An Assessment of classroom Management Strategies and Students' Academic achievement in Mathematics in Education vi, Lagos State

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Abstract

This study was an assessment of classroom management strategies and students' academic achievement in mathematics in Education District VI. The study adopted a descriptive research design and stratified random sampling techniques was used to select ten schools in the Education District VI of Lagos State while simple random sampling technique was adopted for the selection of forty students and two teachers in each school. The total sample size of 400 students and 20 teachers participated in the study. Two research questions and two hypotheses were raised, two instruments were used for collection of data, namely: Classroom Management Strategies (CMS) and Mathematics Achievement Test(M.AT).The face and content validity of the instrument were done by the experts in Test Measurement and Evaluation. The reliability coefficient value of CMS was found to be 0.7, it was therefore found to be reliable. The data collected was analyzed using descriptive statistics such as frequency counts, percentages, mean, standard deviation and inferential statistics such as Pearson Product Moment Correlation Coefficient analysis. The null hypotheses were tested at 0.05 significance level. The result from the study shows that weighted mean of 3.43 out of the maximum obtainable score of 4.00, which is higher than the standard mean of 2.50. This signified that Mathematics teachers practice Teachers' Reward System during Mathematics class. Also, the result reveals a low and negative linear relationship between those two variables (r =-.021); which was not statistically significant because p>0.05. Therefore, the null hypothesis was not rejected. The result implies that there is negative relationship between the two variables; that is, increase in classroom discipline during mathematics class has tendency of decreasing students' achievement in Mathematics. It was therefore recommended that teachers should be conscious of the type ofdiscipline they introduced during teaching and learningof Mathematics.

Key words: Mathematics, Classroom Management, Academic Achievement

Introduction

Education is a mechanism for implementation of national development The National Policy on Education (2014) emphasised on proper administration,

—gement and implementation of the educational system in the educational System in all areas of the society. In nurturing these aims and objectives the teachers have important role to play. The school teacher has the role of providing direction and exerting influence on students in order to achieve the school's goal (Leithwood, 2012, Orodho, Wawerun,Ndichu&Mthinguk, 2013). It becomes impera tive for teachers to achieve good class management, a teacher needs to pay attention to two qualities which are efficiency and effectiveness. The efficiency of a teacher is the measure of the direct activities of his class. For a teacher to efficiently manage his class, he needs to be qualified, systematic and enthusiastic. A teacher needs to be qualified for the job. He needs to have the knowledge of not only what he has to teach, but also of how to teach. In terms of knowledge, the teacher must always know more than his students. Also, the effectiveness of a teacher is measured by the academic achievements of his students and the level to which they display the type of behaviour expected of them by the society. For a teacher to manage his class effectively he needs to assess his students continuously, communicate clearly and set a good personal example. All these are meant to provide effective classroom management strategies in secondary school, which will enhance better academic performance of students.

Classroom management therefore is the process by which a teacher gets his or her pupils to co-operate in directing actions towards achieving ,the proper atmosphere or climate in the classroom for learning. The importance of effective classroom management in a school setting cannot be over emphasized. Teacher is primarily the manager of classroom because he is the one that motivates, initiate and maintain acts of classroom management. Classroom management has been seen across various research studies as one of the variables that affects students' academic performance. Classroom management differs from one teacher to another because, teaching style, preparedness and number of students in the classroom amongst other factors. Despite the situation, there are forthright classroom management strategies a teacher can adopt in order to control students' behaviours and academic engagement, establishing an orderly environment in class. These strategies include discipline, the use of verbal instruction, instructional supervision and the use of rewards. Verbal instruction is one of the effective strategies a teacher can use in the classroom and the use of verbal instruction is one of the most effective classroom management strategies adopted by the teachers. Effective teaching and learning cannot take place in poorly managed classroom (Jones & Jones 2010). Poorly managed classroom are usually characterized by disruptive behaviours such as sleeping, late coming, noise making, miscopying of notes, eating, calling of nicknames, verbal or physical threat to fellow students or the teacher (Ekere, 2016). Again, teachers may adapt various behavioural reinforcement strategies inform of reward to encourage student learning. The teachers should keep on rewarding the successive desired behaviour of students in class through verbal praise, tangible/materials rewards or ignoring the undesired ones.

Mathematics is seen as fundamental to the understanding of other fields of study such as science and technology, social sciences, medicine, etc. Mathematics being one of the core subjects in education and chief corner stone in sciences should not be handled with levity. Igbokwe (2013) stressed that without mathematics there will be no technology and without technology there will be no modern society. This implies that a strong background in mathematics is critical for the nation's development. Mathematics is universal not only in the way it influences the basic sciences, applied sciences, engineering and technology but also, its influences on day-to-day activities (Markarfin, 2011). Due to the importance of this subject, many institutions of higher learning require a credit pass from candidates who seek admission to study in their institutions. It is therefore not surprising that the interest of stakeholders such as educationist, internal and external examination bodies, mathematics teachers, parents and government are finding solution, to the problems that militate against, the teaching and learning of mathematics in secondary schools. The performance of students in mathematics has become a source of concern to education stakeholders. It therefore becomes necessary to ask the question; is there any impact of teacher's classroom management strategies on the academic achievement of students in mathematics.

Statement of the problem

In spite of the importance of mathematics as a subject, the poor performance of students in mathematics in secondary school has been a source of concern to education stakeholders. Many reasons that could have contributed to this are attitude of students towards the subject, lack of instructional materials, poor verbal instruction from teacher, lack of the use of reward system by teacher, poor classroom management by teacher, lack of classroom discipline among others. From this trend it becomes crucial to ask the question; is there any impact of classroom discipline and teacher reward system on the students' academic achievement in mathematics? This study, therefore, assesses classroom discipline and reward system and their relationship with students' academic achievement in mathematics in Education District VI of Lagos State.

Objective of the study

I. To assess classroom discipline in secondary school mathematics classroom.
ii. To assess teacher reward system in secondary school mathematics classroom.
iii. To examine the relationship between classroom discipline and mathematics achievement.
iv. To investigate the relationship between teacher reward system and mathematics achievement.

Research Question

i. How does mathematics teachers maintain classroom discipline during Mathematics class?

ii. What classroom reward system do mathematics teacher practice in the class?

Research hypotheses

i. There is no significant relationship between classroom discipline and academic achievement of students in mathematics.

ii. There is no significant effect of teachers' classroom reward system on the academic performance of students in mathematics.

Methodology

The descriptive research design was adopted for the study. Data collected on the classroom discipline and reward system of teachers were used as independent variable and the academic achievement of students in mathematics as dependent variable. The target population for this study comprises all senior secondary school II students and their teachers in Education District VI of Lagos State. At the time of the study, there are 22 senior secondary schools with 4,824 students in SS II and 612 teachers in Oshodi/Isolo zone. The sample size composed of 400 students and 20 teachers from ten schools randomly selected for the study. The research adopted stratified random sampling techniques in collecting data relative to the study.

Two instruments were used for collection of data, namely: Classroom Management Strategies (CMS) and Mathematics Achievement Test(MAT).The instrument titled: Classroom Management Strategies (CMS) is divided into three. Section A contains teachers' information such as age, years of teaching experience, highest level of educational qualification and years of teaching mathematics. Section Bcontains ten items on classroom discipline, while section C contains ten items on Teacher Reward System. Each respondent is required to respond appropriately by ticking 1 to 4 rating how each statement described the identified variable. Numbers 1 to representing: 1–Strongly agree, 2–Agree,3–Disagree, 4–Strongly Disagree. In Mathematics Achievement Test (MAT) the Blooms Taxonomy of Education objective was used to guide the structure of the items in the instrument. The reliability coefficient value of CMS was found to be 0.7 respectively, it was therefore found to be reliable.The face and content validity of the instrument were done by the experts in Test Measurement and Evaluation.

Therefore, 25-items multiple choice mathematics achievement test with four options per item was constructed and the duration set for students to answer these questions was 1hour. The face and content validity of the instrument were done by the experts in test, Measurement and evaluation. Data were analysed

using descriptive analysis such as frequency count and percentage, mean and standard deviation. Also, inferential statistics was adopted such as Pearson Product Moment Correlation Coefficient analysis.

Results

Gender Distribution of Students

Both male and female students were included in the study. Table 1 and Figure 1 displayed the distribution of students according to their gender. The table revealed that female student respondents (63.0%) were more than male student respondents (36.8%). The information is also graphically displayed in figure 1. One of the respondents did not respond to the item.

Table 1: Gender Distribution of Students

Gender	Frequency	%
Female	252	63.0
Male	147	36.8
No Response	1	0.2
Total	400	100.0

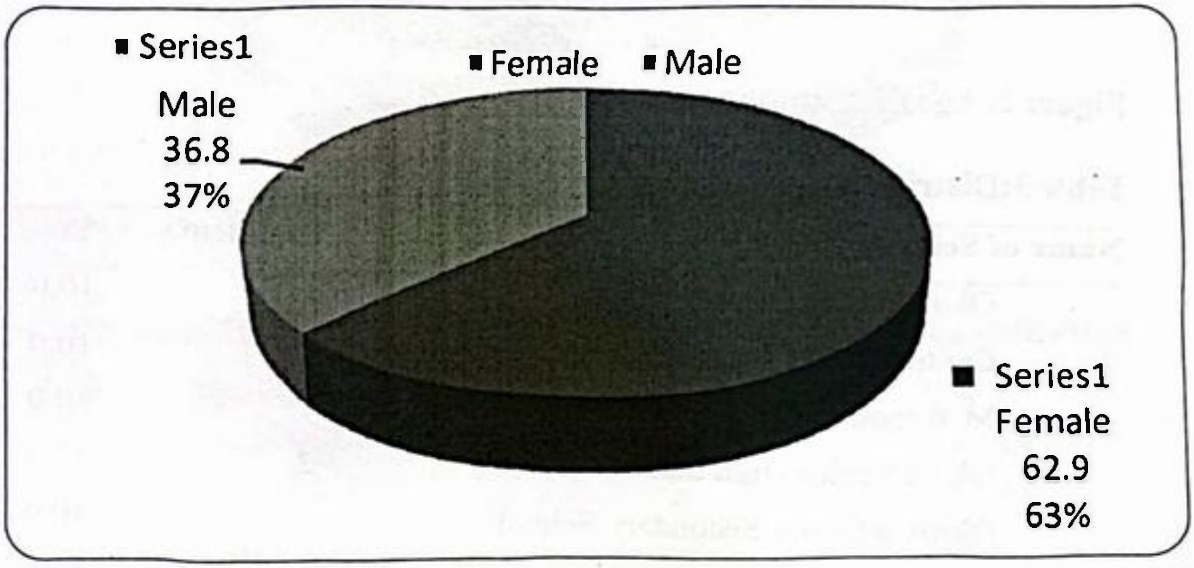

Figure 1 Gender Distribution of Students

Age Distribution of Students

The age range of the respondents was between ten and twenty. Those respondents that fall between 10-15 years were 70.0% while 16-20 years were 28.8%. Five of the respondents which represented 1.2% of the sampled students do not respond to the item. Table 2 and figure 2 displayed information on distribution of respondent based on their gender.

Table 2: Age Distribution of Students

Age range	Frequency	%
10-15	280	70.0
16-20	115	28.8
No Response	5	1.2
Total	400	100.0

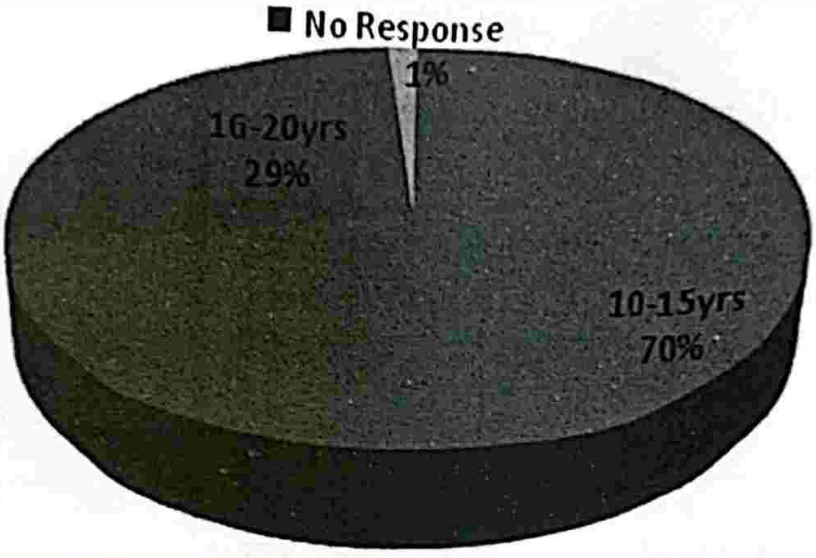

Figure2:Age Distribution of Students

Table 3:Distribution of Teachers based on School

Name of Schools	Frequency	%
Okota Senior Grammar School	2	10.0
Central Senior High School	2	10.0
Metropolitian Senior College Isolo	2	10.0
Okota Senior High School	2	15.0
OkeAfa Senior Secondary School	2	10.0
Ijeshatedo Senior Grammar School	2	10.0
Ansarudeen Comprehensive High School	2	10.0
Matori Senior Grammar School	2	10.0
Ajumoni Senior Secondary School	2	10.0
Okota Senior Secondary School	2	10.0
Total	20	100.0

Age Distribution of Teachers

As presented in Table 4.5, majority of the responding teachers (70%) fall between ages 50 - 59years; while 25% of them were between 40-49years. Only one of the respondents is under 40 years. The information is graphically presented in figure 4

Table 4: Age Distribution of Teachers

Age Range	Frequency	%
UNDER40	1	5.0
40-49	5	25.0
50-59	14	70.0
Total	20	100.0

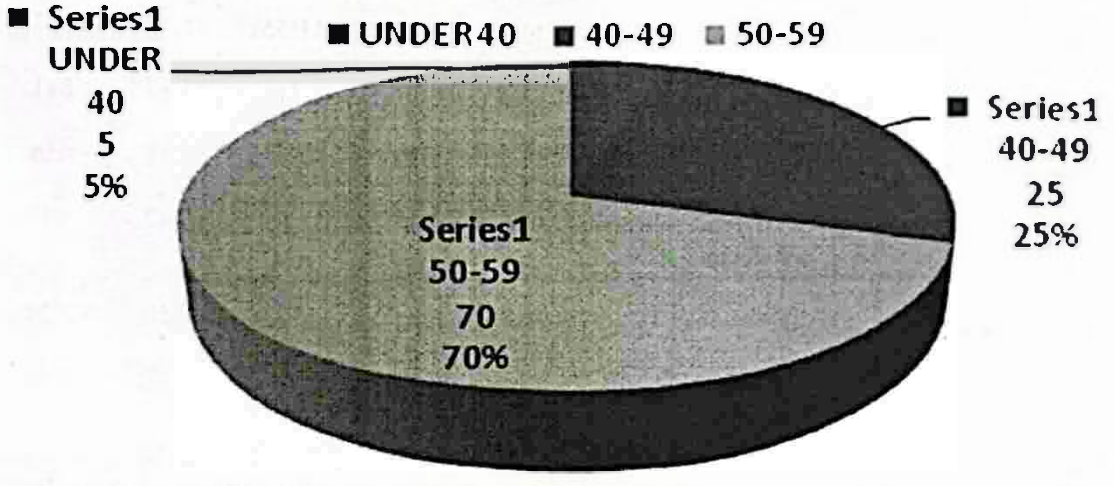

Figure 3: Age Distribution of Teachers

Table 5: Distribution of Teachers based on their educational qualification

Qualification	Frequency	%
B.Sc	8	40.0
B.Ed	11	55.0
Other	1	5.0
Total	20	100.0

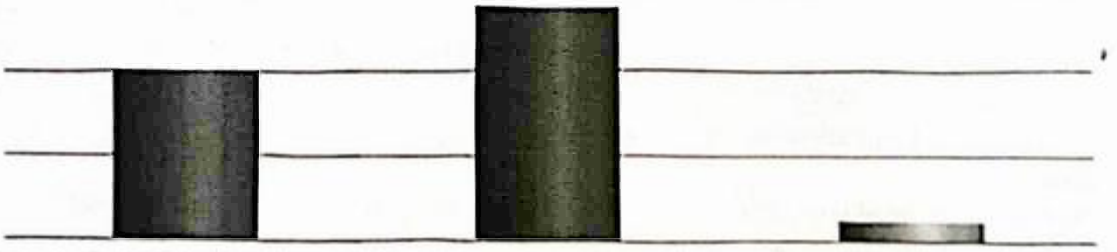

Figure 4: Distribution of Teachers based on their educational qualification

ResearchQuestion1: How does mathematics teachers maintain classroom discipline during Mathematics class.

Table 6: Teachers' classroom discipline in Mathematics class

Statements	Strongly Agree	Agree	Disagree	Strongly disagree	Mean	Std. Deviation
Teacher gives instruction when to start writing during math lesson so that one can pay attention	15(75)	4(20)	-	-	3.79	.419
Teacher stresses on disciplinary rules and regulations of the mathematics class	10(50)	8(40)	1(5)	-	3.47	.612
Teacher monitors all activities in the class whenever he is teaching	12(5)	7(5)	-	-	3.63	.496
Teacher corrects any student's misconduct immediately when he/she sighted it while teaching	10(50)	7(35)	2(10)	-	3.42	.693
Teacher don't give a damn to noise making in the class	1(5)	4(20)	3(15)	11(55)	1.74	.991
Teacher do flog any student with unruling attitude in the class	2(10)	7(35)	8(40)	2(10)	2.47	.841
Everyone in mathematics class is positively engaged	5(25)	11(55)	3(15)	-	3.11	.658
Students don't enter and go out from class as they wish during mathematics class	9(45)	9(45)	1(5)	-	3.42	.607
Teachers are less bothered even when students eat during class	1(5)	2(10)	2(10)	13(65)	3.50	.924
Students do keep silence during mathematics	2(20)	10(50)	2(10)	1(5)	3.00	.791
				Weighted Mean	3.16	

Table 6 presents the weighted mean of 3.16 out of the maximum obtainable score of 4.00, which is higher than the standard mean of 2.50. This is an indication that Mathematics teachers in Education District VI, Lagos state maintain classroom discipline during Mathematics class for Senior Secondary School Two Students.

Research Question 2: How does mathematics teachers' practice teachers' reward system during mathematics class?

Table 7: Teachers' Reward System in Mathematics class among Senior Secondary School Two Students in Education District VI, Lagos state

Statements	Strongly Agree	Agree	Disagree	Strongly disagree	Mean	Std. Deviation
Teacher do praise students for giving correct answer to questions during lessons	10(50)	9(45)	-	-	3.53	.513
Teacher use material reward to motivate students interest in mathematics class	5(25)	9(45)	3(15)	1 (5)	3.00	.840

I do give positive comment on student work to encourage them	12(60)	6(30)	-	1 (5)	3.53	.772
I do not have ti me to make comments on students' work	1(5)	-	9(45)	9(45)	3.37	.761
I do not praise student for work well done during lesson	-	-	8(40)	10(50)	3.56	.511
Teachers giving reward to students causes distractions	-	1(5)	10(50)	7(35)	3.33	.594
Praise and recog nition of students or excellent performance encourages others	13(65)	2(10)	1(5)	3(15)	3.32	1.157
Clapping hands for students for good performance motivates others	11(55)	7(35)	-	-	3.61	.502
Rewarding a student for good behaviour in the classroom enhances student achievement	10(5)	9(10)	-	-	3.53	.513
Giving reward due encourage students in class	8(40)	9(45)	-	-	3.47	.515
				Weighted Mean	3.43	

Table 7 presents the weighted mean of 3.43 out of the maximum obtainable score of 4.00, which is higher than the standard mean of 2.50. This signified that Mathematics teachers in Education District VI, Lagos state practice Teachers' Reward System during Mathematics class for Senior Secondary School Two Students.

Hypothesis 1:

There is no significant relationship between classroom discipline and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state.

Table 8: Relationship between Classroom Discipline and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state

Variable	N	Mean	Std. Deviation	R	Sig.	P	Remark/ Decision
Classroom Discipline	400	30.70	2.301	-.021	0.686	>0.05	Not Significant/ Do not reject Null Hypothesis
Achievement in Mathematics	400	12.94	3.749				

**Correlation is significant at the 0.01 level(2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Pearson Product Moment Correlation Coefficient analysis was conducted to ascertain the direction and magnitude of relationship that exist

between Classroom Discipline and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state; Table 8 is the presentation of the findings. Result reveals a low and negative linear relationship between those two variables (r = -.021); which was not statistically significant because p>0.05. Therefore, the null hypothesis was not rejected. The result implies that there is negative relationship between the two variables; that is, increase in classroom discipline during mathematics class has tendency of decreasing students' achievement in Mathematics. This may however depend on the type of discipline the teacher applies during the teaching and learning process

Hypothesis 2:

There is no significant Relationship between Teacher's Classroom Reward and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state.

Table 9: Relationship between Teacher's Classroom Reward and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state

Variable	N	Mean	Std. Deviation	R	Sig.	P	Remark/ Decision
Reward	400	33.37	2.870	.008	0.872	>0.05	Not Significant/ Do not reject Null hypothesis
Achievement in Mathematics	400	12.94	3.749				

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the0.05 level (2-tailed).

Table 9 is the presentation of Pearson Product Moment Correlation Coefficient analysis was conducted to find out ascertain the direction and magnitude of relationship that exist between Teacher's Classroom Reward and Achievement in Mathematics among Senior Secondary School Two Students in Education District VI, Lagos state. The finding reveals that although the direction of relation is positive between the two variables but there exists almost no relation between those two variables (r = 0.008) and the relationship is notstatistically significant because p>0.05. Therefore, the null hypothesis was not rejected. The result implies that Teacher's Classroom Reward system has no tendency of reducing student achievement and also has almost no relationship with student's achievement in Mathematics. This means that the type of reward being giving by the teachers has no propensity to stimulate students to perform better in Mathematics. This may also depend on the mode of reward being offered by the teachers to the students.

Discussion of Finding

The result from the finding showed that students' academic achievement in mathematics does not significantly depend on classroom discipline. The finding also implies that there is negative relationship between the two variables; that is increase in classroom discipline during mathematics class has tendency of decreasing students' achievement in Mathematics. This awkward trend could be because of the nature of the discipline and fear of the subject by students. Disciplinary measures like administration of corporal punishment added with the initial fear of the subject will further heighten and complicate the problem of the student in the classroom. Since the fear of the subject had been there, any form of discipline could result in students developing mathephobia and consequently this would negatively impact on their performance. In a situation like this, rather than discipline, understanding, love, friendliness and much encouragement may solve the problem.

This finding of negative relationship of discipline and academic achievement is supported by Canter (2016), he asserted that although discipline is one of the most common problems for teachers, some disciplinary measures such as corporal punishment should not be used because no evidence has suggested that it has produced better result academically, morally or that it improves student achievement. He further explained that corporal punishment may inculcate fear in the mind of the students or lead to physical injury if not well administered by the teacher; both situations may lead to absconding or absence from school not only yield to poor academic achievement in mathematics. David (2005) also asserted that the use of punishment in school can lead to undesirable side effects such as anxiety, anger and negative feelings towards the teacher.

Findings from this study though negatively related found a significant relationship between discipline and academic achievement. This corroborate findings of previous studies which suggest that discipline is an important factor in students' academic performance (Simba, Agak&Kabuka, 2016; Dawo&Simatwa, 2010; Njoroge &Nyabuto, 2014; Sureiman, 2010; Tikoko&Bomett, 2011). However, the findings however contradict Gakure et al. (2013) which indicated that discipline has minimal and uncertain influence on pupils' performance in examinations in Gatanga District, Kenya and Zimmerman and Kitsantas(2014) which indicated that self-discipline does not predict students' academic achievement among selected high school students in the USA. Alabi and Saidu (2019) also found a significant relationship between teacher's frequent use of discipline and academic performance of history students in Ilorin metropolis of Kwara state, Nigeria.

Moreover, this study reveals that though teachers use the reward system in their classrooms; this reward system does not significantly affect students'

academic achievement in mathematics. The likely explanation for this may be because of lack of motivation on the part of the students to study mathematics. In support of this, Perkins (2012) stated that before a student can profit from any given reward system, he/she must be ready to learn. That is to say that in spite of the reward system used by the teacher during mathematics lesson the academic achievement of the student also depends on the readiness of the student to learn. Smith (2017) asserted that one of the five examples of positive reinforcement in classroom management is that if a student interacts appropriately with their peers in group activity this will most likely lead to further invitations to join in such activity in the future.

The non-significant relationship between teachers' reward system and academic achievement however contradicts a number of findings from previous studies. Alabi and Saidu (2019) found a significant relationship between teacher's frequent use of reward and academic performance of history students in Ilorin metropolis. Bukoye and Abdulkadir (2008), also submits that reward is a pleasant stimulus that increases the frequencies of behaviour. Given the aforementioned in this and the previous paragraph of this article, it is obvious that the relationships between teacher reward system and academic achievement of students are inconclusive. There is therefore the need to look at the types of reward, the relevance of the reward system to the beneficiary's nature and characteristics etc etc. According to Pirasteh (2003), if a teacher fails to recognise individual differences in students, he or she is likely to reduce the effectiveness of the incentives.

Conclusion

The findings from this study showed that teachers maintain discipline in the mathematics classroom and they also practice reward system. Also discipline in the classroom was found to be negatively related with students' academic achievement in mathematics. There is also no significant relationship between teacher reward system in the classroom and mathematics achievement of students.

Recommendations

Based on the findings of study, the following recommendations are made:

1. Mathematics teachers should be commended for their use of discipline and reward system in the mathematics classroom.
2. They should be encouraged to sustain the usage of both classroom discipline and reward system.
3. Mathematics teachers should be cautioned on the type of discipline meted out in the mathematics classroom to avoid negative influence of the discipline on academic achievement of students in mathematics.
4. Mathematics teachers should be educated on the appropriate us of reward system to improve students' academic achievement in mathematics in the classroom

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