

AVAILABILITY AND UTILIZATION OF INSTRUCTIONAL MATERIALS IN SECONDARY SCHOOLS IN AWGU LOCAL GOVERNMENT AREA OF ENUGU STATE, NIGERIA

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ABSTRACT

The study investigated availability and utilization of instructional materials in Secondary schools in Awgu Local Government Area of Enugu State, Nigeria. The researcher adopted a survey research design in the study. Three researched questions were formulated. A structural questionnaire was designed by the researchers and administered to eighty (80) students randomly selected from eight secondary schools in Awgu Local Government Area of Enugu State. Data were analyzed using percentages. Results indicated from the majority view point show that (I) instructional materials were not available for the teaching of Biology in the schools (II) Teachers do not improvise instructional materials (III) Teachers also do not utilize instructional materials. Based on the findings, it was recommended amongst others that government should provide instructional materials in the schools, teachers on their part should augment government's efforts through improvisation of instructional materials. The availability and effective utilization of instructional materials (whether by improvisation or by provision by the government), will enhance teaching effectiveness in Nigeria Secondary schools.

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KEYWORDS: instructional materials, secondary schools, teaching of biology, improvisation, availability and utilization, teaching effectiveness

INTRODUCTION

Every society achieves what it wants through education (Aguba, 2005). The difference between a developed and developing nation is defined by the importance attached to education of citizens. Japan after the event of the Second World War reviewed their educational curriculum and today Japan is one of most technologically advanced nation in the World (Aguba, 2005). Technology is the product of science (Mbajorgu, 2003) and science on its own is the study of nature which has a tripod stand: biology, chemistry and physics with mathematics as its language.

Biology is defined as the study of living things. It is the foundation for very important science studies like Medicine, Nursing, Pharmacy and others (Arokwu, 2003).

The national policy on education (FRN, 2001) stipulates that biology should be taught to Students in Senior Secondary 1- 111. In accordance with the policy, NECO Syllabus (2010-2012) stated the aims and objectives of teaching biology in secondary schools as follows:

1. Mastery of the structures and functions of living things;
2. Appreciation of nature and the need for its conservation;
3. Acquisition of adequate laboratory and field skills necessary to carry out and evaluate experiments and projects in biology;
4. Ability to observe;
5. Acquisition of meaningful and relevant knowledge in biology as a pre-requisite for pursuit of careers in biological sciences and related disciplines;
6. Acquisition of acceptable scientific attitudes for problem solving; and
7. Ability to apply biological knowledge/ thought to every-day life in matters of personal, social, economic, environmental and community health.

These aims and objectives can only be achieved if the process of teaching and learning of biology is made effective in Nigeria Secondary Schools. Making biology effective entails the use of essential instructional materials to concretize learning (Maduabum, 1992). Instructional materials are those

devices which a teacher uses to enhance his teaching (Ofoefuna & Eya, 1999). They include textbooks and all forms of media aids. According to Agun and Imogie (1998), instructional materials are information carriers designed specifically to fulfill objectives in teaching learning situations. It promotes and enhances the achievements of instructional objectives.

Considering the indispensability of instructional materials in teaching-learning situations, it becomes worthwhile to ascertain its availability and utilization in our schools hence this study.

STATEMENT OF PROBLEM

Biology at Senior Secondary School level is designed to equip learners/Students with relevant skills and attitudes. If this objective will be achieved, then efforts should be made to provide instructional materials to Nigeria Secondary Schools in teaching and learning of biology. To what extents are they available and utilized in Secondary Schools in Awgu Local Government Area of Enugu State, this is the problem addressed by this study.

PURPOSE OF STUDY

This research work is aimed at ascertaining the availability and utilization of instructional materials in teaching biology in selected Secondary Schools in Awgu Local Government Area of Enugu state. Specifically, the study seeks to find out whether:

1. Instructional materials for teaching and learning biology are available in Schools.
2. To what extent the biology teacher improvises instructional materials for his teaching.
3. To what extent instructional materials are utilized by the teacher.

SIGNIFICANCE OF THE STUDY

The study is expected will create awareness amongst the School authority and the Ministry of Education on the availability and utilization of instructional materials in Schools and thus intervention by the government and stakeholders in providing these materials. The findings will sensitize School Principals on their utilization by biology teachers and provide a basis for regular inspection. The result of this study also will provide a reference point for future researchers in the area.

LIMITATION OF THE STUDY

The study is limited to the following:

1. The availability of instructional materials in teaching biology in Secondary Schools in Awgu Local Government Area of Enugu State.
2. The extent to which these instructional materials are utilized.
3. The extent to which biology teachers improvise these instructional materials.

RESEARCH QUESTIONS

The following research questions have been formulated to guide the study:

- (i) Are instructional materials for teaching and learning of biology available in Schools?
- (ii) Do teachers improvise these instructional materials?
- (iii) Are these instructional materials utilized by the teachers?

REVIEW OF RELATED LITERATURE

The Concept of Instructional Materials

Instructional materials are those materials and devices, real or representative, which the teacher uses to make the lessons more meaningful and understandable (Okwo & Ike, 1995). According to them, these devices and real objects will help the teacher to teach effectively in the sense that they help focus the attention of the students during teaching and learning process. Adedijo (2000) posits that instructional materials are invaluable for enrichment purposes in teaching and learning situations.

Onyejemezie (1991) maintained that one of the principles teachers have to bear in mind is that Man learns through his senses. According to him, a good utilization of these senses creates a better understanding. If students are able to see the object and touch or feel the object being taught, understanding of the concept will be easier. Maduabum (1992) added that instructional materials help to concretize learning.

Biology as a science need not to be taught in abstract or theoretically because most of its concepts lend itself to practicability, one may not understand tissues and supporting skeleton if he is not taught with a chart of the human skeleton or study a live Rat by skinning it to expose the skeletons and supporting tissues. Supporting the foregoing, Ofoefuna and Eya (1999) said that many Students at Secondary School level loathe science as they see it as something very abstract and different. According to them, Students will appreciate sciences better if they are learnt more practically than theoretically. This can only be addressed through effective use of instructional materials. Adedijo (2000) in his study titled "Availability and utilization of instructional materials in Business subjects opined that good performance in the subject is ensured as a result of effective utilization of instructional materials. Other findings show that the use of instructional material in teaching and learning affects the achievement of Students in the external exams like WASSCE (Momoh, 1980; Moronfola, 1982; Popoola, 1990).

CLASSIFICATION OF INSTRUCTIONAL MATERIALS

Eya and Igbokwe (1999) classified instructional materials into three, namely:

1. Visual instructional material: these includes such things as charts, models, slides, projected material of silent nature, textbooks, photographs to mention but a few.
2. Audio materials: materials appealing to the sense of hearing alone. They include tape recording, cassettes, radio programs, and teleconferencing. Their common feature is that they provide sound.
3. Audio – visual materials: such materials appeal to the sense of hearing as well as sight. They include television, video recording, motion pictures, film strip projections with sound accompaniment.

IMPROVISATION OF MATERIALS IN TEACHING

Improvisation is a technique of originating a totally new tool, instrument, material and device or modifying an existing one for a particular purpose (FGN, 1990 in Ofoefuna & Eya, 1999). Improvisation deals with originating or modifying an existing material in the absence of the required material in order to aid instruction.

There are needs for the improvisation of materials in teaching – learning process especially in our present Nigeria situation where government seem to pay little or no attention to the provision of instructional materials in our Schools and Colleges. Ofoefuna and Eya (1999) maintain that the only way out of this present educational predicament is to return to resourcefulness on the part of teachers.

Maduabum (1992) noted that our Secondary Schools are poorly equipped. According to him, the expensive nature of scientific equipments, difficulty in purchasing them and persistent problem of lack of funds have worsened the situation. He argued that if science is to be learnt by doing, the teacher must look for resources beyond the classroom. This is because sole reliance on the inadequate School resources will create an undesirable class participation of a preponderant class majority of mere onlookers gazing at science and not learning science.

Many concepts in biology are effectively taught with improvised materials. For instance, models can be used to represent specimens like Lion, Snake and human heart which may not be easily provided. Charts can also be used to represent plants parts with proper labeling.

Ofoefuna and Eya (1999) noted that improvisation is of two types: improvisation by substitution and improvisation by construction. The former refers to the use of an already existing material in place of a material that is not available. For instance, used

chemical bottles can be used where there is no conventional specimen bottle provided it is well labeled. The latter implies constructing a new material for the lesson when the required material is not available.

RESEARCH METHODOLOGY

Research Design

Survey research design was adopted for the study. This was done because the study examined things as they exist.

Population

The population of the study consisted of about one thousand nine hundred and twenty students spread across the twenty four secondary schools in the study area.

Sample and Sampling Techniques

Eighty students were randomly sampled from eight secondary schools, ten from each.

Instrument

The instrument used to obtain data was a structural questionnaire. The questionnaire was made of three sections. Section 'A' is concerned with personal data of respondents (E.g. name of school). Section 'B' and 'C' dealt with the data needed on the availability and utilization of instructional materials.

Validation of Instruments

The instruments were validated by experts in the field of science education. Necessary modifications were effected based on their suggestions. The instrument was trial tested for reliability using test re-test method with twenty respondents from Aninri local government area. The instrument was administered on the same respondents after two weeks. The reliability coefficients of the two were determined using Spearman's rank order coefficient to analyze the data collected. Their 'r' was found to be 0.76.

Procedure for Administration

The researcher visited eight schools. A total of eighty questionnaires were administered to senior secondary biology students of the sampled schools. The completed questions were collected on the spot.

Method of Data Analysis

Data were analyzed using percentages.

Data Presentation and Analysis of Result

The results are presented according to research questions that guided the study.

Research Question One: Are instructional materials for the teaching of biology available in schools?

Table 1: response of students on the availability of instructional materials in their schools.

S/N	Instructional Materials	Yes	No
1	Charts	20 (25%)	60 (75%)
2	Models	10 (12.5%)	70 (85.5%)
3	Specimens (plant and animals)	20 (25%)	60 (75%)
4	Insect mounting box	8 (10%)	72 (90%)
5	Microscope	16 (20%)	64 (80%)
6	Lenses	18 (22.5%)	62 (77.5%)
7	Aquarium	9 (11.25%)	71 (88.75%)
8	Starch	15 (18.75%)	65 (81.25%)
9	Iodine	20 (25%)	60 (75%)
10	Bunsen burner	19 (23.8%)	61 (76.2%)

*Figures in brackets represent percentages.

Analysis of data shows that twenty students representing 25% of the respondents maintained that charts were not available in their school while sixty students representing 75% of the respondents said that charts were available in the school.

Ten students representing 12.5% are of the view that models were available in their school while seventy students representing 87.5% responded on the contrary.

Twenty students representing 25% of the respondents were of the opinion that plants and animal specimens were available in their school while 75% (sixty students) held a contrary view.

Eight students representing 10% of the respondents agreed on the availability of insect mounting box in the schools but seventy two students representing 90% disagreed.

On the availability of microscopes, 20% of the respondents, maintained availability while 80% responded non availability.

Lenses availability saw eighteen students representing 22.55% responding in affirmative but sixty two students representing 77.5% of the respondents disagreed.

In the case of Aquarium 11.5% of the respondents responded availability while 88.7% responded non-availability.

Fifteen students representing 18.75% of the respondents said starch were available in their schools but sixty five students representing 81.25% respondents maintained that starch were not available in the in schools.

Iodine availability saw 25% of the respondents saying yes while 75% responded non availability.

Finally, analysis of data shows data 23.8% of the respondents maintained that they have Bunsen burner in their schools but 76.2% responded non-availability.

Research Question Two: Do teachers improvise these instructional materials?

Fifteen students representing 62.6% of the respondents maintained that teachers do not improvise these instructional materials while thirty students representing 37.5% of the respondents were of the view that teachers improvise instructional materials.

Research Question Three: Are these instructional materials utilized by the teachers?

Table2: Responses of students on the utilization of these instructional materials by their teacher.

S/N	Instructional materials	Frequently	Some times	Not at all
1	Charts	3 (3.75%)	7 (8.75%)	70 (87.5%)
2	Models	1 (1.25%)	10 (12.5%)	69 (86.25%)
3	Specimens (plant and animal)	0	15 (18.75)	65 (81.25%)
4	Insect mounting box	0	10 (12.5%)	70 (87.5%)
5	Microscope	0	7 (8.75%)	63 (91.26%)
6	Lenses	0	8 (10%)	62 (90%)
7	Aquarium	0	10 (12.5%)	70 (87.5%)
8	Starch	5 (6.25%)	15 (18.75%)	60 (75%)
9	Iodine	10 (12.5%)	15 (18.75%)	55 (68.75%)
10	Bunsen burner	2 (2.5%)	12 (15%)	66 (82.5%)

*Figures in brackets represent percentages

Analysis of data shows that 3.75% of respondents maintained that charts were frequently used in teaching biology in their schools. 8.75% maintained that it was sometimes used while 87.5% said that charts were not used at all by their teachers.

Also, 1.25% of the total respondents affirmed the frequent use of models, 12.5% indicated sometimes while 86.26% of the responded not all to the use of models by their teacher.

Analysis also revealed that no respondent agreed that specimens (plant and animal) were frequently used by their teachers. 18.75% said that it was sometimes used while 81.25% maintained that it was not used at all during teaching and learning.

Analysis on the utilization of insect mounting box reveals that no respondent agreed to the frequent use

of insect mounting box, 12.5% responded 'sometimes' but 87.5% maintained that plant and animal specimens were used at all by their teacher.

Microscope utilization analysis shows that no respondent agreed to its frequent use, 8.75% agreed that it was sometimes by their teacher while 91.26% maintained that it was not used at all by their teachers.

Further analysis reveals that out of the total respondents, non agreed to the frequent use of lenses, 10% said it were sometimes used and 90% were of the view that lenses were never used in their school at all.

It was equally revealed from the analysis of data that non of the respondents agreed to the frequent use of Aquarium in their school. 12.5% responded sometimes while 87.5% responded not at all to the use of Aquarium in their school.

Analysis on starch utilization shows that 6.25% of the respondents said that starch were frequently used. 18.75% said it was sometimes used while 75% maintained it was never used during instruction by their teacher.

In the case of iodine, analysis reveals that 12.5% of respondents agreed to its frequent use, 18.75% said it was sometimes used during instruction by their teachers. 68.75% of the respondents maintained that it was not used at all.

Analysis also revealed that 2.5% of the respondents said Bunsen burner was frequently used in their schools. 15% responded sometimes while 82.5% of the respondents were of the view that Bunsen burners were never used in their school.

DISCUSSION OF RESULT

Result generated from table 1 reveals that there is low availability of instructional materials in the schools. The finding seem to be inconsistent with Arokwu (2003) who carried out a similar study in the same study area and found out that instructional materials (textbooks) were available in the schools. It should however be noted that Arokwu only investigated the availability of textbooks in these schools. Okwo and Ike (1995) noted that teaching and learning cannot be made meaningful and understandable without the use of instructional materials. This poses an important question; how meaningful is the teaching and learning of biology in these schools?

Research question two sought to find out if teachers improvise instructional materials in the schools. Results obtained shows that teachers generally do not improvise instructional materials. Ofoefuna and Eya (1999) maintained that a way out of our present educational predicament is to return to resourcefulness on the part of the teacher. According to them, a resourceful teacher is one who can

improvise in the midst of few materials for the teaching of his subject

Result of data analysis on table 3 reveals that teachers do not make use of instructional materials to teach students. This agrees with Arokwu (2003) who maintained that though there are textbooks in the schools, teachers do not use them to teach. Saddened by the development, Eya and Igbokwe (1999) stressed that 80% of what is learnt is through the sense of vision. In separate studies, Momoh (1980), Moronfolo (1982), and Popoola (1990) found out that effective utilization of instructional materials in teaching and learning of students affects achievement of students in external examination like WAEC.

CONCLUSION

Findings from this study revealed that most of the schools lack instructional materials for the teaching and learning of biology, most teachers do not improvise instructional materials and that in few schools where there are instructional materials available, teachers do not use them in the teaching and learning of biology.

RECOMMENDATION

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

1. There need for program of orientation for teachers on the provision and utilization of instructional materials in biology teaching and learning.
2. Biology teachers should be sponsored to professional seminars, workshops focused on improvisation of instructional materials
3. Government should pay more attention to education and provision of instructional materials for teaching and learning.

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