

Instructional Materials and Academic Performance of Students in Biology in Senior Secondary Schools in Abi Local Government Area of Cross River State

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Abstract

This study investigated the influence of instructional materials on academic performance of students in biology in senior secondary schools in Abi local Government Area of Cross River State. The study was guided by a null hypothesis which was tested at .05 level of significance. Literature review was done based on the variables of the study. Ex-post facto design was adopted for the study. A sample of 200 respondents was randomly selected from ten (10) selected senior secondary schools. The selection was done through the application of stratified random sampling technique. The questionnaire was the main instrument adopted for data collection. The data collected were coded, scored and analyzed using independent t-test analysis. The results of the analysis indicate that the values of instructional materials in teaching significantly influence students' academic performance in biology. Based on the findings, it was recommended that adequate instructional material should be provided and appropriate supervision should be carried out by the school authority and the ministry of education to enhance students' academic performance in biology.

Keywords: Instructional, Materials, Academic, Performance, Students, Biology

Introduction

Instructional materials, usually commonly tagged teaching aid in the contemporary society, refer to any device, equipment or object used by the teacher to enhance learning process. This material can be in the form of visual and non-visual form. These materials are specifically developed as major component of instructional system. Textbook, teaching machine, educational films, instructional gumbos and simulations, tape instruction, programmed instruction, learning module, among numerous others, are some common examples. More so, by utilization it means that the materials are specifically developed as components, which can be mobilized and utilized for

learning and evaluation. Some common examples are radio, real objects among others. They facilitate formal and informal education.

Biokoro (2009) emphasized that the importance of instructional aid such as textbooks, which is the most widely used teaching aid in existence, has been overstressed. He noted that modern textbook is an effective combination of word description and clear meaningful illustration. Teaching is a change in human behaviour as a result of experiences in doing things in the learning environment. And this teaching and learning of any subject like biology in post-secondary schools is faced with many problems of both human and material resources. There have been complaints from parents and guardians about poor performance of students in science subjects like biology in secondary schools. The utilization of this instructional material in the teaching and learning process has not been encouraging, the poor result of students in their promotional exams has called for a critical look on learning and possibly the proper utilization of instructional material which will enhance performance in the subject matter.

Instructional materials, for the purpose of teaching, were described by Biokoro (2009) as instructional aids, and devices which are used by the teachers to supplement or complement the teacher tasks. He classified teaching aids into audio and visual aids. Audio and visual aids are indispensable in the teaching and learning situation. Kanno (2005) notes that the availability of teaching aids in a school does not itself guarantee huge academic success but the utilization; it is only by making the best use of such aids as one can obtain and integrate them into teaching process that the teachers will be able to meet the challenges that are facing academic excellence.

According to Daves (2004), instructional materials need to be selected. The selection of the materials should be made in terms of goals or objective of unit of study. Also Brase (2002) affirmed that teacher should not find it hard to make charts or three dimensional figures for teaching. It is essential to consider the cultural background, and experience of the child when making aids for teaching, rather than depending on imported articles which the school may not be able to afford.

Inyang-Abia (2005) maintained that an overhead projector, film shows, diagrams or charts were useful for teaching as instructional materials. He noted that tape recorders also enrich the mind because children understand by listening to sounds. The importance of books as instructional material for teaching cannot be overlooked. One recognizes the role played by the school library as a source for textbooks to be made available and also as a collection other various books for the purposes of reading, studying and consultations. Based on this, Abiri (2000) attribute the poor academic performance of students at the later stages to lack of making effective use of the

available books especially the ones that are concerned with their discipline, not the ones with foreign background and irrelevant model that is not related to their discipline.

Haslem (2005), in his observation, notes that the library was an important learning resources where we have books, pictures, pamphlets and other teaching aids that stimulate learning and teaching situation. He saw them as effective channels that could be used to communicate information to the learners. Ojo and Pull (2009) point out that where few books are available, most teachers tends to depend solely on the same view. He also maintained that most textbooks used in our schools were originally written for British and American schools, but most of them are shifted into Nigeria market and are outdated. Adejunyigbe (2003) buttresses the significant role played by instructional materials and facilities in the teaching and learning processes, therefore if instructional materials are not provided in the proper quantities and qualities, the students' performance may be adversely affected, and may even result in poor performance in subject, matter, biology inclusive.

Umoren (2005) enumerated some of the instructional materials to include objects that are familiar to students such as maps, charts, audio, visual and audio-visual materials. On the contrary, Inyang-Abia (2005) reiterated that in Nigerian secondary schools, 75% of the schools are lacking those instructional materials, thereby constituting an impediment to academic performance of students, and also retard teachers' effectiveness in teaching and learning process.

Adejuyigbe (2003) listed the factors that can lead to lack of instructional materials to include poor selection by the teacher, inadequacy of the materials, the operation of some materials, and being unfamiliar with the usage of a particular material. When all these are not taken into consideration, they will all affect student's academic performance. Moreover, the utilization of instructional materials like projected aids cannot be described in terms of rigid, inflexible. Instead the ability of teachers to make effective use of these instructional materials is what count for the benefit of the students.

According to Brase (2002) competence in using audio-visual materials is a great asset and competence in assessing the value of aid. To prepare a chart, neatness, clarity and accuracy of diagram are necessary. A good chart is complete when it contains relevant, but brief explanations of the subject. But this is what teachers need to be sufficient in the teaching process.

Hypothesis

Ho1: There is no significant influence of instructional materials on student's academic performance in biology.

Research methodology

Research design used for this study was ex-post facto design; it involves the systematic empirical inquiry which the researcher does not have direct control of the independent variable, because their manifestations have already occurred and inherently not manipulated. The sampling technique employed for this study is the stratified random sampling technique. Two hundred (200) students were drawn from the estimated population of two thousand, five hundred and sixty-seven (2,567). The main instrument use for data collection was Instructional Materials Questionnaire (IMQ). The IMQ comprises of fifteen (15) items of questions with a four point likert scale option. The instrument was divided into two sections. Section "A" was designed to collect the respondent personal information while section "B" was made up of fifteen (15) items measuring the use and values of instructional materials. The statistical tools for the analysis was independent t-test.

Presentation of results

Ho1: There is no significant influence of instructional materials on student's academic performance in biology.

Here, the independent variable is instructional material while the dependent variable is students' academic performance in biology. Independent t-test was adopted to test this hypothesis at 0.05 level of significance which produced the result below (see table 1).

Table 1: Independent t-test analysis of instructional materials on students academic performance in biology

Variables	N	\bar{X}	S.D	t-value
Adequate instructional materials	111	48.86	7.06	7.12*
Inadequate instructional materials	89	41.25	7.86	

* level of significant = 0.05, df=198, critical t- value = 1.97

The analyzed data of this hypothesis indicates that the calculated t-value of 7.12 is greater than the critical t-value of 1.97. at 0.05 level of significance with 198 degrees of freedom. Given this results, the null hypothesis was rejected while the alternate was accepted. This implies that there is a significant influence of instructional materials on students' academic performance in Biology.

Discussion of findings

The finding from this study indicates that there is a significant influence of instructional materials on students' academic performance in biology. Biokoro (2009) agreed with this finding when he described instructional materials as devices used by the teacher to supplement or complement the teacher's task. Inyang-Abia (2006) supported that even film shows, diagrams or charts are useful for teaching. He noted that tape recorders also enrich the minds of children as they understand by listening to sounds.

While in the contrary, Abiri (2005) attributed the poor academic performance of students at the later stages to inefficiency of teachers in the use of instructional materials available to them, which includes poor selection by teachers, inadequacy of the materials, the operation of some materials, and unfamiliar with the usage of a particular material. When all these are not properly checked and corrected, they will affect student's academic performance. Based on the assertion above, Adejunyigbe (2003) buttresses the significant role played by instructional materials and facilities in the teaching and learning process, and if instructional materials are not provided in the proper quantities and qualities, the students' performance may be adversely affected, and may even result in poor performance in subject matter.

Conclusion and recommendations

Based on the findings of the study, it can be concluded that students taught with adequate instructional materials perform academically better than their counterparts taught in school without instructional resources. Based on the findings of this study, the following recommendations are made:

1. Seminars and workshops should be organized by the ministry of education for teachers on the need for constant use of instructional materials. In this way, the teachers will be familiar with some instructional resources that could be used to improve students' performance in school.
2. The school authority also should be committed in supervising the teachers on the constant usage of instructional materials in lesson delivery. This will likely facilitate teaching and learning when made available.

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