

The attribution, called locus of control or Rotter's scale, which classifies respondents as "internals" or "externals" based on whether they feel events are mostly caused by their own actions, has been used widely in research on control. Internals, for instance, attribute their performance on a test to their effort.

Externals think that luck or someone else's actions are mostly to blame for happenings. In a classroom setting, an outsider would probably believe that failing an exam was the consequence of an unfair examination (the teacher's fault, for example). Locus of control by itself has significant ramifications. For instance, a research indicated that internal college freshman had much better GPAs than external students, and they also reported greater academic achievement. They also had significantly less academic procrastination and crippling exam anxiety. Additionally, he noted that more than 40 research had looked at the connection between students' academic success and beliefs of locus of control. This supported his results that this link was strong. Internal control perception and academic success have a generally favorable correlation, despite the data' mixed consistency²⁶⁰.

According to a theory put up by an author, both internal and external locus of control are significant determinants of academic success. The degree to which a person feels they have control over a result is how Araromi describes this feeling of control or

locus of control²⁶¹. It was shown that locus of control significantly affects JSS 3 students' arithmetic performance and that it significantly affects students' classroom learning, particularly in spatial disciplines like mathematics. The research also showed that pupils with an internal locus of control outperformed those with an external locus of control in terms of academic performance. Significant connections between locus of control and academic accomplishment satisfaction have been found in several other studies²⁶². This investigation looked at the locus of control, motivation in learning, and self-efficacy of junior secondary school students as predictors of academic progress. According to the findings, locus of control, motivation in education, and self-efficacy all work together to predict academic success in junior secondary school students²⁶³. In his investigation of the causal relationships between academic achievement and some socio-psychological variables using a sample of junior secondary school class three students in 30 secondary schools in Oyo state, an author discovered that there was no direct effect of locus of control on students' achievement in social studies. Yet there was also a composite indirect impact of attitude and study habit, as well as an indirect effect of locus of control via attitude toward social studies²⁶⁴.

2.3.11.10 Socioeconomic Factors

Socioeconomic factor (SEF) is one of the most researched factors contributing to the academic achievements of students. In fact, a study revealed a significant effect of SEF on students' achievement. Some researchers concluded that students with high socioeconomic status perform better than those with low socioeconomic status²⁶⁵. However, researcher found that students coming from disadvantaged socioeconomic and educational homes perform relatively better than those coming from higher

socioeconomic and educational strata. They called this phenomenal educational resilience²⁶⁶.

2.3.11.12 School Leadership

There is a growing consensus, based on empirical evidence, that positive influence of successful leadership can have a positive effect on school performance and students' learning achievement²⁶⁷. Actually, it is revealed that school leaders can improve students' achievement in different ways varying from (i) direct and indirect effect on teaching and learning (ii) involving different stakeholders (such as parents) in school and (iii) providing a proper ethos and climate, which eventually impact students' achievement²⁶⁷.

2.3.11.12 Student Factor

As the main stakeholders, students have a major role in their academic achievement. Indeed, researchers concluded that student factors influence students' academic achievement²⁶⁸. He explained that students' time management, self-motivation, engagement, behaviour and attitudes are the key factors governing their academic success²⁶⁸.

2.3.11.13 Teacher Factor

Many studies have provided empirical evidence of the positive correlation between teacher factor and students' achievements. For instance, a study showed that an effective teacher can dramatically alter students' educational and thus economic outcomes. In fact, analysis of the literature revealed that the impact of educators on students' life and achievement vary widely from being a guide, a facilitator, a model, a pedagogical leader, a source of knowledge to being a friend and a confider²⁶⁹.

2.3.11.14 Private Tuition

Another factor, which works in parallel to school, is the private tuition. Private supplementary tutoring is not per se a new phenomenon, but it takes different forms in different cultures²⁷⁰. Some aspects of private tutoring may be considered positive. Tutoring creates constructive out-of-school activities for young people and thus students who receive private tuition are likely to perform better in school and to stay in the education system for longer durations²⁷⁰. However, tutoring may also distort parts of the mainstream system, place an economic burden on households, and create excessive pressure for children and adolescents. Among the most problematic aspects are cases in which private tutoring becomes a substitute for the mainstream. Especially near the time of major external examinations, schools in some countries may be perceived by pupils to be less able to cater for their specific needs and thus they increasingly rely on private tutoring.

2.3.11. 15 Instructional Materials

An author redefines mathematics materials as “an object that can be handled by an individual in a sensory manner during which conscious and unconscious mathematical thinking will be fostered²⁷¹. Therefore, mathematics manipulatives are materials from our own environment that students can touch and move to learn or formalize mathematical ideas. In this context, materials are found in two groups: the physically represented form of concrete materials, and the computer produced form of digital materials²⁷². Educational materials are sometimes in digital environments and sometimes they are in the form of physical objects. For education, manipulative materials are used for concretize the abstract concepts to be taught. Tangrams, algebra tiles, isometric paper, colorful beads, game cards, scale, pattern blocks, unifix cubes, and caricatures are examples of physical materials that have been used in teaching mathematics for years²⁷³. Learners worked directly with these materials. Digital

manipulations are computer applications and software copies of web-based applications. These computer applications can be accessed online. Once technology is widespread at schools, computer-based electronic materials are easy to access. Digital materials enable teachers to integrate pictorial, verbal, and symbolic representations of mathematics problems more easily. The main difference between physical and digital materials is that you can touch the physical materials²⁷⁴. Teaching with digital material provides more flexibility for manipulation, whereas physical materials enable students to develop their psychomotor learning skills as they address the sense of ‘touching’²⁷⁵. Materials in a web-based environment provide opportunities for interactivity; learner can rotate, flex and reshape the object easily in virtual environments. In addition, there is a need to use computer applications in teaching of mathematics as an instructional material²⁷⁶. Within this respect, it is important for students to interpret the concepts through real and concrete experiences. Similarly, the advantage of using digital materials rather than physical material is that technology-based materials are easily accessible and they associate abstract symbols with visual images. Utilizing technology in mathematics has positive effects on the quality of teaching and learning. Integrating instructional activities in appropriate contexts also affects learning positively²⁷⁷.

There is a large volume of published studies describing the effect of using digital or physical materials in teaching of mathematics on academic achievement of students. Most of these studies have found that using instructional materials in mathematics lessons has more positive contributions to student learning compared to the lessons where none of the instructional materials are used²⁷⁸. An author reported that using materials did not have a significant effect on student success. Some researchers also

found no effect or negative effects of using materials on student achievement in mathematics²⁷⁹. There can be several reasons for this inconsistency.

For example, factors such as duration of treatment, knowledge of teachers, type of the material, age-level of the students and other characteristics of the learning environment may affect the process. For this reason, there is a need for systematic investigation of available experimental studies about the effects of using educational materials in mathematics lessons on academic achievement of students. Many studies have been conducted in Turkey about the benefits of using instructional resources in a classroom setting, and the redesigned curriculum also makes recommendations for these materials. There are several further investigations on the efficiency of teaching resources.

2.3.11.16 Motivation

Concerns about how to guarantee that students learn effectively in class and attain academic excellence in their academic pursuits have grown around the world in the education sector. In Nigeria, there has been a widespread outcry over the declining educational standards and the subpar arithmetic ability of students. Many variables, such as bad study habits, indolence, insufficient classroom teaching, inadequate supply of educational material, and a lack of enthusiasm, have been linked to low academic attainment among pupils²⁸⁰.

One of the biggest issues of this century is to motivate children so they may succeed in school, since inspiring students to study in school is a matter of considerable concern for educationists' today²⁸¹. So, instructors' only goal in the classroom should be to engage students in learning and keep their interest in what they are studying. For academic learning and success, motivation is a crucial component²⁸².

One author makes the observation that one of the elements influencing academic achievement is motivation, and that parents and teachers should work to comprehend the significance of fostering and developing academic drive early in life²⁸³. Motivation is a process that originates, leads, and maintains activities to satiate physiological or psychological needs. It is a component that influences and energizes the behavior of humans and other species. In addition, motivation is said to be what propels, sustains, and directs action. Extrinsic and intrinsic motivation are the two categories of motivation.

Since they are enthusiastic in learning and like the learning process, students who are intrinsically motivated are more likely to participate in academic activities²⁸⁶. He clarified that intrinsic motivation is the genuine human force that propels people to look for and take on new challenges. Even when there are no immediate benefits to be gained, their skills are challenged, and they are ready to learn. It is believed that students who have learning objectives of pursuing comprehension and mastery of scientific knowledge and abilities are intrinsically driven²⁸³.

Intrinsically motivated individuals possess the following characteristics: They engage in both mental and physical activities holistically, they remain highly focused throughout these activities with clearly defined goals, they are self-critical, they self-reflect on their own actions realistically, and they are usually relaxed and not afraid to fail during learning. A research concluded that intrinsically motivated students learn independently and always choose to do challenging tasks. They persevere to complete the tasks they have undertaken. They integrate the knowledge acquired in school with their experiences gained from outside school. They often ask questions to broaden their knowledge and learn regardless of any external push factors or help from teachers, and they take pride in their work and express positive emotions during the learning

process. Highly intrinsically motivated students are able to learn new concepts successfully and show better understanding of the subject matter.

Unlike intrinsic motivation; extrinsic motivation drives students to engage in academic tasks for external reasons. Extrinsic motivators include parental expectations, expectations of other trusted role models, earning potential to enroll in a course later and good grades. Extrinsic motivation promotes effort and performance with rewards serving as positive reinforcers for the desired behaviour. Extrinsic motivation typically produces immediate results and requires less effort in comparison to intrinsic motivation. The down side of it is that extrinsic motivators can often distract students from true independent learning. Another problem with extrinsic motivators is that they typically do not work over the long term. Once, the rewards are removed, students lose their motivation. As extrinsically motivated, students tend to focus on earning higher grades and obtaining rewards, it is believed that extrinsic motivational factors can diminish students' intrinsic motivation²⁹². Such observation has also been reported by an author that concluded that extrinsic rewards have negative impacts on intrinsic motivation. Gender differences in the motivation to learn science has attracted much attention during the last decade²⁸⁴.

Evidence accumulated thus far on gender differences in motivation is inconclusive. While many studies reported that there are gender differences in extrinsic and intrinsic motivation between male and female students, other authors reported otherwise. Whereas on academic performance an author strongly suggests that, "male students' performance accords their interest level more than is the case for female students". In particular, "female students' academic performance is less associated with their interests than male students' academic performance²⁹³. Numerous studies suggested that from childhood through adolescence, across varied populations,

those with higher academic intrinsic motivation have been found to be more competent in school, generally evidencing significantly greater academic achievement, more positive perceptions of their academic competency, lower academic anxiety, and less extrinsic motivation.

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2.4 Conceptual Model

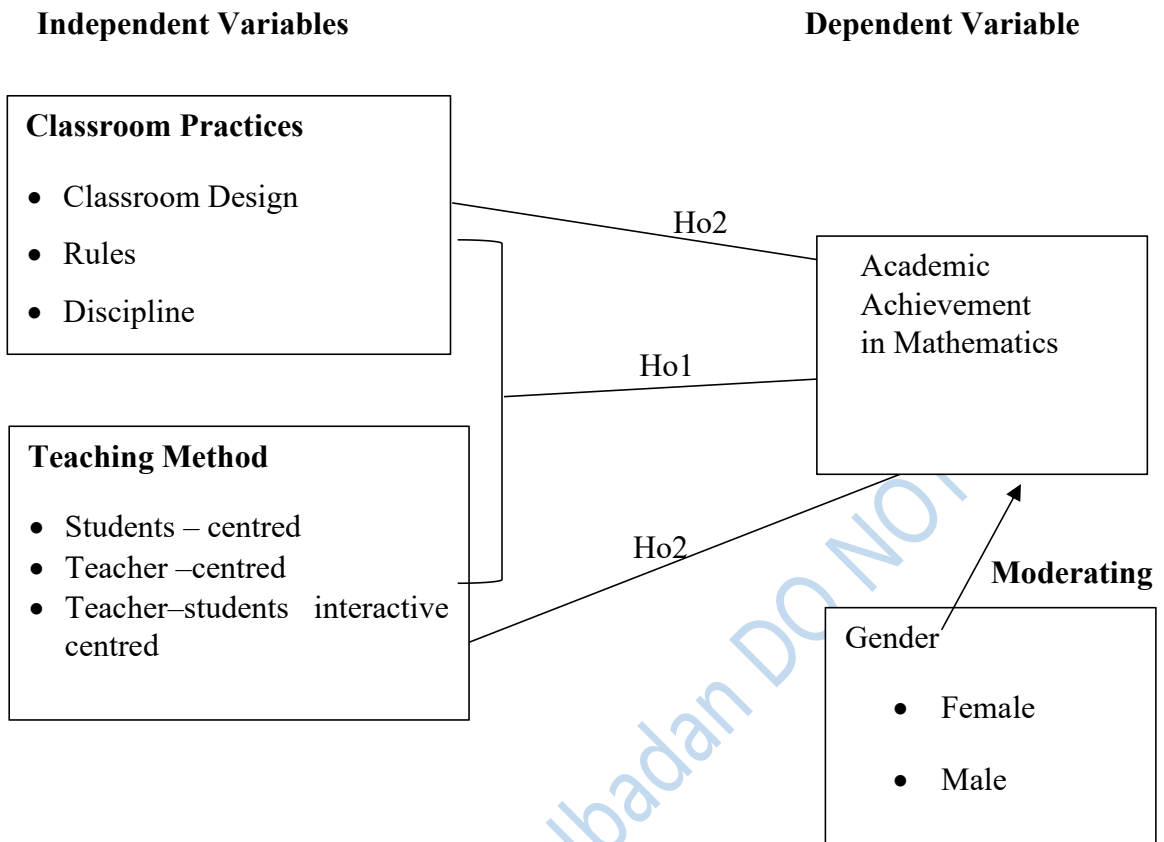


Fig 2.1 Conceptual Model Framework

Source: Research's Fieldwork, 2023

The conceptual model in fig 2.1 show the interrelationship among the variables (two independent variables and one dependent variable while gender is the moderating variable) the independent variables are:

- i. Classroom management practices which include classroom design, rules and disciplines.
- ii. Teaching methods which include Student-centred, teacher-centred and teacher-student interactive centred.

Gender is the moderating variable.

The dependent variable is the academic achievement in Mathematics which will be given to SS2 students. The model shows the combined and relative influence of the two independent variables (Classroom management practices and Teaching methods) on the dependent variable (academic achievement).

2.5 Summary of Literature Reviewed

During the literature review, all the authors acknowledged the significance of discipline in predicting learners' achievement. However, they did not indicate which classroom discipline approaches result in positive outcomes and which ones lead to negative results for students. Additionally, a review of other authors' works regarding the impact of instructional supervision on learners' academic achievement was conducted. The findings of each of the studies showed that instructional supervision by principals influences academic outcomes. Nonetheless, these studies are not specific to a particular group of learners and do not clearly explain how each instructional supervision method affects students' academic performance.

A literature review was conducted on the impact of classroom instructional methodologies on learners' academic achievement. The findings indicated that instructional methods utilized in the classroom have an impact on learners' academic

performance. However, the review did not focus on specific instructional methods that yield positive results on learners' academic achievement, nor did it examine classroom instructional methodologies as a form of classroom management. Another area reviewed was the influence of supportive feedback provided by teachers on learners' academic achievement. While studies have shown that positive feedback has a positive impact on learners' academic performance, the generalizability of these findings is limited by geographic location and sample sizes. A significant gap identified in the review was the lack of studies conducted in Kenya related to the research objectives. The current study aims to address these identified gaps in the reviewed studies.

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Chapter Three

Methodology

This chapter describes the specific research methods and techniques that was used in this study. Specifically, presented in this chapter include the research design, population of the study, sample and sampling techniques, the instrument for data collection, validity and reliability of the instrument, method of data collection and methods of data analysis.

3.1 Research Design

This study adopted the descriptive survey research design. It entails the process of collection of data from a representative sample of population to produce a result that can be generalized to the whole population. The descriptive survey was used for this study because the researcher was concerned with the collection of data for the purpose of describing and interpreting the influence of classroom management practices and teaching methods on academic achievement in mathematics among secondary schools' students in Oyo town only, without any form of variable manipulation.

3.2 Population of the Study

The population of the study consisted of one hundred and two thousand (102,000) public and thirty-eight thousand (38,000) private secondary school students in all the fifty-one (51) public and eighty-four (84) private secondary schools in Oyo town¹.

3.3 Sample and Sampling Technique

Multistage sampling procedure was used to determine the sample for the study. First, all local governments in Oyo town were selected using intact sampling method. These are Afijio, Atiba, Oyo East and Oyo West local governments. Secondly, nine

public secondary schools were selected in each local government using Oyo East which has the least number of public schools as benchmark. Similarly. The the number of private secondary schools in Atiba was used as benchmark to select private schools in other local governments owing to the fact that is has the least number of private secondary schools. Finally, Yamane formula $n = \frac{N}{1+N(e)^2}$ Where: n signifies the sample size N signifies the population under study, e signifies the margin error (0.05) was used to determine the sample size in each of the schools.

Table 3.1 Sample Frame (Public)

S/N	LGA	No. of Public Schools	Sampled Public Schools	No of Students in the Sampled Schools	Sample (Public)
1	Afijio	17	09	2355	342
2	Atiba	14	09	2197	338
3	Oyo East	09	09	2896	351
4	Oyo West	11	09	2745	347
04		51	36	10,193	1,378

Source: Field Work Survey, 2023

Table 3.2 Sample Frame (Private)

S/Nz	LGA	No. of Private Schools	Sampled Private Schools	No of Students in the Sampled Schools	Sample (Private)
1	Afijio	21	13	886	275
2	Atiba	13	13	762	262
3	Oyo East	25	13	649	247
4	Oyo West	22	13	764	263
	04	84	52	3,061	807

Source: Field Work Survey, 2023

3.4 Description of Research Instrument

A self-developed instrument tagged Influence of Classroom Management Practices and Teaching Methods Questionnaire [ICMPTMQ] on Student's academic achievement in mathematics in Oyo town and Mathematics achievement test (MAT) were administered on the participants. This instruments had two sections namely sections A and B. Section A contained items which measured the demographic characteristics of the respondents such as age, gender, Section A also contained items to answer the formulated research questions such as items on level of classroom management practices and teaching methods. Section B contained items to collect data on the influence of classroom management indices and teaching methods on academic achievement in mathematics in secondary schools, Oyo town. Also, the achievement test contained twenty five mathematics questions which were carefully drawn from Past West African Examination council syllabus.

3.4.1 Mathematics Achievement Test (MAT)

This test was developed by the researcher in order to assess the level of acquisition of mathematical concepts of the students. It covered the main topics of mathematics taught in SS 2 up to the third term of the school year. It consisted of 25-item multiple-choice questions with four options A to D and was based on three cognitive levels-“knowledge”, “understanding” and “application”. This measured the dependent variable – Student Achievement in Mathematics.

Table 3.3: The table of specification for the construction of MAT is presented

Topic	Knowledge	Understanding	Application	Total
	No. of item	No. of item.	No. of item.	No of item
	36%	40%	24%	
Mensuration	2	2	1	5
Number and Numeration.	2	3	1	6
Plane Geometry	1	1	1	3
Algebra	2	2	1	5
Statistics and Probability	1	1	1	3
Trigonometry	1	1	1	3
Total	9	10	6	25

Source: Researcher Questionnaire (2023)

3.5 Validity of the Instrument

The validity of the instrument was carried out via face construct and content validity method. For this purpose, the research instrument was scrutinized by the supervisor as well as specialists who equally vetted the structuring, adequacy and content of the items in the questionnaire.

3.6 Reliability of the Research Instruments

A common measure of reliability is the use of Cronbach's Alpha which ranges on a scale of 0 to 1. A high reliability is indicated by a number that is close to one than it is to zero. The study nevertheless, used a threshold of 0.7 as the standard of reliability such that a coefficient below 0.7 indicated that the sub constructs were not reliable in capturing the variable.

To ensure that the questionnaire was efficient and effective, pilot sampling was conducted using 15% of the sample size was tested. Reliability was conducted on the questionnaire fully completed by twenty (20) randomly chosen respondents who are were not part of the sample size for this study as pilot survey. A coefficient of 0.7 was used as the threshold for this study. Table 3.5 shows the reliability results. All the statements were reliable since the Cronbach alpha was above 0.7 which was used as a cut-off of reliability for the study. The results of the test revealed the alpha coefficient is above 0.7 and therefore all the statements were reliable since the reliability threshold was 0.7 Academic Achievement (0.743), Classroom Management Practices (0.706), Method of Teaching (0.710) and Overall Cronbach alpha coefficient obtained was 0.86. Therefore, the internal consistency reliability of the measure was excellent. This indicated that the data was reliable since an alpha coefficient higher than 0.70 signified that the collected data has a comparatively high internal reliability and can be assumed to mirror the respondents views on the study problem.

Table 3.5: Reliability Coefficient

Variable	Cronbach's Alpha	Comment
Academic Achievement	0.743	Accepted
Classroom Management Practices	0.706	Accepted
Method of Teaching	0.710	Accepted
Overall	0.719	Accepted

Source: Researcher's Fieldwork, (2023)

3.7 Administration and Method of Data Collection

A letter of introduction was obtained from the Department of Art and Education, Faculty of Education at Lead City University in Ibadan, Oyo State, Nigeria to request permission to conduct research on the Influence of Classroom Management Practices and Teaching Methods on Senior Secondary School Students' Academic Achievement in Mathematics in Oyo Town, Oyo State. To ensure effective administration of the instruments, research assistants were recruited and given a one-week training to facilitate the success of the administration of the instrument. The research assistants were familiarized with the study's aim and objectives, as well as the time and duration of the administration of the instruments, and established rules of engagement for the respondents in the study locations. The data collection process took between two (2) to four (4) weeks, and data obtained from the field were properly scored, coded, and subjected to data analysis.

3.8 Method of Data Analysis

Data collected were analysed using descriptive and inferential statistical methods. Descriptive statistics such as frequency counts, simple percentages, mean and standard deviation were used to analyze respondents' opinion on research questions while the inferential statistics such as Multiple Regression was used to test hypotheses 1 and 2, while t-test was used to test Hypothesis 3 at 0.05 level of Significance.

Endnotes

1. Establishment Records Office and Academic Planning Unit Ministry of Education, 2022
2. Researcher's Fieldwork Survey, 2023

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Chapter Four

Results and Discussion of Findings

This chapter presents results obtained from the fieldwork as well as discussion of the presented results. It is arranged in the following sub-titles:

- 4.1 Presentation of Results on Demographic Characteristics of Respondents
- 4.2 Presentation of Findings on Research Questions
- 4.3 Test of Hypotheses
- 4.4 Discussion of Findings

4.1 Presentation of Results on Demographic Characteristics of Respondents

Table 4.1: Gender of Respondents

S/N	Gender	Frequency	Percentage
1	Male	717	44.0
2	Female	913	56.0
Total	02	1630	100

Source: Fieldwork Survey, 2023

Table 4.1 presents the gender distribution of respondents that participated in the study. From the table, 717 representing (44.0%) of the sample are male, while 913 representing (56.0%) are female. It can be deduced from this that the female gender is more represented in the study than male. This may be as a result of female gender considerably more represented in teaching profession. It could also be lower owing to the traditional view that men are the main economic provider of the family, and as such choose other professions since the salary earned from teaching profession is relatively low. From the perspective of gender equality, concentration of women are teaching mathematics is generating concerns as parents, students, and schools value the integration of diverse workforce that is imputed in the society.

Table 4.2: Age Range of Respondents

S/N	Age Range	Frequency	Percentage
1	Less than 15 years	1009	61.9
2	15-20 years	525	32.2
3	21 years and Above	96	5.9
Total		1630	100

Source: Fieldwork Survey, 2023

Table 4.2 depicts the age distribution of respondents. The table shows that the highest numbers of respondents are less than 15 years with frequency of 1009 representing (61.9%), this was followed by ages between 15-20 years with frequency of 525 representing (32.2%) respectively. This table further shows that respondents between the ages of 21 years and above with frequency of 96 representing (5.9%) were the least represented age group in the study. The aforementioned analysis implies that significant percentage of the respondent has relevance for the study since they are at the rightful age to give useful information for the achievement of the objectives of the study. On the other hand, the students less than 15 years are majorly found in senior secondary schools.

4.2 Presentation of Findings on Research Questions

1. What is the level of academic achievement in mathematics among secondary school students in Oyo town?

Table 4.3 Level of Academic Achievement in Mathematics among Secondary School Students in Oyo town

$$\bar{X} = 2.35$$

	Academic Achievement	Frequency	Percentage
S/N			
1	Very Low	385	23.6
2	Low	553	33.9
3	High	436	26.7
4	Very High	256	15.7
	Total	1630	100

Source: Fieldwork Survey, 2023

Decision Rule: Scores above 21-25 (Very High), Scores between 15-20 (High), Scores between 10-14 (Low), Scores below 10 (Very Low)

Table 4.3 presents the level of academic achievement in mathematics among secondary school students in Oyo town. The table revealed that 385(23.6%) performed very low, 553(33.9%) performed low. The table further showed that 436(26.7%) performed high while 256(15.7%) performed very high. The result further revealed ($\bar{X} = 2.35$) meaning secondary school students' academic achievement in mathematics in Oyo town is low.

3. Which is the most used methods (Teacher-centred methods, Student-centred method, and Teacher-student interactive method) for teaching mathematics in secondary schools in Oyo town?

Table 4.4: Most Used Methods for Teaching Mathematics in Secondary Schools in Oyo town

S/N	Teacher-Centred Methods	Often	Seldom	Rarely	Never	Mean	Std
1	give information and evaluate only	608 (37.3%)	415 (25.5%)	128 (7.9%)	479 (29.4%)	3.53	1.258
2	be in the centre of teaching and learning	658 (40.4%)	496 (30.4%)	391 (24.0%)	85 (5.2%)	2.94	0.921
3	View students as “empty vessels” who passively receive knowledge from their teachers	840 (51.5%)	641 (39.3%)	64 (3.9%)	85 (5.2%)	2.74	0.731
4	act as the sole supplier of knowledge	526 (32.3%)	531 (32.6%)	397 (24.4%)	176 (10.8%)	3.22	1.016
5	teach under the direct instruction model	469 (28.8%)	771 (47.3%)	112 (6.9%)	278 (17.1%)	3.88	1.012
6	stick only to lesson note	840 (51.5%)	641 (39.3%)	64 (3.9%)	85 (5.2%)	2.74	0.731
Weighted Mean / Std						3.18	0.945

Source: Fieldwork Survey 2023

Decision Rule: $\bar{X} = 4.00$ (Very High), $\bar{X} 3.0-3.99$ (High), $\bar{X} 2.5-2.99$ (Low), $\bar{X} < 2.5$ (Very Low)

Table 4.4 presents analysis of responses to six items in the research instrument to assess the most used methods for teaching mathematics in secondary schools in Oyo town, the analysis of the responses are discussed as follows; 608(37.3%) often gives information and evaluate only, 415(25.5%) seldom, 128(7.9%) rarely and 479(29.4%) never gives information and evaluates only. Also, 658(40.4%) often, 496(30.4%) seldom, 391(24.0%) rarely and 85(5.0%) never be in the centre of teaching and learning. Similarly, 840(51.5%) often, 641(39.3%) seldom, 64(3.9%) rarely and 85(5.2%) never view students as “empty vessels” who passively receive knowledge from their teachers. The table further shows that: 469(28.8%) often, 771(47.3%) seldom, 112 (6.9%) rarely and 278(17.1%) never act as the sole supplier of knowledge. Also, 840(51.5%) often, 641(39.3%) seldom, 64 (3.9%) rarely and 85(5.2%) never stick only to lesson note. In all, a weighted mean of 3.18 was arrived at, signifying that the level of (teacher-centered methods) of teaching mathematics in secondary schools in Oyo town is high.

Table 4.5 Most Used Methods for teaching mathematics in secondary schools in Oyo town

S/N	Student-centred method	Often	Seldom	Rarely	Never	Mean	Std
1	Allow students learn from their own experiences through activities.	00	639 (39.2%)	895 (54.9%)	96 (5.9%)	2.33	0.585
2	Ensure students are more responsible for their own learning using the teaching and learning resources under the guide of a teacher	208 (12.8%)	293 (18.0%)	884 (54.2%)	245 (15.0%)	2.28	0.872
3	Engage all students in lesson; facilitates problem solving among students.	00	00	993 (60.9%)	637 (39.1%)	1.61	0.488
4	Establishes a purposeful learning environment, interacts with students, and guides them to construct their own meaning to concept.	85 (5.2%)	491 (30.1%)	666 (40.9%)	388 (23.8%)	2.17	0.849
5	Construct problems carefully that required students to apply what they learnt	00	34 (2.1%)	906 (55.6%)	690 (42.3%)	1.60	0.531
Weighted Mean / Std						1.99	0.665

Source: Fieldwork Survey, 2023

Decision Rule: $\bar{X}$ = 4.00 (Very High), $\bar{X}$ 3.0-3.99 (High), $\bar{X}$ 2.5-2.99 (Low), $\bar{X}$ < 2.5 (Very Low)

Table 4.5 contains analysis of responses to five items to assess the most used methods for teaching mathematics in secondary schools in Oyo town, deducing from the table,

00(00.0%) often allow students learn from their own experiences through activities, 639(39.2%) seldom, 895(54.9%) rarely and 96(5.9%) never allow students learn from their own experiences through activities. Also, 208(12.8%) often, 293(18.0%) seldom, 884(54.2%) rarely and 245(15.0%) never ensure students are more responsible for their own learning using the teaching and learning resources under the guide of a teacher. This table further shows that, 00(00.0%) often, 00(00.0%) seldom, 993(60.9%) rarely and 637(39.1%) never engage all students in lesson; facilitates problem-solving among students. The table further revealed that 85(5.2%) often, 491(30.1%) seldom, 666(40.9%) and 388(23.8%) never establishes a purposeful learning environment, interacts with students, and guides them to construct their own meaning of concept. Similarly, 00(00.0%) often, 34(2.1%) seldom, 906(55.6%) rarely and 690(42.3%) never construct problems carefully that required students to apply what they learnt. The table further reported weighted mean = 1.99 signifying that the level of (Student-centred method) of teaching mathematics in secondary schools in Oyo town is low.

Table 4.6: Most Used Methods for teaching mathematics in secondary schools in

Oyo town S/N Teacher-student		Often Seldom				Mean	Standard Deviation
S/N	Teacher-Students interactive method	Often	Seldom	Rarely	Never		
1	welcome or appreciate the students contribution in the class.	00	473 (29.0%)	965 (59.2%)	192 (11.8%)	2.17	0.615
2	make positive interaction in the classroom	118 (7.2%)	161 (9.9%)	528 (32.4%)	823 (50.5%)	1.74	0.909
3	Praise or compliment students.	48 (2.9%)	96 (5.9%)	758 (46.5%)	728 (44.7%)	1.67	0.718
4	ask questions in which the answer is anticipated every time	65 (4.0%)	272 (16.7%)	505 (31.0%)	788 (48.3%)	1.76	0.868
5	deals with the feeling in a non-threatening way	384 (23.6%)	425 (26.1%)	520 (31.9%)	301 (18.5%)	2.55	1.044
6	allows students to participate in the classroom activities.	00	128 (7.9%)	794 (48.7%)	708 (43.4%)	1.64	0.622
7	Give the students ideas so that they can express their mind/feeling.	280 (17.2%)	408 (25.0%)	446 (27.4%)	496 (30.4%)	2.29	1.076
8	Summarize the ideas of students and still recognized them as being students contributions.	112 (6.9%)	99 (6.1%)	1003 (61.5%)	416 (25.5%)	1.94	0.767
Weighted Mean / Std						1.97	0.827

Source: Fieldwork Survey, 2023**Decision Rule:** $\bar{X}$ = 4.00 (Very High), $\bar{X}$ 3.0-3.99 (High), $\bar{X}$ 2.5-2.99 (Low), $\bar{X}$ < 2.5 (Very Low)

Table 4.6 presents analysis of responses to eight items in the research instrument to assess the most used methods for teaching mathematics in secondary schools in Oyo town, the analysis of the responses are discussed as follows; 00(00.0%) often welcome or appreciate the students contribution in the class, 473(29.0%) seldom, 965(59.2%) rarely and 192(11.8%) never welcome or appreciate the students contribution in the class. Also, 118(7.2%) often, 161(9.9%) seldom, 528(32.4%) rarely and 823(50.5%) never make positive interaction in the classroom. Similarly, 48(2.9%) often, 96(5.9%) seldom, 758(46.5%) rarely and 728(44.7%) never praise or compliment students. The table went further to depict that 65(4.0%) often, 272(16.7%) seldom, 505(31.0%) and 788(48.3%) never asks questions in which the answer is anticipated every time. Also, 384(23.6%) often, 425(26.1%) seldom, 520 (31.9%) rarely and 301(18.5%) never deals with the feeling in a non-threatening way. The table further shows that 00(00.0%) often, 128(7.9%) seldom, 794(48.7%) rarely and 708(43.4%) never allows students to participate in the classroom activities. Also, 280(17.2%) often, 408(25.0%) seldom, 446(27.4%) rarely and 496(30.4%) never give the students ideas so that they can express their mind/feeling. Similarly, 112(6.9%) often, 99(6.1%) seldom, 1003(61.5%) rarely and 416(25.5%) never summarize the ideas of students and still recognized them as being students' contributions. The table further presented weighted mean = 1.97 signifying that the level of (teacher-student interactive method) of teaching mathematics in secondary schools in Oyo town is low.

4.3 Test of Hypotheses

H₀₁: There will be no significant combined influence of classroom management practices (Classroom Design, Rules, and Discipline) and teaching methods (Teacher-centred methods, Student-centered method, Teacher-student interactive method) on secondary school student's academic achievement in mathematics in Oyo town.

Table 4.4: Summary of Regression Analysis Showing Significant Combined Influence of Classroom Management Practices (Classroom Design, Rules, Discipline) and Teaching Methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) on Secondary School Student's Academic Achievement in Mathematics in Oyo town

Model Summary				Adjusted R Square			Std. Error of the Estimate	
Model	R	R Square		Square				
1	.643 ^a	.413		.411			.773	
ANOVA								
Model		Sum of Squares	df	Mean Square	F			Sig.
1	Regression	681.370	6	113.562	190.174			.000 ^b
	Residual	969.170	1623	.597				
Total		1650.540	1629					

a. Dependent Variable: Students' Academic Achievement in Mathematics

b. Predictors: (Constant), Teacher-Student Interactive Method, Rules, Classroom Design, Discipline, Teacher Centered Method , Student Centered

Source: Fieldwork Survey, 2023

Table 4.4 presents combined influence of Classroom Management Practices (Classroom Design, Rules, and Discipline) and Teaching Methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) on Secondary School Student's Academic Achievement in Mathematics in Oyo town. Result revealed a ($F = 190.174$; $p < 0.05$). This implies that the combined influence of Classroom Management Practices (Classroom Design, Rules, and Discipline) and Teaching Methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) on Secondary School Student's Academic Achievement in Mathematics in Oyo town was significant. Therefore, the stated null hypothesis one was rejected at 0.05 level of significance. Result also showed ($\text{Adj. } R^2 = 0.411$) meaning that (41%) of the total variation is accounted for by the independent variables Classroom Management Practices (Classroom Design, Rules and Discipline) and Teaching Methods (Teacher-centered methods, Student-centered method, Teacher-student interactive method) when considered together.

H₀₂: There will be no significant relative influence of classroom management practices (Classroom Design, Rules, Discipline) and teaching methods Teacher-centered methods, Student-centered method, Teacher-student interactive method) on students' academic achievement in mathematics in Oyo town.

Table 4.5: Summary of Regression Analysis Showing Significant Relative Influence of Classroom Management Practices and Teaching Methods on Secondary School Student's Academic Achievement in Mathematics in Oyo town.

Coefficients Unstandardized		Standardized Coefficients		Coefficients	
Model	B	Std. Error	T	Beta	Sig.
(Constant)	3.840	21.310		.180	.000
Classroom Design	.414	11.391	.318	.036	.000
Rules	.388	19.826	.417	.020	.000
Teacher Centered	.206	4.491	.095	.046	.000
Interactive Method	.280	15.737	.350	.018	.000
Student Centered	.337	7.114	.195	.047	.000
Discipline	.041	1.021	.025	.40	.000

Source: Fieldwork Survey, 2023

The relative influence of each of the items of the independent variables were presented in the table 4.5. It was revealed in the result that classroom rules have the most significant influence on student's academic achievement in mathematics ($\beta = 0.417$; $t = 19.826$, $p < 0.05$). This was followed by teacher-student interactive teaching method ($\beta = 0.350$; $t = 15.737$, $p < 0.05$), classroom design ($\beta = 0.318$; $t = 11.391$, $p < 0.05$), student centered teaching method ($\beta = 0.195$; $t = 7.114$, $p < 0.05$), Classroom Discipline ($\beta = 0.095$; $t = 4.491$, $p < 0.05$) while teacher centred teaching method has the least influence on academic achievement in mathematics among secondary school students in Oyo town ($\beta = 0.25$; $t = 1.021$, $p < 0.05$).

H₀₃: There will be no significant gender difference in academic achievement in mathematics among secondary school students in Oyo town.

Table 4.6: Summary of t-test showing Significant Gender Difference in Academic Achievement in Mathematics among Secondary School Students in Oyo town One-Sample Statistics

Std.	Std. Error	N	Mean	Deviation	Mean
Male Academic Achievement Female Students	717	2.33	.979	.037	
Academic Achievement	913	2.13	.828	.027	
One-Sample Test					
Test Value = 0					
	95% Confidence Interval of the Mean Difference				
	t	Df	Sig. (2-tailed)	Difference	Lower
Upper					
Male Academic Achievement Female Students	63.702	716	.000	2.329	2.26 2.40
Academic Achievement	77.628	912	.000	2.126	2.07 2.18

Source: Fieldwork survey, 2023

Table 4.6 presents summary of t-test result demonstrating the gender difference in the level of academic achievement in mathematics among secondary school students in Oyo town. The result revealed a significant difference at ($p < 0.05$). As a result of that, the null hypothesis that states that there will be no significant gender difference in level of academic achievement in Mathematics among secondary school students in Oyo town was rejected. The result also revealed that the male had the following results ($X = 2.33$, $Std = 0.979$, $p < 0.05$) and female ($X = 2.13$, $Std = 0.828$, $p < 0.05$). Implying that male students contributed more to the observed difference.

4.4 Discussion of Findings

Research question one was raised to determine the level of academic achievement in mathematics among secondary school students in Oyo town. To determine this, an achievement test in mathematics containing twenty-five (25) objective questions were carefully drawn from the approved syllabus for secondary schools in Nigeria. Scores Above 21-25 were categorized as (Very High), Scores between 15-20 were categorized as (High), Scores between 10-14 were categorized as (Low) while scores below 10 was categorized as (Very Low). Result revealed that students' academic achievement in mathematics in Oyo town is low.

This finding corroborates the submission of a study where mathematics was described as a subject that "affects all aspects of human life at different degrees. The study emphasized that mathematics is used throughout our daily lives and its importance in our day-to-day activities is no longer news. However, what remains news is the fact that students' performance in mathematics in secondary schools in Nigeria has not improved significantly despite its importance, not even with the introduction and use of technology in mathematics which makes students make use of computer-assisted problem-solving systems to better learning and understanding of Mathematics¹. A related study also submitted that in Nigeria, despite the fact that the government has clearly confirmed the importance of mathematics by making it a core and compulsory subject at both junior and senior secondary levels, the invested billions of Naira in the teaching and learning of mathematics has not yielded any significant improvement². Again, another author maintained that it is disheartening to note that with all the importance attached to mathematics in Nigeria's education system, poor performance is recorded in public examinations in recent time. This poor performance in mathematics is one of the major reason for decline in science and technology courses

and development, even though emphasis was made on 60:40 ratios in favour of sciences in the area of admission into higher institutions³. It is therefore clear based on the finding above and corroborating fact that student's academic achievement in mathematics in secondary schools in Oyo town, Oyo State, Nigeria is poor for there is an urgent need to drastic action to be taken to ensure students' level of achievement in this subject is improved.

Research question two was raised to assess the most used methods for teaching mathematics in secondary schools in Oyo town. To answer this question, three methods of teaching were assessed. These are teacher centred, student-centred and teacher-student interactive method. Eighteen questions were raised to gather information to answer this question accurately. The first six were employed to determine level of teacher-centered teaching methods, the next five were used to determine student centered while the remaining eight items were deployed to assess level of teacher-students' interactive method of teaching mathematics. In analyzing the responses of respondents, mean score of 4.00 was rated as very high, 3.0-3.99 were rated High, 2.5-2.99 were rated low, while mean score of less than 2.5 was rated as very low. Result revealed that the level of (teacher-centred methods) of teaching mathematics in secondary schools in Oyo town is high ($X = 3.18$), student centred is low ($X = 1.99$) while student-teacher interactive is low ($X = 1.97$). This implies that among other methods of teaching assessed, result found that teacher centred method is the most dominating in teaching mathematics in secondary schools in Oyo town, Oyo State.

This implies that most mathematics teachers in secondary schools in Oyo town simply give information without building their engagement level with the students and the subject being taught. The approach is least practical, more theoretical and

memorizing. It does not apply activity based learning to encourage students to learn real life problems based on applied knowledge. Since the teacher controls the transmission and sharing of knowledge, the teacher may attempt to maximize the delivery of information while minimizing time and effort.

As a result, both interest and understanding of students may get lost. This teacher-centered dominating teaching and learning of mathematics may be one responsible for the low level of academic achievement in mathematics as observed in the analysis of research question one of this study. This result is in line with the submission of a study where it was observed that one of the factors that hinder learners' opportunities to learn is poor instructional methods especially teacher centred method of teaching. The learner according to the study should be actively involved in the learning process, not the traditional method where the instructor is to instruct and the learner play a passive receptive role⁴.

A related author observed that mathematics teachers in secondary schools in Nigeria are in a hurry and tend to rush through the scheme of work to enable them cover the topic in the curriculum within the given period. Therefore, learners are less carried along during teaching and learning⁵. However, it is important to note that maintaining restructured teaching methods that allows teacher-student interaction during teaching and learning is likely going to produce more positive result because most learners are required to be made anxious to learn. They need to be aroused to develop ideas that demands expression verbally or nonverbally. It will not be enough for the teacher to pour out facts for learners to encounter in the course of class activity, learning by discovery is likely to guarantee adequate concept formulation.

Hypothesis one was tested to determine the combined influence of Classroom Management Practices (Classroom Design, Rules, Discipline) and Teaching Methods

(Teacher-centred methods, Student-centred method, Teacher-student interactive method) on Secondary School

Student's Academic Achievement in Mathematics in Oyo town. Result revealed a significant combined influence of Classroom Management Practices (Classroom Design, Rules, and Discipline) and Teaching Methods (Teacher-centered methods, Student-centered method, Teacher-student interactive method) on Secondary School Student's Academic Achievement in Mathematics in Oyo town. The null hypothesis was rejected at 0.05 level of significance.

Hypothesis two was tested to determine the relative influence of each of the items of the independent variables were presented in the table 4.6 presented above. It was revealed in the result that classroom rules have the most significant influence on student's academic achievement in mathematics, this was followed by teacher-student interactive teaching method, classroom design, student centred teaching method and Classroom discipline while teacher centred teaching method has the least influence on student's academic achievement in mathematics among secondary school students in Oyo town. The relationship between classroom management practices and student's academic achievement has been established by so many studies, for instance, it was found that increasing classroom management practices is vital for students' high level achievement⁶. Similarly, it was posited that classroom management practices have direct relationship with students' academic achievement⁷. Teachers' classroom management is clearly associated with students' outcomes. It was found that effective classroom management significantly increased academic achievement of students and decreases behavioural problems of the students⁸. It was also stated in a related study that if the climate for learners are more smooth and effective the learners are always turn towards learning activities⁹. An experimental study found significant differences

in experimental and control teachers' classroom management practices. In treatment, classrooms students showed less disruptive and aggressive behaviour than control classrooms. Positive feedback while decreases the disruptive behaviour of students it was concluded that the results of the learning are directly associated with the climate of the classes¹⁰.

Hypothesis three was tested to determine gender difference in the level of academic achievement in mathematics among secondary school students in Oyo town. Result revealed a significant difference at ($p < 0.05$). It was revealed that male students contributed more to the observed difference than female student. It has become a general feeling that mathematics is boys' domain. A study through a meta-analysis reveals that males tend to do better on mathematics tests that involve problem-solving¹¹. On the contrary, a study revealed that females tend to do better in computation, and there is no significant gender difference in understanding mathematics concepts¹². Another study showed that females tend to earn better grades than males in mathematics¹³. Another author identified as critical, beliefs about the usefulness of and confidence in learning mathematics, with males providing evidence that they were more confident about learning mathematics and believed that mathematics was, and would be, more useful to them than did females¹³. Again, females were found to be strongly not believing in stereotype that mathematics was not their subject while their male counterparts did not strongly stereotype mathematics as a male domain¹⁴.

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Chapter Five

Conclusion

This chapter dealt with the summary of the findings, conclusion and recommendations based on the results of the study. Contribution to knowledge and area of further research were also added.

5.1 Summary of Findings

The study investigated the influence of classroom management practices and teaching methods on secondary school students' Academic Achievement in mathematics in Oyo town. Descriptive survey research design was adopted to guide the study. The population of the study consisted of one hundred and two thousand (102,000) public and thirty-eight thousand (38,000) private secondary school students in all the fifty-one (51) public and eighty-four (84) private secondary schools in Oyo town. Multistage sampling procedure was used to determine the sample for the study.

A self-developed instrument tagged Influence of Classroom Management Practices and Teaching Methods questionnaire [ICMPTMQ] on Student's academic achievement in mathematics in Oyo town and Mathematics achievement test (MAT) were administered on the participants. This instrument shall have two sections namely sections A and B. Section A shall contain items which measure the demographic characteristics of the respondents such as age, gender, Section A contained items to answer the formulated research questions such as items on level of classroom management practices and teaching methods. Section B contained items to collect data on the influence of classroom management indices and teaching methods on academic achievement in Mathematics in secondary schools, Oyo town. Also, the achievement test shall contain twenty five Mathematics questions were carefully

drawn from West African examination council (WAEC) past Questions as the Mathematics Achievement Test.

Two research questions and three hypotheses were raised and tested respectively to achieve the objectives of the study. The data collected from the fieldwork were subjected to analysis with the use of descriptive and inferential statistics. Research questions were answered using descriptive statistics such as mean, standard deviation, frequencies and percentage while hypotheses were tested using Multiple Regression and t-test at 0.05 level of significance.

Level of academic achievement in mathematics among secondary school students in Oyo town is low. Among other methods of teaching assessed, result found that teacher-centred method was the mostly used to teach mathematics in secondary schools in Oyo town, Oyo State.

There was a significant combined influence of Classroom Management Practices (Classroom Design, Rules, and Discipline) and Teaching Methods (Teacher-centred methods, Student-centred method, Teacher-student interactive method) on Secondary School Student's Academic Achievement in Mathematics in Oyo town was significant.

Classroom rules has the most significant influence on student's academic achievement in mathematics. This was followed by teacher-student interactive teaching method, classroom design, while student centred teaching method, teacher centred teaching method and Classroom Discipline had lesser influence on academic achievement in mathematics among secondary school students in Oyo town.

There was a significant gender difference in the level of academic achievement in mathematics among secondary school students in Oyo town. The result also revealed that male students perform better than the female students in Oyo town.

5.2 Conclusion

Based on the findings of the study, the following conclusions were made: level of academic achievement in mathematics among secondary students in Oyo town is low.

Teacher-centred method was the mostly used to teach mathematics in secondary schools in Oyo town, Oyo State.

There was a significant combined influence of Classroom Management Practices and Teaching. Methods on Secondary School Student's Academic Achievement in Mathematics in Oyo town

Classroom rules has the most significant influence on student's academic achievement in mathematics. There was a significant gender difference in the level of academic achievement in mathematics among secondary school students in Oyo town.

5.3 Recommendations

Based on the findings of this study, the following recommendations were given:

1. There is a need to address issue of low students' academic achievement in mathematics.
2. Mathematics teachers should be well educated on the implications of using teacher centred teaching method and the need to adopt teacher-student interaction to facilitate learning.
3. There is a need for school administrators to ensure adequate supervision of mathematics teachers to ensure appropriate teaching method is adopted for easy comprehension of the students.
4. Seminars, conferences and workshops should be organized for teachers of Mathematics which will focus on classroom management practices and how it could be used to facilitate learning.

5. Female students should be given special attention in the mathematics class. This can be done by motivating them to improve their interest in learning the subject.

5.4 Contribution to Knowledge

Conceptual: This study contributes to the understanding of the concept of classroom management practices and teaching methods and their influence on academic achievement in mathematics among secondary school students. It provides a clear definition and description of these concepts and their relevance in the educational setting.

Theoretical: The study is guided by two major theoretical frameworks - Theory of Planned Behaviour and Theory of Reasoned Action and Social Learning Theory. These theories provided a framework for understanding the psychological processes underlying human behaviour, which can be applied to classroom management practices and teaching methods. The study contributes to the application of these theories in the educational setting and helps to advance our understanding of how these theories can be used to improve academic achievement in mathematics among secondary school students.

Empirical: The findings of this study provide empirical evidence to support the notion that classroom management practices and teaching methods have a significant influence on academic achievement in mathematics among secondary school students. The study provides a comprehensive analysis of the factors that contribute to academic achievement in mathematics and helps to identify the most effective teaching methods and classroom management practices for improving academic outcomes.

Policy and Practice: The findings of this study have important implications for educational policy and practice. The study provides evidence-based recommendations for improving classroom management practices and teaching methods in secondary

schools in Oyo town, Oyo State, Nigeria. The study's recommendations can be used to inform the development of policies aimed at improving academic achievement in mathematics among secondary school students. The study's findings can also be used by educators to develop effective classroom management practices and teaching methods that promote positive learning outcomes for students. Overall, this study has important implications for improving educational outcomes in Nigeria and other developing countries.

5.5 Suggested Area for Further Research

Based on the findings of this study, the following areas are suggested for further research:

1. Replication of the study in other states in Nigeria: This study focused on secondary schools in Oyo town, Oyo State, Nigeria. It is recommended that a similar study be conducted in other states in Nigeria to compare the findings and generalize the results.
2. Comparison of public and private secondary schools: This study only focused on public secondary schools and private secondary schools were not included. It would be interesting to conduct a comparative study between public and private secondary schools to identify if there are differences in the influence of classroom management practices and teaching methods on academic achievement in mathematics.
3. Longitudinal study: This study was cross-sectional and only collected data at a specific point in time. A longitudinal study that follows students over a period of time would be beneficial to determine the long-term effects of classroom management practices and teaching methods on academic achievement in mathematics.

4. Qualitative study: This study used a quantitative research design. A qualitative study that explores the experiences and perceptions of students, teachers, and parents on classroom management practices and teaching methods would provide a deeper understanding of the factors that influence academic achievement in mathematics.
5. Impact of technology: With the increased use of technology in education, it would be interesting to investigate the impact of technology on classroom management practices and teaching methods on academic achievement in mathematics.

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Appendix
The Department of Arts & Social Science,
Faculty of Education
Lead City University, Ibadan, Oyo State, Nigeria.
Questionnaire on Influence of Classroom Management Practices and Teaching
Methods on Senior Secondary School Student's Academic Achievement in
Mathematics in Oyo Town, Oyo State

Dear Respondents,

This instrument is designed to solicit information on the research title stated above. I am a student of Lead City University Ibadan, Nigeria. Please be sincere with your responses as no answer is wrong or correct. Also, your responses will be used for research purpose only and its confidentiality is highly guaranteed.

Thank You,

Signature :.....

The Researcher : Akinloye .M.B

Section A

This section contains items on demographic characteristics of the respondents, please respond by ticking the option that best suit your response to the items.

School:

Local government area:

Class:

Gender: Male () Female ()

Age Less than 15 years () 15-17 years () 21-and above ()

Section B

This section contains items to solicit information on methods of teaching, therefore, tick the option that best describe your response to the following statements or items

S/N	Items	Often	Seldom	Rarely	Never
1	give information and evaluate only				
2	be in the center of teaching and learning				
3	View students as “empty vessels” who passively receive knowledge from their teachers				
4	act as the sole supplier of knowledge				
5	teach under the direct instruction model				
6	stick only to lesson note				
7	Students are given more questions to solve using the only method taught by the teacher				

S/N	Items	Often	Seldom	Rarely	Never
1	Allow students learn from their own experiences through activities.				
2	Ensure students are more responsible for their own learning using the teaching and learning resources under the guide of a teacher				
3	Engage all students in lesson; facilitates problemsolving among students.				
4	Establishes a purposeful learning environment, interacts with students, and guides them to construct their own meaning to concept.				
5	Construct problems carefully that required students to apply what they learnt				

S/N	Items	Often	Seldom	Rarely	Never
1	welcome or appreciate the students contribution in the class.				
2	make positive interaction in the classroom				
3	Praise or compliment students.				
4	ask questions in which the answer is anticipated every time				
5	Deals with the feeling in a non-threatening way				

6	Is it every time that your teacher allows students to participate in the classroom activities.				
7	Give the students ideas so that they can express their mind/feeling.				
8	Summarize the ideas of students and still recognized them as being students contributions.				

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Section C

This section contains items to determine the influence of classroom design, rules and discipline on student's academic achievement in mathematics. Please, respond by ticking the option that fit your response to each of the statement below:

S/N	Items	Strongly Agree	Agree	Disagree	Strongly Disagree
1	Classroom is flexible and allows learning activities such as collaborative and social learning activities				
2	Classroom is designed in a way that fosters inspiration and creativity				
3	Classroom is designed in such a way that provides learning tools that students can grasp, manipulate and interact				
4	Classroom is designed in a way that provides natural lighting				
5	Mathematics teachers gives strict instructions before the commencement of the lesson				
6	There is punishment for not adhering to rules and regulations during the mathematics class				
7	Mathematics teacher always strive to maintain discipline in the class				
8	Chorus answers is not allowed in my classroom				
9	Students must not come late to the classroom.				
10	When I am in the class loitering is not allowed.				

**The Department of Arts & Social Science,
Faculty of Education
Lead City University, Ibadan, Oyo State, Nigeria.**

Mathematics Achievement Test (MAT)

Instruction:

Answer all questions and circle the correct option applicable to you in each question

1. Express 302.10495 to five significant figures
 - (a) 302.10
 - (b) 302.11
 - (c) 302.105
 - (d) 203.1049
2. In 1995, the enrolment of two school x and y were 1,050 and 1,190 respectively. Find the ratio of the enrolment of x and y.
 - (a) 50
 - (b) 15:17
 - (c) 13:55
 - (d) 12:11
3. Convert 35_{10} to a number in base 2
 - (a) 1011
 - (b) 10011
 - (c) 100011
 - (d) 1101
4. The n^{th} of a sequence is $T_n = 5 + (n-1)^2$ evaluate $T_4 - T_6$
 - (a) 30
 - (b) 16
 - (c) -16
 - (d) -30
5. Mr. Manu traveled from Accra to Pamfokrom a distance of 720 km in 8 hours. What will be his speed in m/s?
 - (a) 25m/s
 - (b) 150m/s
 - (c) 250m/s
 - (d) 500m/s
6. If N2, 500.00 amounted to N3, 500.00 in 4years at simple interest find the rate which the interest was charged.
 - (a) 5%
 - (b) 7.5%
 - (c) 8%
 - (d) 10%
7. Solve for x in the equation, $\frac{1}{x} + \frac{2}{3x} = \frac{1}{3}$
 - (a) 5
 - (b) 4
 - (c) 3
 - (d) 1

8. If $x + y = 2y - x + 1 = 5$, find the value of x .
- 3
 - 2
 - 1
 - 1
9. The sum of 12 and one third of n is more than twice n express the statement in the form of an equation.
- $12n - 6 < 0$
 - $3n - 12 < 0$
 - $2n - 35 < 0$
 - $5n - 36 < 0$
10. The curved surface area of a cylindrical tin is 704 cm^2 . If the radius of its base is 8cm, find the height. [Take $\pi = 22/7$]
- 14cm
 - 9cm
 - 8cm
 - 7cm
11. The length of the minor and major arcs of circle are 54cm and 126cm respectively. Calculate the angle of the major sector
- 306°
 - 252°
 - 246°
 - 234°
12. A sector of a circle which subtends angle 172° at the center of the circle has a perimeter of 600cm. Find correct to the nearest, the radius of circle [Take $\pi = 22/7$]
- 120m
 - 116cm
 - 107cm
 - 100cm
13. Given that the mean of the scores 15, 21, 17, 26, 18 and 29 is 21 calculate the standard deviation of the scores ____
- $\sqrt{10}$
 - 4
 - 5
 - $\sqrt{30}$
14. A bag contains 4 red and 6 black balls of the same size. If the balls are shuffled briskly and two balls are drawn one after the other without replacement, find the probability of picking balls of different colours.
- $\frac{5}{15}$
 - $\frac{13}{25}$
 - $\frac{11}{15}$
 - $\frac{13}{15}$
15. If the hypotenuse of a right angled isosceles triangle is 2, what is the length of each of the other sides?
- 2

- (b) 2.2
(c) 1
(d) 2.1
16. The sum of the interior angles of a regular polygon is 1800° . How many sides has the polygon?
(a) 16
(b) 12
(c) 10
(d) 8
17. The locus of a point which moves so that it is equidistant from two intersecting straight lines is the
(a) Perpendicular bisector of the two lines.
(b) Angular bisector of the two lines.
(c) Bisector of the two lines.
(d) Line parallel to the two lines.
18. The volume of a cuboid is 54cm^3 . If the length, width and height of the cuboid are in the ratio 2: 1: 1 respectively, find its total surface area.
(a) 108cm^2
(b) 90cm^2
(c) 80cm^2
(d) 75cm^2
19. Multiply 2.7×10^{-4} by 6.3×10^6 and leave your answer in standard form
(a) 1.7×10^3
(b) 1.70×10^3
(c) 1.701×10^3
(d) 17.01×10^3
20. Solve the inequality: $\frac{2x-5}{2} < (2-x)$
(a) $x > 0$
(b) $x < 0$
(c) $x > 2\frac{1}{2}$
(d) $x < 2\frac{1}{4}$
21. A chord is 2cm from the Centre of the circle. If the radius of the circle is 5cm, find the length of the chord.
(a) $2\sqrt{21}\text{cm}$
(b) $\sqrt{42}\text{cm}$
(c) $2\sqrt{21}\text{cm}$
(d) $\sqrt{21}\text{cm}$
22. An object is 6cm away from the base of a mast. The angle of depression the object from the top of the mast is 50° . Find, correct to 2 decimal places, the height of the mast.
(a) 8.60m
(b) 7.5m
(c) 7.15m
(d) 1.19m
23. The bearing of Y from X is 060° and the bearing of Z from y is 060° , find the bearing of X from Z
(a) 300° (b) 240°

- (c) 180°
- (d) 120°
- 24. Which of the following is measure of dispersion?
 - (a) Range
 - (b) percentile
 - (c) median
 - (d) quartile
- 25. In what modulus is it true that $9+8=5$?
 - (a) mod 10
 - (b) mod 11
 - (c) mod 12
 - (d) mod 13

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Bio-data

A. Personal Data

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B. Educational Background with date

	Institution Attended Date	Qualification	
(i)	Baptist School 1, Sango Eruwa Oyo State	Primary School Leaving Certificate	1983
(ii)	Obaseeku High School, Eruwa, Oyo State	WAEC (O'level)	1989
(iii)	The Polytechnic Ibadan, Oyo STATE	OND	1992
(iv)	Yaba College of Technology, Yaba, Lagos.	HND	1996
(v)	University of Ibadan,	PGD Education	2009
(vi)	Lead City University, Ibadan	M.Ed in view	2023

C. Working Experiences with Date

- | | | |
|-------|--|-----------------|
| (i) | Methodist Secondary School, Fiditi, Oyo State | 2005-2010 |
| (ii) | Ladigbolu Junior School IV, Isokun, Oyo, Oyo State | 2010 – 2011 |
| (iii) | Olivet Baptist High School, Oyo. | 2011- till date |

D. Membership of Academic Professional Bodies - Nil

E. Publication - Nil

F. Award and Fellowship - Nil

G. Major Conference/ Workshop Attended - Nil

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The University Compliance Certificate

This is to certify that the thesis by Moses Bamidele AKINLOYE with matriculation number LCU/PG/000529 in the Department of Educational Management, Faculty of Education, Lead City University of Ibadan, Oyo State is in full Compliance with the approved University Format Style.

.....

Signature

.....

Date

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