

THE EFFECTS OF USING AQUARIUM AS A LOCAL TEACHING AID ON PERFORMANCE OF BIOLOGY STUDENTS

Ray TV. Otunne

Abstract

The study is a survey to investigate the effects of using aquarium as a local teaching aid on students on the performance of Biology students. A total of 200 final year Biology students of FCE (T) Omoku 2007/08 academic session formed the population. Data collected from questionnaires were analyzed using t-test. The result shows that students taught using aquarium performed better than those taught without it. And that numerical strength of the class is a factor in respect to performance. Recommendations and conclusion are made, urging education planners to minimize class strength and that teachers should use aquarium to teach some specific ecological concepts in Biology.

Introduction

Aquarium is a water glass-tank with living aquatic plants and animals as the content. It is an improved teaching aid to illustrate some ecological concepts for effective teaching and learning with respect to nutrition in an ecosystem.

The National Policy on Education 1981 Revised, devoted section 10 of the policy on education services which according to the document is meant to facilitate the implementation of education planning and objectives. The objectives include among others to enhance teaching and improve the competence of teachers; to make teaching more meaningful for students; to reduce educational cost and to develop and promote an effective use of innovative materials in schools.

Aquarium as a local teaching aid and others alike have major roles in the teaching and learning of Biology (Coren, 2002).

In Biology class, numerous problems emerge such as population explosion which makes teaching and learning very cumbersome because of the fewness of the local instructional materials. However according to Gbamanja (1991), biology teaching involves exposing the students to several opportunities to understand different types of concepts, principles and exposes students to direct materials that will make some meaning to the cognitive framework.

Statement of the Problem

Some biology lecturers in FCE (T) Omoku ignore the use of laboratory aquarium as practical source for teaching ecological concepts due to population explosion and insufficient practical aid in the class. For that, the study focuses on finding out the effects of using aquarium as concrete aid on biology teaching and learning.

Purpose of the Study

The purpose of the study is to determine the effects of biology students' performance in FCE (T) Omoku by

A Comparing the performance of students taught with by using aquarium and those taught without using aquarium.

B To determine whether numerical strength of the students is a factor for the performance when using aquarium.

Research Questions

To guide the study, research questions are posed thus:-

What difference exists between the performance of biology students taught using aquarium and those taught without using aquarium. Whether numerical strength of the class is a factor in student performance when using aquarium.

Research Hypothesis

HO₁ There is no significant difference in the performance of biology students taught using aquarium and those taught without using aquarium.

HO₂ There is no significant difference in numerical strength as a factor in students performance when using aquarium.

Significance of the Study

The teacher should be made to understand that learning and teaching using aquarium as a material aid enhances the effectiveness with less cost.

Methodology

Research Design: A general survey using questionnaires.

Area of Study

It was conducted across all biology students who are finalist in FCE (T), Omoku.

Population

A total of two hundred (200) biology final year students 2007/08 academic session formed the population of the study.

Research Instrument

Questionnaires were used. Twenty (20) variable questions with responses thus; Agreed, Strongly Agreed, Disagreed, Strongly Disagreed, undecided i.e. A, SA, D, SD, U.

Scoring of Instrument:-

The scoring of responses are as follows:

A = 5; SA = 4; D = 3; SD = 2; U = 1

Procedure:-

Data were collected from the questionnaires distributed to two hundred (200) biology students.

1st group was one hundred (100) students who were distributed questionnaires dealing on students taught using aquarium and those taught without using aquarium.

2nd group was one hundred (100) students distributed questionnaires dealing on numerical strength factor when using aquarium during learning and teaching.

Data Analysis

The data collected were analyzed using independent t-test statistics at 0.05 level of significance.

Results

Hypothesis 1 states that there is no significant difference in the performance of students taught using aquarium and those taught without using aquarium in the ecological concept of nutrition.

The hypothesis was tested and computed on students taught using aquarium and those taught without use aquarium.

Table 1

Variables	N	X	SD	DF	t-Cal	t- Cri.	Remark
Taught using aquarium	100	63.03	14.05				
				198	4.38	1.96	Significant
Taught without using aquarium	100	54.00	15.07				

From this table, it is observed that the calculated value oft-test is 4.38 which is greater than critical t-test value of 1.96 at 0.05 level of significance. The null hypothesis was rejected. This means that students taught using aquarium performance better than those taught without using aquarium.

Hypothesis 1 1 State that there is no significant difference in numerical strength as a factor in students' performance when using aquarium.

Table II.

Variables	N	X	SD	DF	t- Cal	t- Cri.	Remark
Small class size	30	63.67	12.78				
				98	8.12	1.96	Significant
Large class size	70	46.49	10.41				

From this table, it is observed that the calculated value oft-test is 8.12 which is greater than critical t-test value which is 1.96 at 0.05 level of significance. The null hypothesis was rejected. This means that numerical strength of the class is a (actor in respect to students performance when using aquarium.

Discussion

HOi that there is no significant difference in the performance of students taught using aquarium. This was subjected to analysis and the result confirmed that those taught with aquarium performed better than those taught without using aquarium. This was observed in the mean score of 63.03 for those taught with aquarium and 54.00 for those taught without using aquarium. The t-test calculated value was 4.38 against i .96 for t-test critical which led to the rejection of the null hypothesis.

This confirmed the agreement with Shanna and Hyland (1991) who found out that students exposed to direct experience on concrete object performed better than Those exposed to verbal instruction. This also agrees with Warrant (2002) who viewed the physical material as a powerful force for shaping child's learning.

HOn states that there is no significant difference in numerical strength as a factor in students" performance when using aquarium.

This result was analysed confirming that numerical strength of students is a factor when using aquarium. This was observed in the mean score of 65.67 for small class size which perform better against 46.49 for large class size.

The t- test calculated value was 8.12 against 1.96 t - test critical this led to the rejection of null hypothesis.

This result agrees with the work of Ekong (2001) who stated that students attain greater academic success when numerical strength of students are small per-class. The work also agrees with that of Pastella (1996) who found out that the class with small enrolment makes for better and greater freedom, more effective relationship, effective control and class management / supervision as well as greater and better performance in academic activities attained by students.

Recommendations

Based on the findings from the study the following recommendations were made:-Teachers should endeavour to teach ecological concept using aquarium as local material. Education planners should make sure of specific class size per class

More streams of the same class should be created to avoid over-crowding because the fewer the better during teaching and learning process.

Conclusion

It was concluded that the use of aquarium as a local teaching aid for ecological concepts and numerical strength of class should be maintained. This will have significant influence on students' achievement.

Some Ecological Concepts For Effective Teaching Using Aquarium

Autotrophism = This is a type of nutrition by which green plants in aquarium manufacture food through ultimate source of energy that is violet rays of the sun by the process of photosynthesis.

Heterotrophism = This is a type of nutrition by small snails, fishes and frogs in the aquarium which feed on the green plant tissues.

Parasitism = This is a type of nutrition in which water snails (parasite) feed on water-plants which is the host.

Predation = This is a type of nutrition in which big fishes feed on small fishes. The big-fishes are the predators while the small-fishes are the prey. The interaction of feeding is termed

References

- Coren, S.G. (2002). School environmental and learning, Washington, D.C. retrieved from http://www.eduenviron.org/pubs/environmental_resource.html.
- Ekong, I. E (2001) Health school environment. A critical factor for the implementation of University basic education in Nigeria international Journal of Education Development (IJED) AAVEN Publication.
- Etim, P.J. (2006) Issues of education. Technology using local material. A monograph.
- Ezewu, E.E. (1987). The map of social-psychological factors of human learning in school. Onitsha: lead-way books Limited.
- Farrant, S.S. (1981). Principles and practice of education. London and Edingburgh, Morrison and Gib Ltd.
- Gbamanja, S.P.T (1991). Modern methods in science education in African. Owerri: Totan Publishers Ltd.
- Olanewaju, A.O. (1994) New approach to the teaching of integrated science Ibadan, Alfas Nigeria Company.
- Pastella, M. (1996). The effect of class Size on the achievement of different ability group in mathematics. Journal of science teachers association of Nigeria.
- Sharma, A.P & J.T Hyland, (1991). Philosophy of education for Nigeria. Kaduna: Gbabecks Publishers Limited.

