

IMPACT OF OUTDOOR LEARNING RESOURCES ON MALE AND FEMALE STUDENTS' ACHIEVEMENT IN SENIOR SECONDARY SCHOOL BIOLOGY CONCEPTS

***GBELEKE LILIAN AGHOGHO; AND **DANIEL HYELYANKURI**

**JUPEB Center, University of Benin, Benin City, Edo State **Department of Science Education, Federal University of Kashere, Gombe State*

Abstract

The study was concerned with the impact of outdoor learning resources on the achievement of male and female SS II senior secondary school students in biology concepts. This was carried out to provide an empirical basis to determine a more adequate method of teaching and learning of biology concepts and also to give adequate information on the important of using outdoor learning resources taking gender into cognisance. The research design was a time series quasi experimental design. Data were gathered from series of 1 - 3 pretest and posttest of an intact class of 50 students, 24 males and 26 females from an intact class, from one of the 11 public secondary schools randomly selected in Egor Local Government Area of Edo State. The research instrument was Plant Classification Achievement Test (PCAT), a 20 multiple choice test. A reliability coefficient of 0.70 was estimated using split-half. One hypothesis was tested, using t - test at 0.05 level of significance. Result of the study showed no significant difference in biology concepts achievement of male and female students taught using outdoor learning resources. Hence, it is suitable for teaching both male and female students.

Keywords: *Outdoor Activities, Learning Resources, Students' Achievement, Gender, Biology Concepts*

Introduction

Achievement is a key component of learning outcome that is dependent on diverse learning resources. Resources are everything required by a school to enable it reach its objectives. It is therefore, vivid that outdoor learning resources are instrumental in the teaching and learning process. According

to Oni (2005), outdoor resources as those resources outside the classroom environment that facilitate learning of concepts in their natural setting. He went further to say that if students are taken out of the classroom to see what they were taught in the classroom, it could help reduce the problems of rote learning by memorisation of concepts. In other words, outdoor resources are real objects in their natural form, and a wide range of real objects are used for teaching biology to facilitate understanding of biology concepts by meeting cognitive styles of learners which is consequential to achievement. Hence, to make abstract concrete, a class dealing on types of ecosystem or plant classification can do this by using real ecosystem and plants outside the classroom, when some of these real objects or materials are not found within the school environment, a fieldtrip or a fieldwork is organised by the teacher to enable the students see such objects or materials in the museum, parks, game reserves, forest, etc. According to Nundy (2001), outdoor learning resources are instructional aids which facilitate communication between teachers and students in the natural environment. Environment is suggested to include where the instruction takes place and method needed to convey information and guide the learner's study. According to Omatseye (2004), lasting impression can be made on the learners when taken out to see things in their natural environment, instead of teaching them abstractly in the classroom, and leads to concretisation of concepts in the learners. This assertion further buttressed the fact that using the outdoor learning resources could go a long way to enhance students understanding of biology concepts and enhance achievement.

Over the years, experts have continued to draw attention to the grave consequences of constant decline in achievement of students in senior secondary school science subjects especially in public examinations such as National Examination council and West African Senior Secondary Certificate. Since 2007 the West African Examination Council (WAEC) has continuously drawn the attention of school heads and teachers of biology to the general poor understanding of biology concepts and poor achievement of students in the subject (WAEC Chief Examiners Report, 2009). Concepts relating to Classification [Taxonomy] in both plants and animals were specifically pinpointed as weakness, concepts includes

kingdom, phylum, class, order, family, genus and species of the plants and animals. The causes of this have attracted little or no attention of researchers in recent times. Okereke and Onwukwe (2011), in their study discovered that male students performed better than female students in the study of influence of gender on school performance. This position was also buttressed by Ariyo (2006), who found that male students significantly performed better than female students. In another study, Oludipe (2012) observed that there is no significant difference between male and female students' performance. This finding was also buttressed by Kola and Taiwo (2013). Similarly, Udousoro (2003), in a study on gender differences in computing participation, stated that there is no significance difference in the academic performance of male and female students. Nnenna and Adukwu (2018), in their study found that male performed better than female students.

Okoye (2016), conducted a study on the influence of gender and cognitive styles on students' achievement in biology, it was a causal comparative research design and a population of 12,000 (SSII) biology students in sixty-four government owned secondary schools. The sample of the study consisted of 265 SSII biology students, 141 are males while 124 are females drawn from four government owned schools comprising of two (2) boys and two (2) girls' school, ANOVA was used to analyse the data and no significant difference was found between male and female senior secondary school students achievement in biology. Hence, neither gender nor cognitive style was found to influence achievement. Not much was found to be directed towards outdoor learning resources and gender on achievement in biology concepts, therefore, this one question guided research is determined to investigate the impact of outdoor learning resources on male and female senior secondary school students' achievement in biology concepts.

Statement of Problem

Over the years researches and Chief Examiners' Report have shown that students achievement in biology has been poor. It is against this background that the researchers investigated whether the use of outdoor

learning resources could enhance the achievement of male and female students in biology concepts.

Purpose of Study

This study investigated male and female senior secondary school students achievement in biology concepts using outdoor learning resources to see if the use of outdoor learning resources would make any contribution to students' achievement in biology concepts. The study was restricted to public mixed senior secondary schools in Egor Local Government Area of Edo State. One research question guided the study.

1. Is there a difference in achievement between male and female students taught using outdoor learning resources?

Hypothesis

1. There is no significant difference in the achievement between male and female students taught using outdoor learning resources.

Methodology

A single interrupted time series quasi - experimental design to determine the impact of outdoor learning resources on students' achievement was used. It is a quasi - experimental study because there was no randomisation of subjects, an intact class was used. This design made use of several pre-test and post -test which the researchers personally administered as Plant Classification Achievement Test (PCAT) with the aid of the biology teacher. This was administer to the students in series as pre-tests 1, 2 and 3 for 3 weeks before the treatment which was an outdoor learning activity to view some examples of schizophyta, thallophyta , bryophyta and pteridophyta and as post- tests 1, 2 and 3for 3 weeks after the treatment to ensure that the content of classification of plant was exhausted.

Data collection

The researchers personally administered the Plant Classification Achievement Test (PCAT) with the aid of the biology teacher. This was administer to the students in series as pre-tests (1, 2 and 3) for 3 weeks before the treatment (the use of outdoor learning resources) and as post-tests (1, 2 and 3) for 3 weeks after the treatment which took four weeks of the school calendar.

Population of Study

The population of the study consists of all SS II Biology students in the eleven public mixed senior secondary schools which amounted to 2,044 students in Egor Local government Area of Edo State.

Sample and Sampling

The study sample consist of 50 students, 24 males and 26 females from an intact class randomly selected from one of the eleven public mixed senior secondary schools randomly selected in Egor Local Government Area of Edo State .

Instrumentation

The study made use of Plant Classification Achievement Test (PCAT) to assess SS II biology students' achievement on classification of plants. PCAT is a twenty (20) multiple choice question with options a-d to ascertain student's achievement of concepts of plant classification. Split- half was used to test the reliability of the instrument. Using twenty SS II Biology students, a reliability coefficient of 0.70 was obtained by split-half, indicating that the instrument was reliable.

Analysis of Data

t- test was used to test the hypothesis at at 0.05 level of significance.

Results

Testing of Hypothesis

There is no significant difference in the achievement of male and female students taught using outdoor learning resources.

Table 1: t-test summary of male and female students' achievement after treatment.

<i>Treatment</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Mean diff</i>	<i>df</i>	<i>T</i>	<i>Sig</i>	<i>Decision</i>
<i>Male</i>	24	17.83	1.14	0.67	48	1.51	0.139	Not Significant
<i>Female</i>	26	17.17	1.87			1.53	0.133	

Not significant at 0.139 and 0.133 > 0.05

Table 1 shows that the mean difference in achievement after treatment was 0.67 with 48 degree of freedom at 0.139 and 0.133 level of significance for male and female respectively. The Null hypothesis is therefore accepted.

Discussion

Table 1 shows that the mean difference in achievement after treatment was 0.67 with 48 degree of freedom at 0.139 and 0.133 level of significance for male and female respectively. The Null hypothesis is therefore accepted. Findings from the analysis reveals that there was no significant difference in the achievement of male and female students taught using outdoor learning resources. This is an indication that use of outdoor learning resources in teaching biology is suitable for both male and female students' cognitive styles. The findings of this study therefore, agrees with Oludipe (2012), Kola and Taiwo (2013), Udousoro (2003), and Okoye (2016), who found no significant difference in the achievement of male and female students. The findings of the study however does not agree with Nnenna and Adukwu (2018), Okereke and Onwukwe (2011), and Ariyo (2006), who found that male students significantly achieved better than female students in biology

In summary, the teaching and learning of biology concepts using outdoor learning resources indicated that both male and female students benefited equally, in other words it is suitable for both male and female students' cognitive styles in learning biology and therefore, it is gender friendly.

Conclusion

The hypothesis tested shows no significant difference in the achievement of biology concepts between male and female students taught using outdoor learning resources. It is therefore, a suitable method of teaching biology concepts in senior secondary schools for both male and female students to benefit equally.

Reccommendations

The findings of this study would help to stakeholders in the following ways

1. Advance knowledge by providing avenue for the biology teachers to see the importance of outdoor learning resources in teaching biology concepts
2. School principals will also be informed of their roles in encouraging teachers, especially in area of funding, creating time for field work and excursion on school timetable.

3. assess to outdoor learning resources in the teaching of Biology.
4. It would assist curriculum planners to make proper recommendations to government on the need to adequately provide fund and time for outdoor resource learning.

References

- Ariyo, A. (2006). *School and Student Factors as determinants of student's achievement in physics at senior secondary school level in Oyo State*. PhD Thesis, Unpublished: University of Ibadadan
- Cundy, H. (2001). *Biology Models*. Malawi: Oxford University Press, Malawi.
- Omatseye, J.N. (2004). *Educational Philosophy and the African School*. Benin: Mindex Publishing, Benin City.
- Oni, J.O. (2005). *Educational Resources*. Abeokuta: Gbemisodipo press Ltd.
- Kola, A. J. and Taiwo, A. K. (2013). *Analysis of Gender performance in physics in colleges of Education, Nigeria*.
- Nnenna G. E. and Adukwu B. C. (2018). Influence of gender and school location on senior secondary school students achievement in biology Inagbani Education Zone of Enugu State. *Nnenna G. E. and Adukwu B. C. (2018) Influence of gender and school location on senior secondary school students achievement in Nigeria Journal of Education and Practice, 22-28*.
- Nundy, S. (2001). *Raising achievement through the environment: a case for fieldwork and field centres*. Nundy, S. (2001). Raising achievement through the environment: a Peterborough: Nundy, S. (2001). Raising achievement through the environment: a case National Association of Field Studies Officers, Peterborough.
- Okereke, C and Onwukwe, E.O. (2011). Influence of gender, school location and the use of play simulation on school achievement in chemistry. *JORIND, 9(1)*.
- Okoye, P. O. (2016). Influence of Gender and Cognitive Styles on Students' Achievement in Biology. *International Journal of science and technology, 5(1)*, 59-55.
- Oludipe, D. I. (2012). Gender difference in Nigeria junior secondary students' academic achievement in Basic Science. *Journal of educational and social research, 2(1)*.
- Oyewole, I. Y. (2003). The Need for a revised secondary School science Curriculum in Nigeria. *The Educator: Journal of Educational Association, 1(4)*, 23-25.

Udousoro, V. J. (2003). Gender difference in computing participation: The case of University of Uyo. *International Journal of Educational Development (IJED)*, 2(1), 190-199.

WAEC. (2009). *Chief Examiner's Report*. Lagos: WAEC.