

AVAILABILITY AND UTILIZATION OF INSTRUCTIONAL RESOURCES FOR TEACHING AND LEARNING OF PRACTICAL SKILLS IN BIOLOGY

R.U, Egbunonu (Mrs.)

Abstract

The aim of the study was to investigate and assess the level of availability and utilization of instructional resources in the teaching of Biology in secondary schools in Aguata Education Zone of Anambra State. Two research questions guided the study. All the 40 biology teachers in the zone were used for the study. A 32-item questionnaire structured on four point rating scale ranging from Strongly Agree (SA) to Strongly Disagree (SD) was used for data collection. The result obtained following data analysis showed that secondary schools in Aguata Education Zone do not have most of the needed instructional resources for teaching and learning of practical biology. It also revealed that biology teachers have not been using most of the science equipment for practical activities. Some recommendations were made based on the findings.

Introduction

Biology is one of the core subjects in Senior Secondary schools in Nigeria. Hence, an encouragement to learn biology especially at the senior secondary school (SSS), level is of paramount importance. Practical work constitutes an integral part of biology. Ndu (1980), stated that practical work helps students to learn various skills and gives students a sense of achievement when they themselves make discoveries and arrive at scientific conclusion through their own experiments. Instructional resources are inevitable in the teaching of practical skills in biology. It makes teaching and learning more meaningful and real.

Ige (2000), defined instructional resources as modern science equipment library, printed materials, projected media, real and stimulated aids, visual and audio visual aids, science resources and school environment.

Wuyep and Agbo (1998), stated that instructional resources include both human activities and material: without human resources, teaching and learning of practical skills will not take place effectively. On the other hand, human resources will not alone communicate learning.

The studies by Banu (1994) ,and Awoyele (1992), have shown that lack of adequate supply of science equipment and improper management and utilization of available equipment in teaching is what leads to the low achievement in science. Soyibo (1992), in his own view states that .the poor performance of biology students in schools was attributed to improper utilization of the laboratory equipment by the teachers. To reverse the negative trend of this low performance in science, there is need to encourage the science teachers to be more resourceful and use the available materials in teaching and learning of biology practical.

Shortage of instructional resources in our secondary schools is not new. What seems to be the practice is that teachers have not been able to utilize the available resources and by implication, these resources are wasted. In view of this, the problem of this study is therefore to find out the state of instructional resources and their utilization in teaching and learning of biology practical in Aguata Education Zone Secondary Schools.

Purpose of the Study

The study is designed to find out the state of instructional resources availability and utilization in teaching and leaning of biology practical. Specifically, the study intends to find out:

1. The extent to which secondary schools in Aguata Education Zone have the basic instructional resources for teaching and learning of biology practical.
2. The extent to which biology teachers use the available instructional resources in teaching and learning of biology practical.

Research Question

1. The extent to which secondary schools in Aguata Education zone has the basic instructional

- resources for teaching and learning of biology practical?
- The extent to which biology teachers use the available instructional resources in teaching and learning of biology practical?

Design of the Study

The study was a survey of opinion of teachers of biology.

Area for the Study

The study was conducted in Aguata Education Zone of Anambra State.

Population

The population for this study comprises all the 40 biology teachers in secondary schools in Aguata Education Zone of Anambra State.

Instrument for Data Collection

Structured questionnaire was used for data collection. The questionnaire was divided into 2 sections. Section A was concerned with the availability of instructional resources in teaching and learning. Section B was concerned with the utilization of the instructional resources in teaching and learning of biology practical. The questionnaire was modeled on a 4-point rating scale of

Strongly Agree (SA), Agree (A), Disagree (D), Strongly Disagree (SD), with nominal values of 4,3,2 and 1 respectively.

Validation of the Instrument

This instrument was validated by three experts in science education drawn from Federal College of Education (Technical), Umuze. The corrections and other inadequacies of the draft instrument, as observed by these experts, were noted and built into the final instrument.

Reliability of the Instrument

To establish the reliability of the instrument, 15 copies of the questionnaire were administered on 15 biology teachers in Nnewi Education Zone, who were not part of the sample used. Their responses were correlated using Cronbach Alpha technique to determine the internal consistency of the items. The total items yielded an internal consistency of 0.91.

Administration of Instrument

A total of 40 copies of the questionnaire were distributed to the 40 biology teachers who formed the sample of the study. All the distributed copies were completed and collected instantly.

Analysis of Data

The data collected were analyzed using Mean (X) scores. A mean of 2.50 was used as the cut-off point. This was got by summing the nominal values and dividing by the total number of scaling items, that is

$$\frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

Therefore, any item with a mean of 2.50 and above is regarded as Agreed while mean less than 2.50 is regarded as Disagreed.

Results

Table 1: Responses of Biology Teachers on the Availability of Instructional Responses in Secondary Schools.

S/N	ITEMS	SA	A	D	SD	N	X	REMARK
1.	There is high student/teacher ration in our secondary school	-	2	10	28	40	1.35	Disagreed
2	There are enough qualified laboratory attendants in our school	1	3	10	26	40	1.47	Disagreed
3	There is a biology laboratory in my school	25	15	-	-	40	3.62	Disagreed
4	Classroom is used as biology laboratory	-	-	15	25	40	1.38	Disagreed

5	My school have a well equipped biology laboratory	-	-	25	15	40	1.63	Disagreed
6	There is enough teachers office in my school	-	1	10	29	40	1.3	Disagreed
7	There is a functional library/biology laboratory.	-	-	30	10	40	1.75	Disagreed
8	We have electricity supply in the biology laboratory		2	to	2X	40	1.35	Disagreed
9	There are enough microscopes and hand lenses for practical work	-	3	10	27	41)	1.4	Disagreed
10	There is an aquarium in the biology laboratory	-	1	10	29	40	1.3	Disagreed
11	There is a biology museum in the school	-	-	15	25	40	1.38	Disagreed
12	There arc enough quadrate in the biology laboratory.	1	1	8	30	40	1.32	Disagreed
13	There are enough dissecting kits and dissecting boards in the biology laboratory	2	4	10	24	40	1.60	Disagreed
14	There are enough thermometer in the biology laboratory	2	5	20	13	40	1.90	Disagreed
15	There is a first aid box in the laboratory	5	2	20	13	40	1.97	Disagreed
S/N	ITEMS	SA	A	D	SD	N	X	REMARK
16	There is an autoclave in the biology laboratory	-	1	5	34	40	1.47	Disagreed
17	Biology laboratory have a functional refrigerator	1	3	10	26	40	1.49	Disagreed
18	Biology laboratory have slides and slide project	5	2	20	12	40	2.02	Disagreed
19	Biology laboratory' have an adult si/e human skeleton	-	2	10	28	40	1.35	Disagreed
20	Biology laboratory have enough chart s/modals	15	20	5	-	40	3.25	Agreed
21	The schools have a videotape and television in the biology laboratory.		-	15	25	40	1.38	Disagreed
22	There is a computer in the biology laboratory	-	-	25	15	40	1.63	Disagreed

From the table, it can be seen that only items 3 and 20 had mean ratings above the cut-off point of 2.50 showing that the respondents agreed on the items being available in the secondary schools. A total of 20 items were rated as not being available in the schools.

Table 2: Mean Responses of the Teachers on the Ability of the Utilization of the Instructional Resources in The Teaching and Learning of Biology Practical

S/N	ITEMS	SA	A	D	SD	N	X	REMARK
1	Able to manipulate dissecting instruments during practical work	5	3	20	12	40	2.02	Disagreed
2	Able to make use of slide projectors during practical work	6	2	12	20	40	1.85	Disagree-]
3	Able to make use of computer during practical work		2	8	30	40	1.3	Disagreed
4	Always use the microscope when the need arises.	4	4	18	14	40	1.95	Disagreed
5	Always draw on the chalkboard duringTpractical	5	2	20	12	40	2.02	Disagreed
6	Able to prepare temporary Slides of organisms	-	3	10	27	40	1.4	Disagree*'

7	Takes students to the biology museum during practical work.				40	40	1.6	Disagreed
S/N	ITEMS	SA	A	D	SD	N	X	REMARK
8	Takes students out to see things in their natural habitats	12	20	8		40	3.1	Agreed
9	Able to do a photomicrography in the biology laboratory				40	40	1.0	Disagreed
10	Able to manipulate an electronic particle counters during practical work.				40	40	1.0	Disagreed

In table 2 above, all except item number 8 received mean rating above the cutoff point (2.50).

Discussion of the Result

The data obtained from table 1 revealed that Secondary Schools Aguata Education Zone of Anambra State lack most of the basic instructional resources for teaching and learning of biology practical. This finding agrees with the opinion of Awoyele (1992), and Banu (1994), who observed that most of the instructional resources needed for the teaching and learning of practical science were not adequately available in the schools.

The data on table 11, show that the respondents agreed that they have not been utilizing the instructional resources in teaching and learning of biology practical. This goes to confirm the earlier finding of Soyibo (1992), and Amadi (2001), that teachers have not been utilizing properly most of the instructional resources in their teaching.

Recommendations

Based on the finding of this study, the following recommendations were made:

1. Government should ensure equitable distribution of biology teachers among schools irrespective of their locations.
2. PTA, private entrepreneurs and other organizations should provide instructional facilities to Secondary Schools to carryout their practical work effectively.
3. There should be personal effort on the part of biology teachers to further their education in order to acquire the necessary skills needed for the manipulation of most of the science equipment. They should take advantage of conferences, workshops and seminars, which are organized by different stakeholder on regular basis.

Conclusion

The study informed by the desire to improve the teaching and learning of biology as a practical based subject in our secondary schools. Availability and utilization of instructional resources were considered a point of discourse, having a direct bearing on the teaching of biology practicals. It is believed that the findings and recommendations of this study will be of immense benefit to all and sundry who are involved with the teaching and learning of biology.

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