

## INFLUENCE OF CLASSROOM MANAGEMENT ON STUDENTS' ATTITUDE TOWARDS LEARNING SCIENCE IN SENIOR SECONDARY SCHOOLS IN NIGERIA

**Aliyu Taiwo**

Lead City University, NIGERIA  
Email: aliyutaiwo2013@gmail.com

**Akuche Ukamaka**

Lead City University, NIGERIA  
Email: akucheukamakae@gmail.com

**Muhammad Abdallah**

Lead City University, NIGERIA  
Email: abdallahmuhd@yahoo.com

### ABSTRACT

The problem of students' attitude towards learning in the science arm of secondary schools has been a subject of concern and discuss. Many studies have been carried out to investigate factors that affect students' attitude towards learning but very few have considered the role of classroom management. This study therefore investigated the influence of classroom management factors on students' attitude towards learning science in senior secondary schools, Nigeria. Two research questions were raised and answered, and three hypotheses were formulated and tested to guide the study at .05 level of significance. The study used the descriptive research design. A sample of 6349 students and teachers was utilized for the study. The research instrument used for data collection was the questionnaire titled: Classroom Management and Students' Attitude Towards Learning Science Questionnaire (CMSAQ). The instrument was subjected to face and content validity; Cronbach Alpha reliability analysis which yielded 0.84 coefficient. The data collected were analyzed using descriptive statistics, multiple regression and independent t-test statistics. The results using multiple regression revealed that significant influence exists for the independent variable (classroom management,  $r=0.405$ ,  $p<0.05$ ). The mean difference in the opinions of the respondents regarding high-stakes tests were higher for teachers ( $\bar{X}=55.68$ ,  $SD=8.09$ ) than students ( $\bar{X}=53.54$ ,  $SD=9.49$ ),  $t_{(6347)}=-6.268$ ,  $p>0.05$ ,  $F=45.3363$ ,  $p=.250$ ), however there was no significant difference. In conclusion, classroom management have significant influence on students' attitude towards learning science. Therefore, it is recommended among others, that teachers and educators should pay attention to the effects of classroom management strategies in their schools.

**Keywords:** Classroom Management, Students' Attitude towards Learning Science

### INTRODUCTION

Attitude towards learning science is an essential concept that can also be described as the students' interpretation of knowledge, assessment, laboratory activities and the roles of instructors and students in learning science (Gavin *et al.*, 2019). A learner's attitude relates to all the facets of education. For example, the attitude of a learner towards science will determine the measure of the learner's attractiveness or repulsiveness to science<sup>5</sup>. Some research studies have indicated positive correlations between achievement in science courses and positive attitudes toward science (Jebson and Amos, 2015). Some research journals have also reported attitude and certain characteristics of

the classroom environments that include teacher support, use of a variety of teaching strategies, innovative learning activities, and student-centered instructional designs (Gavin *et al.*, 2019). Students who have positive attitudes show increased attention to classroom instruction and participate more in science activities (Jarvis and Pell, 2020). The investigation of students' attitudes towards studying science has been a substantive feature of the work of the science education research community for more than 40 years (Gavin *et al.*, 2019). Development of positive attitudes towards learning science, which has always been a constituent of science education, is increasingly a subject of concern (Cheung, 2018). Some reasons why students develop more negative attitudes towards science as they move through secondary school include students' interests in a number of non-school activities, more emphasis on test results and not much opportunity for students to enjoy science (Cheung, 2018). It follows therefore, that in order to have better students' understanding and application of science concepts, there is need to determine students' attitude to science subjects, and factors that can influence such attitudes.

Classroom management is the process of organizing and conducting the business of the classroom; many perceive it as the preservation of order through teacher control (Imran *et al.*, 2018). Classroom management is however much more than that; it also involves the establishment and maintenance of the classroom environment so that educational goals can be accomplished (Corazon and Guhao, 2020). For primary and secondary school teachers, disciplinary method and behavioral expectations are central to this system. As students age, the managerial style of instructors may change to assist students in the development of self-guided learning (Markowitz, 2018). Although every teacher will have a unique style of management to meet each class' needs, the same elements can be found consistently. Some of these elements include classroom environment & design, rules, discipline and communication.

The ability of teachers to organize classrooms and manage the behavior of their students is critical to achieving positive educational outcomes. Although sound classroom management does not guarantee effective instruction (teaching), it establishes the environmental context that makes good instructional (teaching) methods possible. Reciprocally, highly effective instruction reduces, but does not eliminate, classroom behavior problems (Egeberg *et al.*, 2020). A successful classroom design needs to strike the balance between the teaching methods and learning styles that take place in the space. Combining learning and teaching (two entirely different activities) helps to create a learning environment that facilitates both the student and the teacher, thereby creating a more fulfilling learning experience. Classroom setup and design is an important component in a learning environment because it is an essential piece of classroom management to support both teaching and learning. The physical atmosphere of the classroom can help prevent attitudinal matters as well as promote and improve learning (National Academy of Science, 2020). The structuring of the learning environment is essential for teachers and students. The physical condition and arrangement of the classroom can affect both teacher methods and performance, and a well-structured classroom management plan of design has the ability to improve students' attitude to learning.

### **Aim and Objectives of the Study**

The aim of this study was to assess the influence of classroom management on students' attitude towards learning science in Nigeria.

The specific objectives of the study include, to:

- i. ascertain the level of classroom management factors (discipline, classroom design, communication) in senior secondary schools in Nigeria.
- ii. ascertain the level of students' attitude towards learning science in senior secondary schools in Nigeria.
- iii. determine the composite influence of high-stakes tests factors (washback effect, test pressure, test anxiety) and classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.
- iv. determine the relative influence of high-stakes tests factors (washback effect, test pressure, test anxiety) and classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.
- v. examine the significant mean difference between the opinions of teachers and students with regards to classroom management factors in senior secondary schools in Nigeria.

#### **1.4 Research Questions**

The study attempted to find answers to the following questions:

- i. What is the level of classroom management factors (discipline, classroom design, communication) in senior secondary schools in Nigeria?
- ii. What is the level of students' attitude towards learning science in senior secondary schools in Nigeria?

#### **1.5 Hypotheses**

This study was guided by the following hypotheses.

H<sub>0</sub>1: There will be no significant composite influence of high-stakes tests factors (washback effect, test pressure, test anxiety) and classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.

H<sub>0</sub>2: There will be no significant relative influence of high-stakes tests factors (washback effect, test pressure, test anxiety) and classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.

H<sub>0</sub>3: There will be no significant mean difference between the opinions of teachers and students with regards to classroom management factors in senior secondary schools in Nigeria.

### **METHODOLOGY**

This chapter presented the methodology and procedures employed in the study. It contains information about the population of the study, sample and sampling techniques, research instrument, validity of the instrument, reliability of the instrument, administration of the instrument and method of data analysis.

#### **Research Design**

The descriptive-survey research design was adopted for this study. This research design is considered appropriate because the study involved collection of data to factually describe existing phenomena, without any manipulation or randomization. Furthermore, the research design allowed

the researcher to obtain a proper picture of the present situation of the particular phenomena under study.

### **Population of the Study**

The targeted population comprised of all Senior Secondary school science teachers and students in Senior Secondary School who registered for the 2021 West African Examinations Council (WAEC) examination.

### **Sample and Sampling Techniques**

A total of 6,720 respondents formed the sample for this study. The study sites were mapped based on the six geo-political zones in Nigeria. Multi-stage sampling technique was used to select participants for this study. In the first stage, simple random sampling technique was used to select one state from each geopolitical zone in Nigeria, giving a total of six (6) states. Abuja, the Federal Capital Territory, was also included as a separate category because of its peculiarities. In the second stage, four (4) local government areas (LGA) were selected from each state to reflect the urban and rural areas, using simple random sampling technique, making a total of 28 LGAs. At the third stage, purposive sampling was used to select ten (10) secondary schools from each LGA, which have participated in high-stakes tests for at least five (5) years, making a total of 280 schools. In the next stage, purposive sampling was also used to select three (3) senior secondary school science teachers who teach science in selected schools, making a total of 1120 teachers. Stratified random sampling technique was used to select 20 science students in senior secondary schools, who have been registered for high-stakes tests (WAEC, NECO, UTME), making a total 5,600 students. In all, a total of 6,720 respondents, consisting of five thousand six hundred science students (5600) and one thousand one hundred and twenty (1,120) science teachers, were used as participants in this study.

### **Research Instrument**

The instrument for this study will be a self-developed questionnaire – Classroom Management and Students' Attitude Questionnaire (CMSAQ), appendix 1 – which was designed and adapted in line with the research questions and hypotheses that were raised for the study. The instrument was used for all categories of respondents (students and teachers). The questionnaire was divided into five sections; A, B, C, D and E. Section A of the instrument focused on the demographic data of the respondent (that is their gender, age, educational qualification, and so on). Section B elicited information on classroom management, while Sections C comprises of items on students' attitude to learning science. For all sections, the sub-scale was a modified Likert-type scale with four response options rates as follows: Strongly Agree (4), Agree (3), Disagree (2) and Strongly Agree (1). Also, students' and teachers' questionnaire were structured from the questionnaire.

### **Method of Data Analysis**

Data collected from the field were clean, coded and inputted into a computer system, for statistical analysis using Statistical Package for Social Sciences (SPSS) software, version 21 for mac iOS. The research questions 1 to 4 were analysed using descriptive statistics of mean ( $\bar{x}$ ) *score* and

standard deviation (SD). Mean was used to describe the data. A criterion mean ( $\bar{x}$ ) of 2.50 was set for the study. In this case, a mean score of 2.50 and above was adjudged moderate, high and very high as the case may be while a mean score below 2.50 was adjudged low (performance) extent. Standard deviation was used to determine how responses of the respondents varied. Hypotheses 1 to 4 were tested using multiple regression while Hypotheses 5 and 6 were tested using independent sample t-test statistics. An alpha level of 0.05 significance was set for the inferential statistics.

## RESULTS

The purpose of this study was to investigate the influence of classroom management on students' attitude towards learning science in senior secondary schools, Nigeria. This chapter presents the results of the analysis of the data collected from all respondents (science students and science teachers) involved in the study. The results are presented in tables on the basis of the research questions and hypotheses formulated for the study. Descriptive statistics (mean and standard deviation) was used to answer the research questions while inferential statistics was used to test the null stated hypotheses at 0.05 level of significance. The findings were outlined and discussed accordingly. The research instrument was dispatched to 6700 respondents with 6349 (94.8%) of the dispatched questionnaire retrieved.

### Demographic Profile of the Participants Status of the Respondents

The study sought information on the status of the respondents. Table 1 presents a summary of the status distribution for all the categories.

**Table 1: Demographic Characteristics of Respondents Status**

Status	Frequency	%
Students	5501	86.6
Teachers	848	13.4
Total	6349	100.0

**Source: Fieldwork, 2021**

Out of the 6349 respondents, 5501 respondents representing 86.6% of the sample represented the science students while 848 respondents, which constituted 13.4%, represented the science teachers.

### Gender of the Respondents

The study sought information on the gender of the respondents. Table 2 presents a summary of the gender distribution for all the categories of respondents.

**Table 2: Demographic Characteristics of Gender \* Respondents Status Cross Tabulation**

Gender	Students	%	Teachers	%	Total (%)
Male	2710	83.1	553	16.9	3263 (100.0)
					51.4%
Female	2791	90.4	295	9.6	3086 (100.0)
					48.6%

Total	5501	173.5	848	26.5	6349 (100.0)
-------	------	-------	-----	------	--------------

**Source: Fieldwork, 2021**

Out of the 6349 respondents, 3263 respondents, representing 51.4% of the sample represented male while 3086 respondents, constituting 48.6%, represented female participants. This slight difference may be as a result of gender stereotypes, which have been reported to be part of the major factors contributing to the gender-gap in the field of science<sup>1</sup>. There were however slightly more female science students (2791) than male students (2710), suggesting that there could be an improvement in the number of females opting for science courses from high school level.

### Age of Respondents

The study also sought information on the age of the respondents. Table 3 presents a summary of the age distribution for all the categories.

**Table 3 Demographic Characteristics of \* Respondents' Age Respondents Cross Tabulation**

Age Group	Students	%	Teachers	%	Total (%)
20 and below	5501	98.8	10	1.2	5511 (100.0) 100%
21 – 30 years	0	0	132	100	132 (100.0) 100%
31 – 40 years	0	0	269	100	269 (100.0) 100%
41 – 50 years	0	0	276	100	276 (100.0) 100%
51 – 60 years	0	0	135	100	135 (100.0) 100%
60 and above	0	0	26	100	26 (100.0) 100%
Total	5501	98.8	848	501.2	6349 (100.0)

**Source: Fieldwork, 2021**

For the teachers, majority (31.7%) were aged between 31 and 40 years, and those aged between 41 and 50 years (32.5%). The least age range (3.1%) was between 60 and above, with respondents under this age range originating from private schools. This clearly indicated that many teachers were young and energetic with regards to handling infrastructural matters. Although the older teachers are more experienced and more familiar with instructional issues, they might be tired and might lack 21<sup>st</sup> century skills such as information and communication technology (ICT), which is a very vital component of instruction today. The student-respondents were all within the range of 20 years and below.

### Professional Qualifications of Respondents

The study was also interested in finding out the professional qualifications of the respondents (teachers). The data obtained are presented in Table 4 below.



**Table 4 Demographic Characteristics of Teachers' Professional Qualifications**

Qualification	Frequency	%
HND/PGDE	166	19.6
First Degree	337	39.7
Masters	319	37.6
PhD	26	3.1
Total	848	100.0

**Source: Fieldwork, 2021**

Table 4 shows that a total of 166 (representing 19.6%) staff-respondents hold HND/PGDE, while 337 respondents (representing 39.7%) have a first-degree qualification. A total number of 319 respondents (representing 37.6%) have a Master's degree, while only 26 respondents (representing 3.1%) have a PhD. This was a positive gesture that human resources with adequate professional qualifications were involved in teaching in our schools. This could be instrumental to effective instructional dissemination. Evans (1999) had posited that the successful 21<sup>st</sup> century instructor will need to be very professional, competent, highly trained and a well-motivated individual. Majority of the respondents (39.7%) indicated that first degree was their highest professional qualification while the least indicated qualification (3.1%) were respondents with a PhD. Degree. Hence, this indicated that the respondents had the appropriate academic professional qualifications required to the handle the curriculum.

### Teaching Experience of Teachers

The study also sought information on the teaching experience of teachers. Table 5 presents a summary of the data obtained.

**Table 5 Demographic Characteristics of Teachers' Teaching Experience**

Length of Service	Frequency	%
Less than 10 years	270	31.8
10 – 15 years	242	28.5
16 – 20 years	200	23.6
21 – 30 years	124	14.6
31 – 35 years	12	1.5
Total	848	100.0

**Source: Fieldwork, 2021**

Out of the 848 respondents (science teachers), 270 had less than 10 years of teaching experience, representing 31.8%, 242 had 10 – 15 years teaching experience, representing 28.5%, 200 had 16 – 20 years teaching experience, representing 23.6%, 124 had 21 – 30 years teaching experience, representing 14.6% and 12 had 31 – 35 years of teaching experience, representing 1.5% of the total respondents.

### School Types of Respondents

The study sought information on the type of school all respondents were related with. Table 6 presents a summary of the school types of respondents.

**Table 6 Demographic Characteristics of Respondents' School Types**

School Types	Frequency	%
Public School	3915	61.7
Private School	2434	38.3
Total	6349	100.0

Source: Fieldwork, 2021

Table 6 shows that 3915 respondents were from public schools, representing 61.7% of the total sample, while 2434 respondents (38.3%) were from private schools.

### Marital Status of Teachers

The study also obtained information on the marital status of respondents. The data obtained is presented in Table 7 below.

**Table 7 Demographic Characteristics of Teachers' Marital Status**

Marital Status	Frequency	%
Married	624	73.6
Single	173	20.4
Divorced	51	6.0
Total	848	100.0

Source: Fieldwork, 2021

Table 7 shows that 624 respondents were married, representing 73.6% of the total sample (teachers) used in the study, 173 respondents were single representing 20.4% of the sample and 51 respondents were divorced, representing 6.0% of the total sample.

### Research Question 1: What is the level of classroom management factors (discipline, classroom design, communication) in senior secondary schools in Nigeria?

To answer research question 1, Table 8 (a – c) will be used.

**Table 8a Descriptive Statistics on Classroom Discipline**

Items	N	$\bar{x}$	Std. Dev.	R
1. Teachers involve students in establishing rules and procedures	6349	3.2978	.71748	HE
2. Teachers share with students the reasons behind the disciplinary approaches used	6349	3.4072	.62962	HE
3. Teachers make students aware of consequences for misbehavior (e.g. loss of break time, extra classroom time)	6349	3.2128	.72466	HE
4. Teachers ignore misbehavior that is non-disruptive to class	6349	3.0083	.90023	HE
<b>Average Total</b>	<b>6349</b>	<b>3.232</b>	<b>.743</b>	<b>HE</b>

R: Remarks; VHE: Very High Extent (3.50 and above); HE: High Extent (3.00 – 3.49); ME: Moderate Extent (2.50 – 2.99); LE: Low Extent (Below 2.50)



**Source: Fieldwork, 2021**

Table 8a showed that each of items 1 to 4 on the level of classroom discipline in classroom management obtained a mean score above 2.50. The above results implied that the respondents rated the influence of classroom discipline on science teachers and students as high. The grand mean score was **3.232**, which was above the criterion of **2.50** set for the study, while the standard deviation was **0.743**, indicating that the respondents were not far from the mean and from one another in their responses. Also, the table revealed that item 2 had the highest mean of **3.4072** while the least mean was that of item 4 with a mean score of **3.0083**. This result implies that the grand mean score of **3.232** indicated that the level of classroom discipline on science teachers and students in secondary schools in Nigeria is on a high extent. Therefore, the level of classroom discipline on science teachers and students in secondary schools in Nigeria is on a high extent with the grand mean score of **3.232**.

**Table 8b Descriptive Statistics on Classroom Design**

Items	N	$\bar{x}$	Std. Dev.	R
1. Teachers use different types of seating arrangements depending on the type of activity students are assigned to do	6349	3.2364	.67778	HE
2. Classrooms have enough desk space for classroom activities	6349	3.1849	.71386	HE
3. Classrooms are fitted with an appropriate level of classroom technology for the course material	6349	3.1950	.76845	HE
4. The lightning in the classroom is appropriate during classes	6349	3.1649	.77211	HE
5. Noise coming from outside of the classroom is often a problem in class	6349	3.2281	.68190	HE
<b>Average Total</b>	<b>6349</b>	<b>3.202</b>	<b>.723</b>	<b>HE</b>

**R: Remarks; VHE: Very High Extent (3.50 and above); HE: High Extent (3.00 – 3.49); ME: Moderate Extent (2.50 – 2.99); LE: Low Extent (Below 2.50)**

**Source: Fieldwork, 2021**

Table 8b showed that each of items 1 to 5 on the level of classroom design in classroom management obtained a mean score above 2.50. The above results implied that the respondents rated the influence of classroom design on science teachers and students as high. The grand mean score was **3.202**, which was above the criterion of **2.50** set for the study, while the standard deviation was **0.723**, indicating that the respondents were not far from the mean and from one another in their responses. Also, the table revealed that item 1 had the highest mean of **3.2364** while the least mean was that of item 4 with a mean score of **3.1649**. This result implies that the grand mean score of **3.202** indicated that the level of classroom design on science teachers and students in secondary schools in Nigeria is on a high extent. Therefore, the level of classroom design on science teachers and students in secondary schools in Nigeria is on a high extent with the grand mean score of **3.202**.

**Table 8c Descriptive Statistics on Classroom Communication**

Items	N	$\bar{x}$	Std. Dev.	R
-------	---	-----------	-----------	---

1.	Students are always highly motivated to learn when they communicate their thoughts with teachers	6349	3.2293	.60974	HE
2.	Teachers are always very patient while listening to the thoughts of students	6349	3.0783	.66249	HE
3.	Students sometimes have difficulty seeing the instructional materials displayed in the classroom	6349	3.1110	.77540	HE
4.	Students exchange ideas freely with teachers during lessons	6349	2.9551	.87788	ME
5.	Teachers create an environment in the class where students can easily ask questions	6349	3.3927	.73379	HE
6.	Teachers take into account different learning/communication styles of students when preparing for lessons	6349	3.2945	.71433	HE
7.	The layout in the classroom is suitable for teachers' ways of teaching	6349	3.1578	.70954	HE
8.	Teachers explain the meaning of concepts that students do not understand	6349	3.3440	.71185	HE
<b>Average Total</b>		<b>6349</b>	<b>3.195</b>	<b>.724</b>	<b>HE</b>

**R: Remarks; VHE: Very High Extent (3.50 and above); HE: High Extent (3.00 – 3.49); ME: Moderate Extent (2.50 – 2.99); LE: Low Extent (Below 2.50)**

**Source: Fieldwork, 2021**

Table 8c showed that each of items 1 to 8 on the level of classroom communication in classroom management obtained a mean score above 2.50. The above results implied that the respondents rated the influence of classroom communication on science teachers and students as high. The grand mean score was **3.195**, which was above the criterion of **2.50** set for the study, while the standard deviation was **0.724**, indicating that the respondents were not far from the mean and from one another in their responses. Also, the table revealed that item 5 had the highest mean of **3.3927** while the least mean was that of item 4 with a mean score of **2.9551**. This result implies that the grand mean score of **3.195** indicated that the level of classroom communication on science teachers and students in secondary schools in Nigeria is on a high extent. Therefore, the level of classroom communication on science teachers and students in secondary schools in Nigeria is on a high extent with the grand mean score of **3.195**. Thus, the level of discipline, classroom design and communication in classroom management in senior secondary schools in Nigeria is on a high extent.

**Research Question 2: What is the level of students' attitude towards learning science in senior secondary schools in Nigeria?**

Table 9 will be used to answer research question 3.

Items	N	$\bar{x}$	Std. Dev.	R
1. Science is very interesting to students	6349	3.2826	.75129	HE
2. Students look forward to science lessons	6349	3.2744	.73850	HE

3.	Most students do not like science subjects, and it scares them to have to take it.	6349	2.9409	.89270	ME
4.	Most students are always under a terrible pressure in science classes	6349	2.8897	.84334	ME
5.	Some students believe they are just not good at Science	6349	2.8849	.88062	ME
6.	Science makes students feel secure, and at the same time it is stimulating	6349	2.9663	.72545	ME
7.	Science makes students feel uncomfortable, restless, irritable and impatient.	6349	3.0670	.86457	HE
8.	Practical work in science is exciting for students	6349	3.0076	.75777	HE
9.	Students would like more practical work in science lessons	6349	3.0955	.70745	HE
10.	Students learn science better when they do practical work.	6349	3.1370	.72352	HE
11.	It makes students nervous to even think about doing a scientific experiment	6349	3.1889	.82339	HE
12.	Students like reading science magazines and books.	6349	3.1447	.88997	HE
13.	It is exciting for students to learn about new things happening in science	6349	3.0542	.82336	HE
14.	Most students would like to study science at university.	6349	3.2341	.78492	HE
15.	Students learn about things they are interested in	6349	3.0596	.76500	HE
16.	In general, students have a good feeling towards science	6349	3.1515	.81798	HE
<b>Average Total</b>		<b>6349</b>	<b>3.086</b>	<b>.799</b>	<b>HE</b>

*R: Remarks; VHE: Very High Extent (3.50 and above); HE: High Extent (3.00 – 3.49); ME: Moderate Extent (2.50 – 2.99); LE: Low Extent (Below 2.50)*

**Source: Fieldwork, 2021**

Table 9 showed that each of items 1 to 16 on the level of students' attitude towards learning science obtained a mean score above 2.50. The above results implied that the respondents rated the level of students' attitude towards learning science as high. The grand mean score was **3.086**, which was above the criterion of **2.50** set for the study, while the standard deviation was **0.799**, indicating that the respondents were not far from the mean and from one another in their responses. Also, the table revealed that item 1 had the highest mean of **3.2826** while the least mean was that of item 5 with a mean score of **2.8849**. This result implies that the grand mean score of **3.086** indicated that the level of students' attitude towards learning science in senior secondary schools in Nigeria is on a high extent. Therefore, the level of students' attitude towards learning science in senior secondary schools in Nigeria is on a high extent with the grand mean score of **3.086**.

## Hypotheses

The hypotheses tested below were used to establish whether the independent variables of high stakes tests and classroom management have significant relationship with teaching styles of

teachers and students' attitude to learning science. This was done using multiple regression and analysis of variance (ANOVA) at .05 level of significance. The correlation matrix of the variables was first presented in a table to reveal the degree of inter-correlation among the independent variables in the study. The opinions of science teachers and students were equally tested using t-test to know whether there are significant differences or not in the opinions/responses.

**Table 10: Correlation Matrix of Independent and Dependent Variables**

Independent Variables	Discipline	Classroom design	Comm.	Students' Attitude
Discipline	1.00	.564*	.248*	-.100*
Classroom Design		1.00	.332*	-.125*
Communication			1.00	.425*
Students' Attitude				1.00

### Regression

**H<sub>0</sub>1:** There will be no significant composite influence of classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.

*Summary of regression on classroom management factors on students' attitude towards learning science*

**Table 11a Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate	Change Statistics				
					R <sup>2</sup> Change	F Change	df1	df2	Sig. F Ch.
1	.405 <sup>a</sup>	.164	.164	7.18626	.164	622.020	1	6347	.000

a. Predictors: (Constant), Classroom Management

**Table 11b Summary Table of ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig	Remarks
Regression	64245.068	1	32122.534	622.020	.000 <sup>b</sup>	Significant
Residual	327722.120	6347	51.642			
Total	391967.188	6348				

a. Dependent Variable: Students' Attitude Towards Learning Science

b. Predictors: (Constant), Classroom Management

Source: Fieldwork, 2021

Table 11b shows the regression correlation (R) among high-stakes tests, classroom management and students' attitude towards learning science in senior secondary schools in Nigeria. The results show that the regression correlation (R) is **.405**, R square equals **.164** and Adjusted R square equals **.164**. This implied that the combination of the variables (independent variables) contributed **16.4%**

to the variation in students' attitude towards learning science in senior secondary schools in Nigeria. Further verification using analysis of variance (ANOVA) produced  $F_{(1, 6347)}$  equals 622.020;  $p < .05$ . This implied that the linear relationship among the combined variables and students' attitude towards learning science is significant. This also means that there is a significant composite relationship between the independent variables of classroom management and students' attitude towards learning science in senior secondary schools in Nigeria.

**H<sub>0</sub>2: There will be no significant relative influence of classroom management factors (discipline, classroom design, communication) on students' attitude to learning science in senior secondary schools in Nigeria.**

**Table 12 Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta	t		Lower Bound	Upper Bound
(Constant)	34.015	.692		49.162	.000	.52385	1.65926
Classroom Management	-.218	.011	-.258	-19.751	.000	-2.81927	-1.47595

a. Dependent Variable: Students' Attitude Towards Learning Science

Source: Fieldwork, 2021

Table 12 presents the coefficients that indicate the relationship between each of the factors (classroom management) and students' attitude towards learning science in senior secondary schools in Nigeria. The results show contribution of the variables factors indicated by standardized Beta (B) weights in order of magnitude; classroom management contributed to students' attitude with  $B = -.258$ ,  $t = -19.751$ ;  $p < .05$ . The analysis of the result shows that the independent variables of classroom management have significant relationship with students' attitude towards learning science.

**H<sub>0</sub>3: There will be no significant mean difference between the opinions of teachers and students with regards to classroom management factors in senior secondary schools in Nigeria.**

The independent sample t-test was used in testing the opinions of teachers and students regarding classroom management in senior secondary schools in Nigeria.

**Table 13a Group Statistics on Classroom Management**

Respondents' Status	N	Mean $\bar{x}$	Std. Deviation	Std. Error
Students	5501	53.5352	9.45855	.12753
Classroom Management				
Teachers	848	55.6828	8.08643	.27769

**Table 13b Summary Table of Independent Sample t-test on Classroom Management**

Levene's Test		t-test for Equality of Means		
F	Sig.	t	df	Sig.

					(2-tailed)	Decision	Remarks
Equal Variances Assumed Classroom Management	45.363	.000	-6.268	6347	.000	Accept	Not sig.
Equal Variances Not Assumed			-7.028	1233.501	.000		

From table 13 above, the mean difference in the opinions of teachers and students regarding classroom management were higher for teachers ( $M=55.6828$ ,  $SD=8.08643$ ) than students ( $M=53.5352$ ,  $SD=9.45855$ ),  $t_{(6347)} = -6.268$ ,  $p > .05$ . Levene's test indicated equal variance assumed ( $F=45.363$ ,  $p=.000$ ). Thus, it is not significant. The null hypothesis of no significant mean difference in the opinions of teachers and students with regards to classroom management in senior secondary schools in Nigeria is therefore upheld. Thus, there is no significant mean difference in the opinions of teachers and students regarding classroom management in senior secondary schools in Nigeria.

## DISCUSSION OF FINDINGS

This section presents discussion on the findings of the study with respect to the influence of classroom management on students' attitude towards learning science in senior secondary schools in Nigeria. The hypothesis which sought the significant composite influence of classroom management on students' attitude towards learning science, agreed that the independent variables' factors have an influence on the attitude of students towards learning science. This means that the factors of classroom management have a significant joint influence on the attitude of students towards learning science subjects in senior secondary schools in Nigeria. This result is in tandem with a scholar who posited that certain factors, including testing and classroom management elements, have an influence on the way teachers teach and the how students learn (My Free School Tanzania, 2021).

The evaluation of hypothesis two, which also sought the significant relative influence of classroom management factors on students' attitude towards learning science, revealed a positive result. This means that classroom management factors have individual influence on the attitude of science students towards learning science subjects in senior secondary schools in Nigeria. This is in tandem with scholars who reported that the nature of the classroom environment greatly influences the learning environment, including students' behavior towards learning (Cox, 2019; Nwankwo *et al.*, 2019). Another group of scholars also posited that classroom management elements such as classroom design have a direct influence on student's attitude to learning, explaining that the design of the classroom can build or mar the interest of the students in learning. They went further to state that if students are not interested in science, they tend not to make an effort to learn and understand the meaning of concepts being taught to them (Zhi-Hong and Chi-Kin, 2017).

Analysis of hypothesis three which sought the opinions of respondents regarding the classroom management in senior secondary schools in Nigeria, revealed that the majority of the respondents agreed that classroom management also impacts the teaching and learning process in senior secondary schools in Nigeria. This is supported by a particular study that described the classroom



as both a physical and decision-making unit for the teacher as well as for the students and so management of the classroom environment can influence both users (Boniface, 2018). Another group of researchers came with findings that classroom management components including classroom size, classroom design and classroom discipline have significant influence on the instructional process of classrooms (Ajayi *et al.*, 2017). In a study by yet another group of scholars, it was again reported that classroom management is one of the most neglected areas in secondary schools, relating the success or failure of any teaching and learning process to the way the classroom is managed (Omenka and Otor, 2015).

## CONCLUSION

Classroom management are critical to the success and progress of the teaching and learning process in both developed and developing countries, including Nigeria. On the basis of these research findings, the study has proven that the classroom management factors have a strong relationship with students' attitude towards learning science in senior secondary schools in Nigeria. It was observed that even though mostly neglected, classroom management plays a significant role in the successful teaching and learning process in classrooms. From the analysis and results of the findings, it could be concluded that students tend to develop a positive attitude towards learning science, when the learning environment is conducive. It can also be concluded that students generally have interest in science, even though some find science activities a bit challenging.

## RECOMMENDATIONS

Classroom management systems are put in place to increase student success by creating an orderly learning environment that enhances students' academic skills and competencies, as well as their social and emotional development.

i. Much consideration needs to be taken into account when developing guidance and classroom management. Positive environments are created through appropriate psychosocial aspects and physical attention of the teacher towards students. It is possible for teachers having the students wanting to learn and it is possible to create an appropriate classroom behavior and management system. However, without structure in daily routines, students are left to stray from appropriate learning activities. With discipline and appropriate classroom design, a positive learning environment and structure, the student and the teacher will benefit as a whole.

## Suggestions for Further Studies

Based on the findings and conclusion of this study, and the fact that the study did not cover all aspects, the following suggestions were made for further studies in the resulting areas.

i. There is need for more research focusing on knowledge and skills of teachers in terms of managing their classrooms effectively and modifying instruction that could enhance learning opportunities for all students with their varying learning abilities.

## REFERENCES

- Anna Markowitz. "Changes in School Engagement as A Function of No Child Left Behind: A Comparative Interrupted Time Series Analysis". *American Educational research Journal*, 5(4) (2018): pp. 721-760.
- Boniface Ugwumaduka. "Classroom environment and academic interest as correlates of achievement in senior secondary school chemistry in Ibadan south West local government area, Oyo state, Nigeria". *Global Journal of Educational research*, (2018).
- Derek Cheung. "The Key Factors Affecting Students' Individual Interest In School Science Lessons". *International Journal of Science Education*, 40(1) (2018): pp. 1 – 23.
- Gavin Fulmer, Hongjia Ma and Ling Liang. "Middle School Student Attitudes Toward Science". *Asia-Pacific Science Education*, 5(9) (2019), pp1-21.
- Helen Egeberg, Andrew McConney and Anne Price. "Teachers' Views on Effective Classroom Management: A Mixed-Method Investigation in Western Australian Schools". *Educational Research for Policy and Practice*, 36(2): (2020): pp. 1-18.
- Imran Latif, Lubna Salamat, Mohammad Iftikhar and Muzaffar Hussain. "The Impact of Classroom Management Strategies on the Students' Achievement". *Asian Journal of Social Sciences and Humanities* 2(2); (2018): pp. 13 – 27.
- Isaac Nwankwo, Omebe Mathew and Anikeze Christiana. "Extent of Teachers' Classroom Management Practices for Quality Teaching and Learning in Secondary Schools in Ebonyi State". *International Journal of Humanities and Social Science* (2019); 9(1), pp 106 – 113.
- Janelle Cox. "Classroom Management for an Effective Learning Environment". *Teach Hub*, (2019).
- Jebson Sofeme and Amos Hena. "Students' Attitude Towards Science Subjects In Senior Secondary Schools In Adamawa State, Nigeria". *International Journal of Research in Applied, Natural and Social Sciences*, 3(3), (2015): pp. 117 – 124.
- Maria Corazon and Eugeni Guhao. "Student Discipline In The Classroom: Public School teachers' Point of View. *International Journal of Scientific and Technology Research*, 9(1), (2020), pp. 271 – 282.
- My Free School Tanzania. Factors that determine the choice method to be used in teaching history. Retrieved from <http://myfreeschooltanzania.blogspot.com/2014/08/factors-that-determine-choice-method-to.html> on 11th June, 2021.
- National Academy of Science. "The Design of Learning Environments". <https://www.nap.edu/read/9853/chapter/10> (accessed June 20, 2020).
- Nicholas Omenka and Eriba Otor. "Influence of Classroom Management on Students' Academic Achievement in Science and Mathematics in Oju Local Government Area of Benue State". *Global Journal of Interdisciplinary Social Sciences*, 4(4), (2015), pp 36 – 40.
- Oluwatosin Victor Ajayi, Christina Tanko Audu and Evelyn Ehi Ajayi. "Influence of class size on students' classroom discipline, engagement and communication: a case study of senior secondary schools in Ekiti state, Nigeria". *Sky Journal of Educational Research*, 5(5), (2017), pp. 34 – 041.
- Tina Jarvis and Anthony Pell. "Factors influencing elementary school children's attitudes toward science before, during, and after a visit to the UK National Space Centre". Wiley Online Library, <https://doi.org/10.1002/tea.20045> (accessed May 10 2020).

Wan Zhi Hong and Lee John Chi Kin. “Hong Kong secondary school students’ attitudes towards science: a study of structural models and gender differences”. *International Journal of Science Education* (2017), pp. 1–21.