

Influence Of Clean School Environment and Standard Class Room Size and Facilities on Students' Achievement in Biology in Gwagwalada Area Council of Fct-Abuja

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Abstract

The study investigated the influence of two school environmental variables on students' achievement in biology in Gwagwalada Area Council of FCT, Abuja. An ex-post-facto design was adopted. The sample was 300 SS2 biology students from six senior secondary schools. Two research questions and two hypotheses were formulated to guide the study. Two validated instruments known as Checklist on Influence of school Environment (CISE) and Biology Achievement Test (BAT) which yielded reliability coefficients of 0.82 and 0.80 respectively using KR 20 method for CISE and split half method for BAT were used for data collection. The research questions were answered using the Mean and Standard Deviation scores, while the hypotheses were tested at 0.05 significant level using t-test. It was found that clean school environment and standard classrooms and size significantly influenced students achievement in biology, $0.005 < 0.05$ and $0.001 < 0.05$ respectively. It was recommended that principals of senior secondary schools in Gwagwalada Area Council of FCT-Abuja should continue to uphold and improve on the cleanness of their schools' learning environment since this can further enhance student's achievement. School stake holders should as a matter of policy insist on schools providing standard classrooms, with standard facilities also to enhance further students' achievement.

Introduction

Science being the foundation of sustainable development is undeniably and unquestionably the key to national economic growth and prosperity (Samba, 2010). It is the foundation of scientific and technological breakthrough in any nation of the world. It is in this light that the Federal Government of Nigeria FGN (2004) enshrines in the National Policy on Education the promotion of science as a means for technological development. In this regard, Ogherohwo (2006) maintains that one of the policy statements for developing science and technology in Nigeria stresses that the educational system should emphasize science at all levels. On his part, Owolabi (2004) views science as an integral part of human society which influences every sphere of human life. This explains why the effective teaching of sciences, biology in particular becomes a matter of concern to educators.

Hills (2009) attributed poor performance of students in biology to the poor state in which science is taught in our schools, perhaps due to provision of substandard class-sizes and dirt school environments. The school environment is the focus of the education industry, on which success of teaching depends. Berry (2002) explains that the school environment involves the totality of the atmosphere within which the school staff and students function. It is a dynamic and

comprehensive picture of all those influences that mold physical, emotional, psychological and social life of the members of the school. With regards to this, Udeozor (2004) maintains that the concept of school learning environment constitutes various strands which include the provision of standard class rooms and making sure that school environments are clean among others.

On his part, Tsavga (2011) maintains that the learning environment plays a vital role in determining how students perform or respond to circumstances and situations around them. This implies that no society is void of environmental influences. The learning environment determines to a large extent how a student behaves and interacts, that is to say that the environment in which we find ourselves tend to mould our behaviour so as to meet the demands of life whether negatively or positively. The author opined that the desire for both qualitative and quantitative education has multiplied the problem of providing an effective and conducive learning environment for teaching and learning. In Nigeria, there is an increase in the number of students' enrolment in schools with little or no regards to improving the learning environment so as to better their performance.

Biology can be studied in open fields, bushes, parks and other places where life exists. In the study of biology, the main objects of study for

the understanding of principles are in the environment. According to Rohana and Kamaruzaman (2009), intelligence is not the only determinant of academic performance of a student. Academic performance of a student is always associated with many components of learning environment. The environment no doubt has great effect on the cognitive development and functioning of an individual. To some extent, heredity determines the capacity of an individuals' learning. However, the environment enables the child to attain these limits or fall short of them as the case may be (Davidoff, 2001).

Available statistics from National Examination Council (NECO) and West Africa Examination Council, WAEC Chief Examiners' report (2003, 2004, 2006, 2007 and 2008) on Senior Secondary Students' achievement in Biology revealed a poor achievement. A number of factors are said to have contributed to the students' poor achievement. The authors stress that a host of other factors may surround students' poor achievement in biology. In this regard Ajewole (2000) stated that some of these factors include: poor study habits and lack of available resource materials, teachers' ineffectiveness, the teaching method and the type of learning environment available for both the students and the teachers. From the authors view, the poor performance of students in Biology may be a reflection of the type of learning environment.

On his part Ajaja (2000) is of the opinion that, the desire for education has multiplied the problem of providing an effective and conducive environment for teaching and learning of Biology. There is an increase in the number of students' enrolment in schools with little or no regards to improving the learning environment and also with no regards for some environmental variables such as Cleanliness of the school environment, Standard classrooms and class size. This explains why this study focuses on the cleanliness of the school environment and the availability of standard sized classrooms with adequate relevant facilities.

Purpose of the Study

The purpose of this study was to determine the influence of school environment on the students' achievement in biology among Senior Secondary Schools in Gwagwalada Area Council of Abuja. The

study however focused on the following specific objectives:

- i. To find out the extent to which cleanliness of the school environment influences students' achievement in Biology.
- ii. To determine if size of classrooms and availability of facilities has any influence on students' achievement in Biology.

Research Questions

The following research questions were raised to guide the study.

1. What is the difference in the achievement of Biology students from clean school environments and those from dirty school environments?
2. What is the difference in the mean Biology achievement scores between students from schools with standard classrooms size and those without standard classrooms size?

Hypotheses.

The following hypotheses were formulated for testing:

1. There is no significant mean difference between Biology students' achievement from the schools with clean environments and those from dirty school environments.
2. There is no significant difference between the mean scores of Biology students from schools with standard classrooms (having standard facilities) and size and those without standard classrooms and size.

Methodology

The study used ex-post facto design. The study area was Gwagwalada Area council of FCT – Abuja. The population of study comprised all the 6,373 students in the seven senior secondary schools in the area council. A sample of 300 male and female students was drawn using purposive sampling. Two instruments, the checklist on influence of school environment on students' achievement in Biology (CISE) and Biology Achievement Test (BAT) which were validated by two experts in science education and one expert in measurement and evaluation all from Benue State

University, Makurdi were used to collect the data. The validators made some suggestions on how to improve the instruments. Such suggestions were considered by the researchers and relevant corrections were effected. CISE was used to checklist the items listed in the instrument while the BAT was used to test the students. CISE was made up of 20 items and yielded 0.82 reliability coefficient using KR20 while BAT structurally consisted of 40 items and it yielded reliability coefficient of 0.80 using split half. Two research assistants from each school were trained by the researchers and assisted to administer the BAT to the students. Mean (M) and standard deviations were used to answer the research questions while t-test was used to test the hypotheses at 0.05 level of

significance. The searchers assumed that clean school environments and standard classroom sizes would enhance students' achievement in biology in the area of study.

Results

The results are presented in Tables for each research question and each hypothesis, and are analysed and interpreted at 0.05 level of significance.

Research Question I

What is the difference in the mean achievement scores of biology students from clean school environments and those from dirty school environments? Answer to research question 1 is contained in Table 1.

Table 1: Mean Achievement Scores on school cleanliness.

School cleanliness	N	Standard Deviation	Mean	Mean difference
School with poor sanitation	100	3.84334	13.4200	1.625
Clean school	200	5.06470	15.0450	
Total	300	4.74888	14.5033	

Table 1 shows that the mean scores for students from clean schools is 15.0450 while that of students from schools with poor sanitation is 13.4200, this shows that there is a mean difference of 1.625 in favour of schools with clean environment.

Research Question 2

What is the difference in the mean biology achievement scores between students from schools with standard classroom and size and those without standard classroom and size. Answer to research question 2 is contained in Table 2.

Table 2. Mean Achievement Scores of Standard Classroom and Size and Substandard Classroom and Size.

School cleanliness	N	Standard Deviation	Mean	Mean difference
Standard classroom and size	100	5.43702	17.1200	3.925
Substandard classroom and size	200	3.74394	13.1950	
Total	300	4.74888	14.5033	

Table 2 shows that the mean achievement scores for students from schools with standard classroom and size is 17.1200 while that of students from schools with substandard classroom and size is 13.1950. The mean achievement scores of students with standard classroom and size is therefore higher than that of the schools with substandard classroom and size with a mean difference of 3.925. This implies that standard classroom and size enhanced the student's achievement more than the substandard classroom and size in the learning of biology.

Hypothesis 1.

There is no significant mean difference between biology students' achievement from the schools with clean environments and those from dirty school environments. Test of hypothesis 1 is contained in Table 3.

Table 3: t-test of Mean Difference between Students from Clean and Dirty School Environment in Biology Achievement.

School cleanliness	N	Mean	t cal	df	Sig.(2 tailed)	Decision
School with poor sanitation	100	13.4200	-2.826	298	0.005	Significant
Clean school	200	15.0450				

P < 0.05

The result in Table 3 shows that there is a significant difference in students achievement in biology between those from clean school environment and those from poor school environment ($t_{298} = -2826$, $p < 0.05$). Thus the null hypothesis is not rejected. This means that there is a significant difference between biology students' achievement from schools with clean environment and those from dirty school environments.

Hypothesis 2.

There is no significant difference between the mean achievement scores of biology students from the schools with standard classroom and size and those from schools with sub-standard classrooms and size. Test of hypothesis 2 is contained in Table 4.

Table 4: t-test of Mean difference in Achievement of students from schools with. Standard Classroom and Size and those without in Biology.

standard classroom and size	N	Mean	t cal	df	Sig.(2 tailed)	Decision
Standard classroom and size	100	17.1200	7.317	298	0.0001	Significant
Substandard classroom and size	200	13.1950				

P < 0.05

The result in Table 4 shows that there is a significant difference between the mean achievement scores of biology students from the schools with standard classroom and size and those from schools with sub-standard classroom and size ($t_{298} = 7.317$, $P < 0.05$). Thus the null hypothesis is rejected.

Discussion

This section deals with the discussion of the results as presented in Tables. The variables under discussion are school cleanliness and class size and facilities. The result of hypothesis one shows that there is significant difference between the achievement of students from clean schools and those with poor sanitation. Students in the clean schools have a higher achievement scores than students from schools with poor sanitation. This finding is in agreement with Achide (2002) and Balogun (2001) who observed that school

cleanliness is very important and mandatory in any school environment. These authors maintained that unhealthy environment breeds disease and sickness. Moreover, in sickness students cannot learn or study properly.

This findings, however is contrast with the report of Yusuf (2004) and Ukachi (2006) that showed that students from clean school environment did not achieve better than students from schools with poor sanitation. This difference may have resulted probably because of the combination of other environmental factors such as lack of laboratories, libraries, standard classroom and size, among others.

The study reveals that there is a significant difference between the achievement of students with standard classroom and size and students with substandard classroom and size. Students from schools with standard classroom and size have a

higher achievement than students from schools with substandard classroom and size. The reason could be that a caring and supportive school environment is conducive for effective teaching and learning. This finding is in agreement with that of Ugwuoke (2008) who maintained that there is an explicit relationship between physical characteristics of school buildings and educational outcomes. Obaka (2005) stated that in standard classes students received more individual attention, asked more questions and participated more fully in the learning. In consonance with the finding, Udoh (2007) stressed that evidence continues to accumulate that standard class size improves student achievement, reduces discipline problems and provides a lasting benefit to both students and teachers.

Conclusion and Recommendations

The paper concludes that the two school environmental variables namely, school cleanliness and class size have positive effects on the learning of biology in secondary schools, in the area of study. Based on the findings of the study, the following recommendations are made.

1. Principals of Senior Secondary schools in Gwagwalada Area Council of FCT, Abuja should as a matter of urgency take the cleanliness of their schools learning environment, as a priority; by employing environmental care service providers who shall maintain the environment tidy. Students could also be involved in the daily school cleaning as this may go a long way in enhancing their achievement in biology, as they could be motivated to learn in these very clean environments.
2. The FCT government, area councils, philanthropists as well as school authorities should give award to the best schools in terms of cleanliness.
3. School proprietors should ensure the continuity in the provision of large classrooms and relevant facilities in all schools without discrimination.

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