THE RELATIONSHIP BETWEEN EFFECTIVE CLASSROOM MANAGEMENT AND STUDENTS' ACADEMIC ACHIEVEMENT IN SCIENCE

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Abstract

Science occupies a unique position among the subjects taught in secondary schools; therefore it is very important to lay very good and solid foundation in the secondary schools. The aim of this study therefore was to examine the relationship between effective classroom management and students' academic achievement in science as a Subject. The study was carried out in ten randomly selected secondary schools in Shomolu local Government Area of Lagos State. The design adopted for the study was a descriptive survey approach. Simple descriptive analysis was used. The major instrument used in this study were student questionnaire, teacher questionnaire and physics achievement test, data were gathered with the research instrument and were analyzed, the research question were investigated and four hypothesis were duly tested using ANOVA and t-test statistics. Based on the findings of this research, it was concluded that effective classroom management skills or techniques have strong and positive influence on student achievement in science.

Key words: Science in secondary schools, effective classroom management skills, students' achievement in science.

Introduction

The classroom is that space bounded by the wall and roof which a teacher houses his pupils/students for the purpose of giving instruction to such pupils /students. In other words, it is a shelter for both teachers and learners so as to engage in educative activities. Classroom teaching is a complex task in a complex environment. The classroom is the immediate management environment for formal knowledge acquisition. It is made up of the teacher, the learners, learning equipment and the environment. Evertson and Weinstein (2006) define classroom management as "the actions teachers take to create an environment that supports and facilitates both academic and social-emotional learning" (pp. 4-5). This definition concentrates on the responsibility of the teacher and relates the use of classroom management strategies to multiple learning goals for students. Following this definition, effective CMS seem to focus on preventive rather than reactive classroom management procedures (Lewis & Sugai, 1999). Teachers, however, also frequently use reactive strategies (e.g., punishing disruptive students; Rydell & Henricsson, 2004; Shook, 2012), whereas it is unclear whether these strategies effectively change student behaviour. This may be caused by a lack of knowledge about the effectiveness of preventive strategies (e.g., Peters, 2012), or by a lack of belief in their effectiveness. Teachers do not always believe in the effectiveness of particular strategies despite ample empirical evidence that the strategy has been implemented successfully in many classrooms (e.g., Smart & Brent, 2010). One example is that beginning teachers are generally advised to be as strict as possible in the first week of their internship and then slowly to become less authoritarian, whereas first establishing positive teacher-student relationships has been proven far more effective in regulating student behaviour (e.g., Bohn, Roehrig, & Pressley, 2004).

Moreover, more and more technology is finding its way into classrooms, for example, the use of interactive whiteboards, tablets, and laptops (Schussler, Poole, Whitlock, & Evertson, 2007). These changes presumably have had a large impact on the demands placed on teachers' classroom management skills (e.g., rules and procedures to facilitate cooperative learning). Although, to the best of our knowledge, no studies have been conducted to explicitly compare the effectiveness of particular CMS(Classroom Management Strategies) in more traditional versus more modern classrooms, an up-to-date overview of studies conducted in the last decade is expected to provide insight into which CMS have been proven (still) to be effective in modern classrooms. Kimberly (2001) stated the five characteristics of a classroom as security, open communication, mutual liking, shared goals and connectedness. Management on the other hand, can be seen as the process of designing and maintaining any setting in which people work in groups for the purpose of accomplishing predetermined goals. The idea of "any setting" equally indicates that management is applicable to all establishments which do not exonerate educational setting. The Oxford Dictionary (6th edition) defines management as the act of running or controlling or skill of dealing with people or situations in any way.

Loomiz (1980) defines management as a method where a group of people at the highest level of organization plan, organize, communicate, coordinate, control and direct the actions and activities of people who work for the organization toward the achievement of organizational objectives. Some people believe that education and management are incompatible; management is seen as process that happens in industry but not in education. The management role of a teacher therefore is not the same as that of an accountant or of a bank manager, but a management role is certainly an institution that has specific objectives and a school is not an exception. In order to achieve its aims, a school has to have objectives, and to achieve these objectives, the various people with responsibilities in the school especially in a classroom have to plan, organize and lead.

Classroom management is the term used by teachers to describe the process of ensuring that classroom lessons run smoothly despite disruptive behavior by students. The term also implies that the prevention of disruptive behavior. It is possibly the most difficult aspect of teaching for many teachers; indeed experienced problems in this area cause some to leave teaching altogether. Classroom management is a complex setoff articulate behavior which the teacher uses to establish and maintain conditions to enable learners achieve instructional objectives efficiently. Brown (1995:150) looked at classroom management as a "process involving the organization of certain academic tasks which are essential for effective teaching and learning in a specific set up". Classroom management first became a popular topic in education during the 1970's and 1980's (Tavares, 1996 and Butchart, 1995). The focus in these early years was primarily on making the classroom safe and establishing behavior management, used to control and shape students behavior to conform to school rules by the classroom teacher. Classroom management using an authoritarian or punitive approach did repress disorderly behavior, but it did not foster student's growth or allow the acquisition of more sophisticated modes of learning, such as critical thinking and reflection (Jones, 1995).

The physical and psychological environment of the school may be such that do not promote orderly behavior. School that are too large, impersonal, competitive, lack rules and regulations, and meaningful curriculum may create conditions not conducive for learning. Teacher's levels of intelligence, subject matter mastery in science such as biology, physics, etc and professional competence may determine the relationship with students and success in behavior may be influenced by the learners" psychological disposition which in turn may have its origin from the home (Eze, 2002, and Sontrock, 2004).

The expectations of science every teacher is that learners will develop appropriate interpersonal communication skills, self-discipline, and problem solving skills. These attributes if acquired go a long way to minimize problem behavior in the classrooms and ensure an increase in skills and behavior in the classrooms and ensure an increase in skills and behaviors that lead to social competence and effective classroom climate (Sorcinelli, 2002). Research has shown that learners" ability to interact effectively with peers, teachers and family members is crucial to their socio-psychological development and adjustment at school (Santrock, 2004). Inadequate socio-psychological has also been observed to relate positively to low academic achievement in science subjects among learners in schools (Charles and Senter, 2002).

The teaching of biology, physics and other science subjects in secondary schools has been an issue of major concern to science educators because these subjects must be taught in the senior secondary school. The teaching of science provides the learners with understanding, skills and experimental knowledge needed for scientific research fostering economic and technological growth in the society, where they live thus improving the standard of living. For a long time science has been mystified as difficult and hence as one of the most dreaded subjects by students. This dislike for science subjects might be attributed to so many reasons such as the subject itself, the methods which are being used to teach the subject, lack of effective classroom management skills of the science teachers' is one factor that may affect science student achievement skills of the teacher and so on. As stated by Mills, 1991 "the teaching approach adopted by a teacher is one factor that may affect student achievement, therefore the use of appropriate teaching method is critical to the successful teaching and learning of science subjects such as physics, biology, etc. Thus, improved teacher preparation and professional development in classroom management are part of the solution towards a better learning of science subjects. It is evident that a well improved and structurally planned classroom management technique can help to achieve a better performance of students in schools, it is therefore important for teachers to consider some of the basic tips required when trying to implement classroom behavior management strategies.

Statement of the Problem

In Nigerian secondary schools, the most common problem reported by science teachers is the one related to behavior management in the classroom (Igbo, 2005). The evidence is irrefutable, surveys of graduates" education schools and colleges indicate that sometimes in an attempt to maintain order in the classroom sometimes teachers can actually make the problem worse which leads to known implications such as; lackadaisical attitude towards learning, loss of interest in the subjects and in general a poor academic performance of such a child. Considering this observation, one wonders the extent these teachers are aware of and apply research supported classroom behavior management skills. Over the years there has a record of poor performance of students in science examination which are written every year in the country. It has also been observed that students no longer have interest in learning science. Since classroom management is a keystone for students learning and has been cited by virtually every researcher and reviewer who looked at the relationship between educational practices and student results (Angell, 1991; Harwood,1992 et al) If the school authorities and science teachers emphasize more on how to implement classroom management skills perhaps these problems stated above could be minimized. However, there is a need to determine the strategies teachers perceive to be effective in handling disruptive behavior in secondary schools, therefore this research work will look into better ways of implementing effective management strategies which aid in the improvement of students in science and also how the interest of students in the science subjects could be regained.

Literature Review

It can be rightly argued that the teacher is the biggest influence on how well students behave in a classroom. This means that it is not only the quality of the students, the involvement of the parents, or the administration that make the most impact, but the teacher's attitude. This is premised on the fact that some students tend to live up to the teacher's expectations. In this instance when the teacher expects great things from them, they would surely rise to the challenge. The corollary is that when you expect poor classroom behaviour they would also meet that challenge. The overall value of effective classroom management and its positive effect in guaranteeing the achievement of outstanding educational outcomes is well captured by Emmer and Stough (2001). Ovira (2006) reported that the variables that measure the classroom learning environment as perceived by students actually predicts their attitude towards schooling and academic performance. They argued that the ability of teachers to organize classrooms and manage the behaviour of their students is critical to achieving positive educational outcomes. Although sound behaviour management does not guarantee effective instruction, it establishes the environmental context that makes good instruction possible. Reciprocally, highly effective instruction reduces but does not eliminate classroom behavioural problems. He argued that effective classroom management procedures promote independent learning and success for all students in classrooms which are productive, orderly and pleasant.

It is important to consider the importance of maintaining order in effective classroom management. This has become necessary because establishing and maintaining order is central to what educators do. According to Doyle (2011) "the underlying assumption is that classroom order encourages student engagement which supports learning. Without order, a teacher is hard pressed to promote student learning". The implication of this, according to him is that "classroom management results in the coupling of order and learning." He therefore, saw classroom management as the progression of strategies that teachers utilize to promote order and student engagement and learning. The consequence of this position is the prompt enhancement of the right learning outcomes. Classroom management is a prerequisite for achieving instructional objectives and safeguarding the well being of students for whom the teaching and learning activities are centered (Ogunu, 2000). Classroom management entails planning, supervising, controlling and coordinating the activities of pupils in teaching -learning process. According to Grieser (2007), successful classroom management enhances students questioning and exploration only if the learning environment is conducive. Classroom management techniques as used in this study, refers to tactics adopted by teachers to ensure decorum in the classroom and thus create a healthy and conducive atmosphere for learning.

Classroom teachers are known as classroom managers because of their roles in managing learning activities, instructional procedures, the prevailing attitudes, feeling and atmosphere in the classroom. Teaching and classroom management cannot be separated because effective classroom management is characterized by effective discipline, and discipline is seen as an instruction, training of the mind, and subjection to school rules and regulations. Though discipline may seem harsh and unpractical for students, it is the most essential element in securing effective classroom management and an excellent academic performance of students which leads to quality education. Classroom management task consists of planning lessons, providing a conducive learning environment, teaching students and perhaps the most daunting task of all, is appropriately responding to students' behavioral problems. This is a great task that teachers face on daily basis which require them to work diligently and continuously to maintain a positive classroom atmosphere. The ability of teachers to organize of their students is critical to achieving positive educational outcomes. Classroom teachers are known as classroom managers because of their roles in managing learning activities, instructional procedures, the prevailing attitudes, feeling and atmosphere in the classroom. Teaching and classroom management cannot be separated because effective classroom management is characterized by effective discipline, and discipline is seen as an instruction, training of the mind, and subjection to school rules and regulations. Though discipline may seem harsh and unpractical for students, it is the most essential element in securing effective classroom management and an excellent academic performance of students which leads to quality education.

Gordon (2001) believes the teacher has the opportunity to create a learning environment that is kind and respectful in order to meet the nurturing need. Students will be better able to reciprocate genuine loving, caring behaviors toward other people if the demonstration of affection is modeled for them in classroom. The fourth category of needs that Gordon (2001) states surrounds self-esteem, selfconfidence, a sense of purpose, and empowerment that will directly relate to love and acceptance. If a student feels cared for and can express those emotions and behaviors, the student will continue to build selfesteem and confidence. The need of self-actualization can be fulfilled when the more basic needs have been met. All of these theories are an intricate part of the history of classroom management research. Together the theories help build a foundation upon which we can continue to build our research on classroom management, inclusion of disabled students, reactive and preventative responses, and making value judgments.

Purpose of Study

The main purpose of this study is to determine the impact of effective classroom management on students' academic performance in science

Research Hypotheses

In the study, the following null hypotheses were formulated:

Ho₁: There is no significant difference in the classroom management among the selected schools.

Ho₂: There is no gender difference in the performance of science students.

Ho3: There is no significant difference between science students' performance and effective classroom management.

Ho4: There is no significant difference in science teachers' perception of effective classroom management.

Methods

A descriptive survey approach was adopted for this study to gather relevant information. The research was a survey on how effective classroom management skills or techniques could positively influence the achievement of science students. The study is carried out in some ten randomly selected senior secondary schools in Shomolu Local Government Area of Lagos state. The population of this study was directed towards science senior secondary school (science) students and teachers in the ten selected schools in Shomolu L.G.A. of Lagos state. The sample will consists of SS2 and SS3 science students in public secondary schools in Local Government area of Lagos state. In all, an equal amount of 80 students each from SS2 and SS3 classes and 20 teachers was selected from ten secondary schools for the study.

Instruments

Data were collected using a structured classroom behavior questionnaire. It was a modified Likert type questionnaire developed by the researchers through extensive review of literature and from their personal experiences as teachers and interaction with other teachers. The instrument has two main parts. The first part requested for relevant information on the personal data of the respondents. Part two of the instrument sought for information that assisted in answering the research questions that guided this study. The items on sections B were structured on a four point rating scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). An achievement test for students in SS2 classes of the selected schools was also used in order to assess the science students' academic achievement before and after the study. The achievement test contains multiple-choice questions from past WASSCE questions. The reliability coefficient of the question are KR-20 was 0.76.

Data Analysis

The data obtained through the questionnaire were collected, organized and analyzed using mean and standard deviation. The decisions on the quantitative data obtained from the internal scale were based on the real limits of the number corresponding with the obtained mean rating. The t-test statistics was also used at the 0.05 level of significance to see if there was a significant relationship between effective classroom management and students' performance in science subjects such as physics and biology.

Ho₁: There is no significant difference in classroom management among the selected secondary schools. The summary of the data analysis is presented in table 1

Testing of Hypotheses

Table 1: Classroom Management in selected Secondary Schools

Schools	Number	Mean	STD	F	Sig	
School 1	20	52.55	1.98743	3.282	0.08	
School 2	20	53.21	1.66796			
School 3	20	56.75	1.20498			
School 4	20	57.25	1.32362			
School 5	20	57.65	1.19048			
School 6	20	59.15	1.1175			
Total	120	56.09	0.61936			

P > 0.05

From the above table, it is easy to see that the results show that significant differences exist among the classroom management of the selected schools for the study.

Furthermore, it is necessary to find out if there is a difference between the performances of boys and girls in the selected schools and the researchers used the t-test statistics to know whether the hypothesis is true. To accomplish this, we used hypothesis two,

Ho₂: There is no gender difference in the performance of science students.

Table 2: Gender difference on students" performance in science

Gender	N	Mean	Std. Dev.		Df	Sig. P
Male	76	10.3947	3.24172	0.578	118	0.991
Female	44	10.7501	3.25737	0.577	89.566	

P < 0.05

Ho3: There is no significant difference between science students' performance and effective classroom management.

Students' Performance	10.525	120	3.23833	66.064	119	0.889	
Classroom Management	56.0917	120	6.7848				

P< 0.05

Thus from the above table having level of significant to be 0.05 while P=0.89 and t=66.064. this result therefore shows that the hypothesis is accepted implying that there is no significant difference between science students' performance and classroom management.

Ho4: there is no significant difference in science teacher perception of an effective classroom management.

Table 4: Teacher Perception of Classroom Management

Teacher perception of classroom management	N	Mean	Std Deviation
	6	21	3.16228
Variable	X2	DF	P
Teacher perception	0.67	4	0.96

P < 0.05

The results showing that X²=0.67 and P=0.96 with 0.05 level of significance implies therefore that the null hypothesis is accepted which means that there is no significant difference in the perception of teachers pertaining effective classroom management.

Discussion

The concept of classroom management is broader in scope than that implied in more old fashioned terms like discipline or "control". It includes all the things a teacher must do to foster pupil involvement and cooperation in classroom activities and to establish a learning environment. The concept spans a very broad range of activities, encompassing such things as arranging the physical setting, establishing and maintaining classroom procedures, monitoring pupil behaviors, dealing with deviant behavior, keeping pupils accountable for work, and conducting lessons that keep pupils on task (Emmer, 1987; Sanford, Emmer & Clements, 1983). In short, a well-managed classroom is a task-oriented, predictable environment where students know is expected of them and how to succeed. Research shows that in a class such as this, a majority of pupils will attain well (Brophy, 1979; Brophy % Good, 1986; Good, 1982; 1983; Medley, 1987). Research findings also converge on the conclusion that teachers who approach classroom management as a process of establishing and maintaining effective learning environments tend to be more successful than teachers who place more emphasis on their role as authority figures or disciplinarians (Brophy, 1988).

A close examination of these findings shows that the causes of classroom disruptive behavior may originate from the school, the teacher or the child as shaped by the environment. These findings are in line with Santrock"s (2004) observation that the causes of disruptive behavior in the classrooms are traceable to three important sources: the teacher - his personality and professional competences and the child. That these factors, which cause disruptive behavior is a common feature of our society that has attracted the attention of different individuals in Nigeria. In the school system, deviant behaviors have manifested in the form of truancy, loitering, bulling, examination malpractices and lateness to schools. The teachers, school, students and society directly or indirectly are causes of classroom disruptive behavior in secondary schools. Government funding of schools has been very poor and available funds have not been judiciously managed. Many children by the circumstance of their birth, family, and peer and general societal influences find proper adjustment in and out of school difficult. These are the major problems that give to the disruptive problems, which are encountered in schools.

The significance of the classroom as an ecological system in which students build their understandings, attitudes and feelings about themselves and their social world is now very much to the forefront in the educational literature (Ball, 1980; Chazan & Galton, 1984; Davies 1982; Doyle, 1977, 1981; Fenstermacher, 1978; Hargreaves et al. 1975; Harre & Secord, management has always lurked in the shadows of research on teaching, despite a widespread concern for management among teachers and the public (Coates and Thoresen, 1976; Elton, 1989; Fuller, 1969; Gallup, 1983; Kyriacou, 1987; Veenman, 1984; Wragg, 1981). Maduewesi (2005) emphasized that with recent publicly on gender issues, women are no longer regarded as decorative accessories and objects to be moved like before and girls of this age treated with respect and of great importance most especially when it comes to getting the education required.

This finding is not surprising as every child, be it male or female has had equal rights to education and every child has been given an equal opportunity to perform to his/her outmost capabilities. Each student is given an equal right to excel tremendously in his/her academics. This result is not unconnected to the findings of some gender-based science researchers who have reported that what both the "feminist empiricist" and the "liberal feminist critics" seem to agree is that female in principle will produce exactly the same scientific inquiry (Howes, 2002; Barton, 1998; Sinnes, 2006). They also believe that initiates that build on the assumption that females and males are equal in their approach to science and that inequality in science and science education is caused by political, educational and social factors external obstacles. There is need therefore to give boys and girls exactly the same opportunities and in Nigeria, genderachievement studies include Abiam and Odok (2006) who found no significant relationship between gender and achievement in number and numeration, algebraic processes and statistics. They however found the existence of a weak significant relationship in geometry and trigonometry. Though globally the mathematics education (STME) has produced inconclusive results, one meta-analysis covering the period 1974 - 1987 on mathematics and gender led to two conclusion: the average gender gap is very small (statistically insignificant), and the fact that the differences tend to decline with time (Friedman, 1989).

Neither women nor men should be given any special preference. All it takes is the consciousness and one will have the gender lens on. The main core message in gender approach therefore is that men and women play different roles to promote the well-being of the family and society, (Ikegulu, 2000). In a research by Parson who used cognitive motivational constructs to explain the course selection behaviors of high school students' choice was expectation of success. The relationship between expectation of success and behavioral choice has been described as a number of researches such as Kukla (1978) Atkinson (1964) Feather (1959) and Edward (1954). The relationship between expectancy and achievement behaviors also forms major components of attribution theory (Weiner, 1974) and self-worth theory (Beery, 1975), Covington and Beery (1976). According to these theories, the expectations that individuals have that they will successfully complete a task is a main factor in whether they attempt the task or not and does not depend solely on their physical capacity.

Conclusion

The findings of this study indicate that the causes of classroom disruptive behavior are traceable in general to the society and in particular to the schools, teachers, children and the homes. Both teachers and students have a significant role to play when it comes to implementing effective classroom management. It might seem that it is only the teachers work to keep the class in order but these result have clearly shown that student and the society as a whole also have a role or two to play in order for classroom activities to run smoothly without disruptions of any sort. From these results it can be clearly stated that the hypothesis 1,3 and 4 which are in the order: classroom management, relationship between science students' performance and classroom management and teacher perception and classroom management are significant while the hypothesis 2 which finds out if gender difference has anything to do with students' is correlated with utilization of ineffective classroom management by the teachers. Nworgu (1988) and Adeniyi (1986) found out that academic performance of a student is a measure of the teacher"s entire work in training, development and growth. They further stressed out that how effectively a teacher manages his/her class is positively related to the students" academic performance in an organized and standardized external examination conducted by a statutory examination body such as WAEC or NECO.

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