

Original Article

The Relationship among School Environment, Student Approaches to Learning and their Academic Achievement in Senior Secondary School Physics

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ABSTRACT

This study examined the relationship among educational environment, students approaches to learning and their academic achievement in senior secondary physics. One hundred students were randomly selected across five randomly selected secondary schools. The researcher selected twenty physics student using the simple random technique. The instruments used were questionnaire in facilitating data collection. The simple percentage and Chi-square methods were employed for the analysis, and the results of the finding show that the school physical environment have significant influence on the students' academic achievement in senior secondary physics, significant relationship exist between school social environment and student academic achievement in senior secondary physics and there is significant relationship between students' attitude to learning of physics and their academic achievement in senior secondary physics. Finally, recommendations made for physics teachers, school heads, chemistry students, and government for ways of improving students' performance in physics, providing enabling environment for effective teaching and learning of physics in secondary school and inculcating positive attitude in students towards learning physics.

INTRODUCTION

Research consistently shows that educational environment has the greatest potential to influence children's education. For sometimes now, psychologist and educationist have been arguing on the factors that affect academic performance of learners in the subject offered of which physics is one of them. While some stress that school building are of critical importance to the teaching and learning process some argued on the relationship between physical characteristics of school buildings and educational outcomes.

The learning of physics is influenced by many factors such as the educational environment and students' approaches to learning the subject. Historically, the assumption has been that as long as the basic physical requirements of the school building are met. The child's learning depends in large part on pedagogical, psychological and social variables. There is now considerable empirical support for the argument that a variety of sustainable design characteristic can have a significant influence on students' academic performance.

There is no controversy among scholars, researchers, educational planners, and administrator about the fact that educational facilities are essential ingredients in the effort to realize effective teaching learning outcomes. Haroon (1999) asserts that the quality of facilities has an impact not only on educational outcomes but on the well-being of the pupils and teachers. Adeboyeje (1994) and Ayodele (2004) have variously pointed out that the availability of adequate school buildings, classrooms, chairs, desks, laboratories and other facilities are necessary for the accomplishment of any educational goals and objectives. They also revealed that effective management of school facilities brings about development of educational programmes and facilitates educational process. It enhances the usefulness in the determination of the worth of a school, influences the relationship between schools and community and usefulness as cultural civic, recreational and youth center.

Moyer (1995), states that school building design features and component have been proven to have a measurable influence upon pupils' learning and their performance in schools. The overall impact a school building has on pupils can be either positive or negative, depending upon the condition of the building. Overcrowded school building and classrooms have a negative influence upon students' performance, especially for minority and poverty pupils proper and accurate hearing is essential to

students' ability to learn in the classroom. Noise distracts interest in learning and influence students' performance but also the condition of a school building influence the work and effectiveness of a teacher as well as students approaches to learning of subject such as physics.

STATEMENT OF THE PROBLEM

The problems facing education in this country since independence are high rate of school enrolment, inadequate instructional materials, high drop-out, inadequate facilities, increased school expenditures, mass failure in public examination and poor quality of school leavers. These challenges led to the introduction of the 6-3-3-4 system, the problem of quality education still persists. The National Policy on Education (1998) enunciated the need for a highly motivated conscientious and effective teaching staff at all levels of educations. It is a known fact that each level of education as well as the subject being taught has their aims and objectives, if the aims and objectives of education especially that of teaching physics in senior secondary schools is to be achieved the learning environment must be improved and student attitudes towards learning the subjects must be changed.

REVIEW OF LITERATURE

Learning process has attracted the attention of psychologists and educationists for more than a century. As far back as the 1870's William James felt that learning especially during childhood shapes and directs our later lives. Man's survival and his adaptation and adjustment to the ever changing circumstances in the environment largely depend on the individual's capacity to learning (Nwadinigwe, 2000).

Hilgard (1971), sees learning as "the persisting changes as a result of practice, the process by which new and altered behaviours come about as a result of prior response, provided the change cannot be attributed to growth or temporary change. Blair (1975), defines learning as any change in behaviour that is as a result of experience and that causes people to face latter situations differently. Okoye (2003) defines learning as a relative permanent change on behaviour resulting from experience.

The quality of the teachers' lesson presentation has been found to be a major determinant of pupil's performance during lesson evaluation (Akande, 1991). If the teaching learning environment is adequately enriched through high quality and interesting presentation, the probability that learning effectiveness may result is very high.

Olatunji, (2005), readiness for learning depend on physical and mental maturation and also in the accumulation of experiences as a foundation or the building of new learning.

Motivation can be defined as "the needs, desires, interest or a consideration of reason that arouses a person and direct him towards a specific goal" (Olatunji, 2005).

According to Akande (2002), motivation means a definite, natural and positive desire to do certain things. Prior independence, there was little or no innovation in secondary school science in Nigeria (Busari, 2006). Nevertheless, a re-awakening of science curriculum innovations was observed in the Western World, which particularly led to the awareness with regards to the need to re-examine in this part of the world, the school science curriculum objectives, content and evaluation. According to Berkheimer and Lot (1984) learners' concept attainment is facilitated when teachers are knowledgeable about the structure and pedagogy of treating such concepts. The science curriculum developers expect every student entering senior secondary school level to be of least at late concrete level (Busari, 2006). moreover, there are some concepts that have algebraic expressions and symbolic representations which are abstract in nature at SSS I and SSS II. There might be a problem if the students of these forms are still at intuitive or concrete stage.

According to Broadbent (1958) "Attention" is serial: one object can be attended to at moment" even when the learner is attentive, understanding of the scientific information is crucial. According to Glaxton (1980), understanding a concept or relationship goes beyond the association of parts put together which is rather like constructing a model of a molecule with one of those kits that we used in school physics. Processes that influence individual's understanding of a concept before selection into memory involve: meditation, integration and elaboration. The extent to which the science teacher makes the scientific information o be natural also aids learning. As Anderson (1976) indicated, when the sentences are more natural, there is always a greater wealth of potential elaborations from the learners. This is because people tend to recognize the associated descriptions once they have earlier observed the object or phenomenon.

There are many studies available that have been contributed on the effects of these cognitive and sensory variables on achievement in physics lessons (Johnstone, 1983). The aim of physics education is not just to load the students with knowledge but to contribute to their mental development, therefore, the content and methodology of physics teaching should be organized in such a way as to lead to this kind of change in students. In accordance with (Tobin, Tippins and Gallard 1994). It is in correct for teachers of physics lesson to assume that their students are capable of learning using their own learning methods. Physics teachers should first be aware of their own teaching approaches, and then pay attention to the learning approaches of their students.

According to Cukrowska, Staskun and Shoeman (1999), what is important is to ensure that students learn how to establish connections between the subjects of the elements at these three levels. Certain factors and activities apart from physics subjects are taken into consideration in the measurement of students' achievement. In one study, university lecturer state that the main factors influencing achievement in courses are attitude and motivation (Covington, 2000).

Schibeci and Riley (1986) and Schibeci (1989), have examined the effects of students' background features and their perceptions of the attitudes toward science on achievement. These studies reveal the home environment has that a considerable effect when science achievement. Among variables under considerations, the effect of students' attitudes on science and mathematics achievement is particularly emphasized (Osborne, 1976 and Weaver, Hounshell and Coble, (1979). In general, these studies maintain that attitude change is related to achievement. Many studies have proved that the gender of the student significantly affects scientific achievement and attitudes (Fleming and Malone, 1983). Several studies have also proven that many socio-economic (background) factors constituting the physical environment have an effect on scientific achievement (Gabel and Samuel, 1990).

PURPOSE OF THE STUDY

The purpose of the study is to examine the concept of senior secondary school physics, to ascertain the effect of educational environment on students' academic achievement in physics and to find out the students' approaches to learning senior secondary school physics.

RESEARCH HYPOTHESES

The following hypotheses were postulated to guide the investigations:

- Ho₁:** The school physical environment has no effect on students' academic achievement in senior secondary school physics.
- Ho₂:** The school social environment is not influenced by the students' achievement in senior secondary school physics.
- Ho₃:** Students' attitude to learning of physics is not influenced by their academic achievement in senior secondary school physics.

RESEARCH DESIGN

The study adopts a descriptive survey research design to find out the relationship among educational environment, student approaches to learning and their academic achievement in senior secondary physics. The survey research design is aimed at collecting large and small samples from the populations in order to examine the distribution, incidence and interaction of educational and sociological phenomena.

RESEARCH INSTRUMENTS

Questionnaire was the main instrument used to collect information from the respondents in this research work. The questionnaire consisted of two parts. The first part deals with the personal data of the respondents while the second part deals with research questions which consist of five options (Strongly Agreed, Agreed, Undecided, Disagreed, and Strongly Disagreed) of which each respondent is expected to tick only one that best suit his/her opinion on each item.

DATA ANALYSIS

The data analysis and results are presented with special reference to the research hypothesis. The data were then used to test the three hypotheses formulated to guide the study using the Chi-square (X^2) statistical method of data analysis. Also, interpretation of the results as well as discussion of finding was done.

Table 1: School Physical Environment and Students' Academic Achievement in Senior Secondary School Physics

Variables	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed	Total	X ² cal	X ² tab
School physical environment	815	424	27	52	1	1319	150.304	9.488
Students' academic achievement in senior secondary school physics.	505	680	51	30	3	1269		
Total	1320	1104	78	82	4	2588		

Significant, df = 4, P < 0.05

Table 1 above revealed that calculated X² was 150.304 while the critical value of X² was 9.488 at 0.05 level of significance and degree of freedom 4. Since the calculated Chi-square value is greater than the critical value, the null hypothesis, which states that there is no significant relationship between the school physical environment and students' academic achievement on senior secondary physics, was rejected.

Hence, there is a significant relationship between school physical environment and students' academic achievement in senior secondary school physics.

Table 2: School Social Environment and Students' Academic Achievement in Senior Secondary School Physics

Variables	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed	Total	X ² cal	X ² tab
School social environment	580	684	150	82	6	1502	106.258**	9.488
Students' academic achievement in senior secondary school physics.	300	440	240	98	15	1093		
Total	880	1124	390	180	21	2595		

****Significant, df = 4, P < 0.05**

Table 2 above revealed that the calculated value of X² was found to be greater than the table value or the critical value of X² at 0.05 level of significance with degree of freedom 4. In view of this, the null hypothesis which states that there is no significant relationship between the school social environment and students' academic achievement in senior secondary school physics is rejected. Hence, there is significant relationship between the school social environment and students' academic achievement in senior secondary school physics.

Table 3: Students' Attitude to Learning of Physics and Students' Academic Achievement in Senior Secondary School Physics

Variables	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagreed	Total	X ² cal	X ² tab
Students' attitude to learning of physics	750	552	90	50	4	1446	**60.540	9.488
Students' academic achievement in senior secondary school physics.								
Total	1290	1244	219	86	13	2852		

****Significant, df = 4, P < 0.05**

At 5% level of significance and degree of freedom 4, the critical value of X^2 is 9.488 while the calculated value of X^2 is 60.540. Hence, the null hypothesis which says there is no significant relationship between students' attitude to learning of physics and their academic achievement in senior secondary school physics is rejected. This implies that students' attitude to learning of physics has significant effect on their academic achievement in senior secondary school physics.

DISCUSSION AND CONCLUSION

The result of the analysis revealed that there is a significant relationship between school physical environment and students' academic achievement in senior secondary school physics. This implies that school physical environment has some influence on students' academic achievement in senior secondary school physics. This may be due to the fact that physical facilities, human resources, and the relationship between them determine the type of school physical environment. This result was in consonance with that of Bolorunduro (1998) who discovered in his studies that students' with adequate laboratory facilities in physics perform better than those in schools with less or without facilities. This is simply because laboratory form part of school physical environment. Also, it was discovered that poor facilities and inadequate space as well as the arrangement of items including seats in classroom, library and laboratory would affect the organization of learning experience, but whenever the physical environment is well taken care of, the learners are likely to have a record of high achievement. Also conducive school climate gives room for students' to work hard and enhance their academic achievement in school.

The research result obtained from the data analysis indicates that students' academic achievement in senior secondary school physics is influenced by the level of teachers – students' relationship in schools. This result agrees with the opinion of most psychologists that poor relationship has diverse effect on students' attitude in respect of events in the teaching – learning environment. Therefore teacher should be friendly and not mean; appear admirable but not seductive; attends to the needs of students and be aware of the difference between them and be fair and firm in dealing with them.

Also, when a healthy teacher – teacher relationship exist in a school, it goes a long way in the promotion of learning among students and this enables them to share knowledge and experience which will enhance better school environment.

From the finding of the study, it reveals that there is a significant relationship between students' attitude to learning of physics and their academic achievement in senior secondary school physics. Students' attitude to subject and teacher has significant effects on students' performance in the teacher's subject such as physics. Although, this study found that conducive school climate gives room for students' to work hard and enhance their academic achievement in school. Invariably, the school organisational climate promotes positive learning among students and enhances students' academic achievement in senior secondary school physics.

Based on the results of these finding, poor facilities and inadequate space as well as the arrangement of items including seats in class room, library and laboratory affect students' academic achievements in senior secondary school physics.

Conducive school climate gives room for students' to work hard and enhance their academic achievement in senior secondary school physics. Students' attitude to learning of physics has significant effect on their academic achievement in senior secondary school physics. Teaching and learning process can be affected by the school physical environment. Healthy teacher student relationship enhances students' academic achievement in senior – secondary school physics. Application of instructional media in schools enhances students' academic achievement in physics. And availability of experienced and competent physics teachers in school enhances students' academic achievement in senior secondary school physics.

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