

EFFECT OF REAL OBJECT ON ACADEMIC PERFORMANCE OF BIOLOGY STUDENTS IN SECONDARY SCHOOLS IN EMUOHA LOCAL GOVERNMENT AREA, RIVERS STATE

BY

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Abstract

The study examined the effect of real object on academic performance of Biology Students in Secondary Schools in Emuoha Local Government Area of Rivers State, the study adopted quasi-experimental research design, population comprises of 1,115 students from three samples secondary schools in Emuoha Local Government Area of Rivers State. 150 students make up the sample size and Biology Performance Test (BPT) was used as the instrument for the study. mean and standard deviation was used to answer research questions while z-test was used to test the hypotheses. Result revealed showed that students taught with real objects performed better than those taught without the use of real objects and the male students performed better than their female counterparts when taught with real objects. The study therefore recommends seminar/workshop for Biology teachers on the use of diverse real objects in teaching Biology in Secondary Schools especially in Emohua Local Government Area, Rivers State. State organized committee should be set up by government to monitor the teachers during the teaching and learning process to ensure the use of real objects in teaching Biology in Secondary Schools in Rivers State generally.

Keywords: Effect, Real object, Performance, Biology

Introduction

Teaching aids are simply devices used to enhance the teaching and learning of any subject in the school. Teaching aids may be visual, audio or audio-visual materials. The visual materials is for the sense of sight, the audio materials are sensitive to hearing and the audio-visual material interact simultaneously with both senses (hearing and sight). Visual aids specifically are typical examples of real object others include models, flip charts, wall charts etc. The teaching of science in schools and colleges has assumed increasing importance within the last century. Agweda (2009), stressed that the teaching strategies applied by some teachers during the teaching-learning process can affect the child comprehension of what is being taught. The effective implementation of any curriculum depends to a large extent on

the availability of adequate recommended instructional materials (real object). In order to fill the gap, it is therefore very important to investigate the use of real object as a form of instructional materials in teaching and learning Biology and to explore useful information on the teachers knowledge of real objects for effective teaching of Biology. In education, real objects are objects from real life used in classroom instruction by educators to improve students understanding of other cultures and real life situations (Wikipedia). Real objects can be an effective media in teaching because it can stimulate students to use their five senses (sense of sight, to touch, hear, smell and taste) to find the idea about a content. It is that object brought into the classroom to bring a lesson, idea, or concept to life. For example, the teacher can talk about various fruits and vegetables and show pictures of them or could bring real objects into the class. Students can sight, touch, taste or smell them, which will make the lesson quite memorable. Teaching and learning with real objects has the following advantages according to Smith, 2015.

- i. Makes learning more concrete
- ii. Attracts attention
- iii. Students become more familiar with objects.
- iv. Inspire students to learn by doing things themselves and they get sense of involvement.
- v. Give students sense of accomplishment and achievement.
- vi. Develop social skills of communication, cooperation, and coordination.
- vii. Fasten better school community relations and make community members conscious about the school.
- viii. Foster creativity among students

Real objects and applied in the class during teaching and learning by letting in child to explore the object freely and feel free to analyze them as well these materials can engage students who don't always respond to written materials they can be used to reinforce material coursed in other media, they can connect students with their own environment and culture, as well as with other cultures. Lim (2022) defined Biology as the study of life which includes all living things both plants and animals. It is a useful science subject with inch application in our daily life. According to Akanuji (2015), the Biology Science Curriculum which is used in Nigeria today for teaching and learning in secondary schools is filled with lots of activities and practical experiments meant to help the students understand the theory aspect better and also provides continuous experience in process skills development. Despite the wonders of Information Technology Communication, the teacher is indispensable in the education process. The heat of any successful learning is the informed teacher. Biology as a science subject is based on practical and experience, its objective as contained in the National policy on education (NPE, 2013) include among others to equip learners with meaningful and relevant knowledge of Biology.

Statement of Problem

Biology been owe of the most important and interesting science subject is loosing its saviour in academic performance of students in post primary institution (Onyeozu, 2008). The teaching and learning of Biology over years is not yet adequate to meet the expectation of the students in senior secondary school especially in Emuoha Local Government Area of Rivers

State. One of the effective ways of teaching and learning Biology is the use of real objects or instructional materials that are visible to the eye believe they stimulates the interest of the students, give background knowledge, concrete and first had experience on which further learning is based on. On the other hand, some Biology teachers do not have the interest of teaching with real object all they need is good knowledge of the subject matter, clarity, eloquent speech and personality. This study therefore and to investigate if using real objects in teaching and learning topics in Biology will improve the academic performance students in senior secondary schools , especially in Emuoha LGA of Rivers State.

Purpose of the Study

The study looked at the effect of using real objects in the teaching and learning of Biology on the performance of students in Emuoha Local Government Area of Rivers State, this study seeks to:

- i. Find out the effect of using real objects in the teaching and learning of topics in Biology on the performance source secondary school students in Emuoha Local Government Area of Rivers State.
- ii. Examine the effect of using real objects in the teaching and learning of topics in Biology on the performance of student with respect to gender in Emuoha Local Government Area of Rivers State.

Research Questions

- i. What is the effect on the performance scores of students taught biology using real objects in senior secondary school in Emuoha Local Government Area of Rivers State?
- ii. Will the male students perform better than the female students when real object is used in the teaching and learning of Biology in Senior Secondary Schools Emuoha Local Government Area of Rivers State?

Hypotheses

- i. There is no significant difference on the performance scores of students taught Biology with the use of real objects and those taught Biology without the use of real object in Senior Secondary Schools in Emuoha Local Government Area of Rivers State.
- ii. There is no significant difference on the mean performance scores of male and female students taught biology using real object in senior secondary schools in Emuoha Local Government Area of Rivers State.

Methodology

The study employed a quasi-experimental research design, the population of the study includes all senior secondary schools studying Biology in Emuoha Local Government Area of Rivers State. Specifically, 1, 115 students, drawn from three secondary schools make up the population of this study, while 150 students equally make up the sample size. The instrument utilized is called Biology Performance Test (BPT) developed by the researcher, adapted from WAEC and NECO part question papers. The test items are 20 questions

divided into two sections: A and B all in objective forms. Data was collected after subjecting the instrument to two experts in Science education Biology with a reliability index of 0.85 using Pearson Product Moment Correlation Statistics. The instrument instruction focused on the external morphology of a herbaceous plant such as water leaf and so the experimental group was taught with the presentation of a complete waterleaf plant having both the root and the shoot systems intact as a typical example of real object while the control group was taught without the presentation of the water leaf plant as an instrumental material. Data obtained were analyzed using mean and Standard Deviation to answer the research questions while z-test was used to test the hypotheses out 0.05 level of significance.

Results

Research Question 1: What is the significant effect on the performance scores of students taught Biology with real object and those taught without real objects?

Table 1

Mean and Standard deviation of pre-test and post test performance scores of students taught Biology with Real object and those taught Biology without object.

Group	N	\bar{x} pretest	\bar{x} protest	SD	Gain
Students taught using Real object (experimental) group	72	49.0	60.67	10.11	19.9
Students taught without real object (control group)	75	40.75	28.22	7.12	15.69

Table 1 above shows that the mean and standard deviation scores of students taught with real object (experimental group) was 60.67 and 10.11 respectively while the mean and standard deviation scores of those taught without real object was 28.22 and 7.12 respectively. The above scores showed that the experimental group obtained higher scores that the control group indicating that teaching Biology with real objects enhance students performance.

Research Question 2: Will the male students perform better than the female students when taught Biology with the use of real object?

Table 2

Mean and Standard deviation of pretest and post test performance scores of male and female students taught Biology using real object.

Group	N	Pre-test	SD	Post-test	SD	Gain
Male students	80	29.0	8.23	33.31	11.9	4.5
Female students	70	25.0	6.23	28.22	8.12	3.0

Table 2 above showed that male students has a mean score of 33.31 with a standard deviation of 11.9 while the means scores of the female students is 28.22 with a standard deviation of 8.12. This indicates that male students performed higher than their female students counterpart.

Testing of Hypotheses

Hypothesis 1: There is no significant difference on the performance scores of students taught Biology with the use of real object and those taught Biology without the use of Real object.

Table 3

Z-test analysis on Hypothesis one

Group	N	\bar{x}	SD	z-cal	z-table	Df	Decision
(experimental group) those taught Biology	75	1.65	0.59				
Use of real object				6.40	4.12	1.50	Reject
Those taught Biology without the use of real object (control group)	75	1.31	0.47				

Table 3 shows that the z-calculated value of 6.40 is greater than the z-table value of 4.12. This implies that there was a significant difference on the performance of students taught biology with the use of real object. The null hypothesis was therefore rejected and its alternate accepted.

Hypothesis 2: there is no significant difference on the mean performance scores of male and female students taught using real object.

Table 4*Z-analysis of hypothesis Two*

Group	N	Gender	\bar{x}	SD	z-cal	z-table	DF	Decision
Students	80	Male	2.65	0.61				
Taught Biology using Real object	70	Female	2.3	0.49	4.10	1.96	150	Reject

Table 4 showed that the z-calculated value of 4.10 is higher than z-table value of 1.96. This implies that there is a significant difference on the performances of male and female students taught Biology with the use of real object, null hypothesis of no significant difference rejected and its alternate accepted.

Discussion of Findings

Result obtained from reach questions one of this study revealed that students taught Biology using real object as instructional material performance better than the students taught Biology without the use of real object. This finding was in agreement with Matsuoka, (2010) who opined that real objects are useful for teaching and learning in classroom, makes learning process more enjoyable, creates connection with vocabulary words, stimulate conversation and build background knowledge real objects give students the opportunity to use all their sense organs to learn about a given subject and it is appropriate for any grade level of students for enhancement of academic performance.

To findings on research question two equally revealed a significant differences on the performance of male and female students taught Biology with the use of real objects. The findings revealed that male student's performance better than the female student, this is in agreement with Adgun (2001) who stated that schools that possess more real objects performed better than schools that have less real objects as instructional material. Also noted that there was a low level of real objects available in public schools and hence commented that public schools had acute shortages of both teaching and learning resources that effective teaching and learning cannot occur in any classroom environment if essential real objects are not available.

Conclusion

From the result of this study, it is obvious that to improve the academic performance of students in biology, there is need for the use of real objects as instructional materials. Effective use of real object can help overcome the failure of students prevalent in biology

examination and it can also be used as an advantage to help teaching and learning activities go smoothly with less frustration.

Based on the findings of the study, the following conclusion were made:

- That the use of real objects as instructional materials in the teaching and learning of biology in senior secondary schools enhances students' performance,
- That the use of real objects in teaching and learning biology in senior secondary schools is greater selective in its effectiveness as the male students performed better than the female students due to their ability and composure in term of using real learning resources.

Recommendation

The study recommended that:

- i. Secondary schools administration should ensure that real objects are provided for teachers to enable teach more effectively an efficiently.
- ii. More seminars /workshops in the use of diverse real objects as instructional materials should be organized to acquaint teachers on how to use them in the teaching and learning of Biology.
- iii. A state organized committee should be set up to monitor the teachers use of real object during the teaching and learning periods. ‘
- iv. When the real object is not available or impractical, teacher can use models or semi concrete objects such as photographs, illustrations, and artworks etc to enhance students' academic performance in Biology.

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