

THE STATUS OF BEHAVIORAL OBJECTIVE ON SECONDARY SCHOOL STUDENTS' PERFORMANCE IN BIOLOGY PRACTICAL IN IREPODUN LGA KWARA STATE

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Abstract

This study observes the status of behavioural objectives on senior secondary school students' performance in Biology practical in Irepodun LGA, Kwara State, Nigeria. The target population for the study comprised Senior Secondary School two (SSS II) students in Kwara State. One hundred and eight (130) Biology students in Senior Secondary school two (SSS 2) took part in the investigation. A quasi-experimental, non-randomized, non-equivalent, pre-test, post-test control group involving a 2x2x3 factorial design was employed as research design. The dependent variable was students' scores in performance test. The independent variables were the lecture method. The test scores were analyzed using mean scores, standard deviation, t-test and analysis of covariance on the three null hypotheses formulated. An alpha level of 0.05 was used to determine the significant level. Findings from the study showed that the experimental group significantly performed better in Biology academic performance test than the control group. Based on this finding, it was recommended that Biology teachers should always present the behavioural objectives to the students prior to the lesson in order to enhance students' full participation in the lesson.

Key Words: Behavioral Objective, Secondary School Students' Biology Practical.

Introduction

Science is a process of devising a solution to an observed problem of living things and non-living things through observation, experimentation, collection of data, fact drawing inference and conclusion. Nigerian Institute of Science Laboratory Technology (NISLT, 2013) defined science as the systemic study of the structure and behaviour of the physical and natural world through observation, and experimentation. Science could be classifying into two branches: pure and applied science. Pure or natural science such as biology, chemistry, physics and astronomy are studied, in the secondary schools as the basic sciences. Applied sciences include medicine, agriculture, engineering, architecture and so on. Science is the foundation of all disciplines; Physics is one of the basic science subjects. It is the study of the relationship between matter and energy in its entire ramification.

Science and technology are in the synergy, one leads to the other, that is science precedes technology. Science produces 'know-what' and technology produces 'know-how'. The laboratory is the link between science and technology. The existence of science laboratory in secondary school has become an essential requirement to give opportunity for students to do practical work. Practical work is an effective way of learning and reinforcing theoretical concepts in science. Teachers who make effective use of practical works often find that student learn better through practical work, teaching are enhanced and becomes more interesting for both the learner and the teacher (Richard, 2012).

Biology as an important science subject has made it possible for man to know more about the world. Therefore, there is the need to teach it effectively. The effective teaching of science subjects can lead to the attainment of scientific and technological greatness (Abidoye, 2015). Abimbola & Abidoye (2013) examined the views of Biology teachers on the status of ecology teaching in Kwara State. The study sample one hundred and forty two (142) secondary Schools. The study revealed that both male and female Biology teachers viewed ecology teaching the same way that is ecology teaching was not properly done due to lack of instructional materials. This ecology teaching is full of practical work mainly on field work which is always on natural resource.

Omosewo (1999) stated that a behavioural objective is a statement of proposed change expected from learners after had been exposed to learning for specified period. These changes desired and valued by teacher are expected to occur in thoughts, actions and feelings of the students. These are the cognitive, psychomotor and affective domains. A behavioural objective, which is student-oriented, places the emphasis upon (Ajagun, 2000). Nnaka and Anaekwe (2004) in their separate findings have attributed to non-availability of necessary facilities for the teaching of science subjects, students' socio-economic background, level of intelligence among other things. Teachers blame the management of the system, for not providing adequate equipment or materials as well as poor conditions of service. Ogbeba and Ogbeba (2007), in agreement with these claims have confirmed that there are inadequate laboratory facilities in our secondary schools.

Achor, (2003) and Ogbeba (2009) recommend that most science teachers in secondary schools in Nigeria should make use of varying forms of teaching strategies to be able to cope with some specific difficulties associated with the

Teaching of science. In order, words, it implies that teachers are knowledgeable in science content but not in pedagogical aspects. West African Examinations Council (WACE), National Examinations Council (NECO) and National Business and Technical Examinations Board (NABTEB), have similar aims and objectives of practical Biology, Chemistry and Physics. The objectives of the practical examination is to test how well the candidates understand the nature of scientific investigation and their capacity in handling simple apparatus in an experiment to determine an answer to a practical question. It is also to determine the competence of candidates in demonstrating their understanding of some of the principles involved in small-scale laboratory experiments. The practical test will contain enough instructions to enable candidates to carryout experiment. Even when stardard experiments such as the determination of focal length, or specific heat capacities are set, candidates was told what readings to take how to calculates the result. Therefore, it should not be necessary for candidates to learn by heart how to perform any experiment (Umoren and Aniashi 2007)

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The general purpose of this study is to determine the effects of behavioural objectives on senior secondary school students' performance in practical Biology in Irepodun, Kwara, State.

Specifically the study found out whether:

1. students who were exposed to behavioural objectives in Biology performed better than their counterparts that were not exposed to the treatment;
2. male students performed better than their female counterparts in the experimental group; and

Research Questions

The under listed questions were answered:

1. What is the academic performance of students who were exposed to behavioural objectives and those who were not exposed to treatment?
2. Is there any effect of gender in the academic performance of students who are exposed to behavioural objectives?

Research Hypotheses

The under listed hypotheses were tested:

1. There is no significant difference in the academic performance of students that were exposed to behavioral objectives and those who were not exposed to the treatment.
2. there is no significant effect of gender on the performance of students exposed and those not exposed to behavioural objectives.

Methodology

These studies have been carried out in senior secondary school in Irepodun LGA, Kwara State, Nigeria. This included all senior secondary (SSS II) students in Kwara State, Nigeria. The studies were carried out in two (2) secondary schools. The total numbers of One hundred and eight (130) Biology students in Senior Secondary school two (SSS 2) were involved in the study. Variables that were tested in the study were: behavioural objectives and those who were not exposed to treatment as well as the gender of the students. The finding is presented based on the research questions and hypotheses. The hypotheses were tested using Analysis of Covariance (ANCOVA) and Standard deviation. The total number of students participated in the study are 130 (male 93 and female 37)

Hypothesis One: There is no significant difference in the academic performance of students that were exposed to behavioural objectives and those who were not exposed to control group.

Table 1: ANCOVA of the difference in the academic performance of students in control and experimental group.

Source	Type III	Sum of	df	Mean	Cal. <i>F</i> .	Sig.
Remark		Square	Square			
Corrected	1502.15a	2	751.076	61.79		0.00
model						
Intercept	3333.33	1	3333.33	274.21		0.00
Pretest	53.59	1	53.592	4.41	0.00	
Groups	1348.90	1	1348.903	110.97		0.04
Error	127639.	115	12.156			
Total	47879.00	130				
Corrected	2778.55	129				
Total						

Table 1 reveals that the p value is less than 0.05 ($p = 0.000 < 0.05$) significance level. This therefore implies that there is difference in the academic performance of students that were exposed to behavioural objectives and those who were not exposed to treatment. Thus the null hypothesis which states that there is no significant difference in the academic performance of students that were exposed to behavioural objectives and those who were not exposed to treatment is rejected. In order to know the group of students that brings about the difference post-test mean score and standard deviation of the experimental and the control groups was calculated.

Table 2: Post-test mean scores and standard deviation of the experiment and the Control Group

Group	N	Mean	Sd
Experimental Group	67	23.96	4.152
Control Group	63	16.63	2.737
Total	130	20.44	5.096

Table 2 shows that the post-test mean scores of student taught chemistry practical with prior knowledge of behavioural objectives were 23.96 with SD 4.15 and mean scores of the control group 16.63 with DS 2.737 respectively. The mean scores of the experimental group were 7.33 higher than the control group

Hypothesis Two:

There is no significant effect of gender on the performance of students exposed and those not exposed to behavioural objectives.

Table 3: post-test mean Scores and Standard deviation of the experimental Group based on gender.

Gender	N	Mean	Sd
Male	93	21.026	5.576
Female	37	18.900	3.144
Total	130	20.435	5.096

Table 3 shows the mean scores and standard deviation of male and female students in the experimental group. The mean score of male students taught Biology practical with the prior knowledge of behavioural objectives was 21.026, while the mean score of female students taught practical Biology with the prior knowledge behavioural objectives was 18.90. The mean score of the male students was 2.126 higher than that of the female students. Further analysis was conducted to test whether the difference in the means was statistically significant; this was shown in table 3.

Discussion of Finding

The study revealed that the experimental group exposed to behavioural objectives performed significantly better in Biology subject practical than their counterparts in the control group. This attests to the efficacy of the use of behavioural objectives as a tool for improving students' academic performance in

Biology practical. This is in agreement with the findings of Umorem and Aniashi (2007) observed prior presentation of behavioural objectives and students' achievement in Biology and the result indicated that there is significant.

The finding of the study revealed that both male and female students benefited from the use of behavioural objectives learning strategy.

The male students had higher mean score than female students. This may be due to that, the male students realized more of the importance of Biology learning for their future. The findings is in agreement with the finding of Adebola (2011) who observed the effect

of behavioural objectives on students' Achievement in Senior Secondary School

Mathematics instructions when used as advance organizers and the result indicated that there are significant difference in the performance of male and female students.

Recommendations

Based on the findings of this study, the following recommendations were considered appropriate:

1. The use behavioral objective is found to be an effective instructional strategy and therefore it should be used for teaching and learning process not only in teaching sciences practical but all aspects of science subject.
2. There should motivation for the female students inorder to improve their academic performance

References

- Abidoye, F. O. (2015): Influence of Gender and Academic Performance on the Perception of Biology Teachers on Teaching of Ecology in Secondary Schools. *Ilorin Journal of Education*, University of Ilorin, Faculty of Education. 34 (4) pp 31-37.
- Abimbola, I. O. & Abidoye, F. O. (2013). Views of Kwara State senior school Biology teachers on the status of ecology teaching. *Journal of Curriculum and Instruction* Vol. 8 No 1 pp1-10.
- Achor, E. E. (2003). Cognitive correlates of physics achievement of some Nigerian senior secondary students. *Journal of the Science Teachers Association of Nigeria* 38(1&2), 10-15.
- Adebola, S. I. (2011). The effect of behavioural objectives on students' Achievement in Senior Secondary School Mathematics instructions When used as advance organizers.
- Ajagun, G. A. (2000). A study of performance of students in the Senior Secondary School Certificate Examinations in selected schools in Kano state. Tambori, *Kano journal of Education*, 6(1), 10-21.

- Awoniyi, S. A. (2000). Sex differences in academic performance. *Nigeria Journal of Gender and Development* 1, (1&2) 35-38.
- Barker, D. & Hapkieivicz, W. (1979). The effect of behavioural objectives on relevant and incidental learning at www.ccsenet.org/jel journal of education and learning vol. 1 no 2:2012
- Beskeni, R. (2011). The effect of prior knowledge in understanding of Chemistry concepts by senior secondary school students. *International Journal of Academic Research*. 3(2), 607-611
- Draper, S. (2001). Why show learners the objectives? Retrieve 22/2/2013 from <http://www.psy.gla.ac.uk/steve/objs.html>
- Marsh, P. (2007). What is known about student learning outcomes and how does it relate to the scholarship of teaching and learning? *International Journal for the scholarship of teaching and learning* 2.
- Nigerian Institute of Science Laboratory Technology (2013). Laboratory procedures for effective science practical's for science teachers and laboratory technologies in Kwara state secondary schools. A workshop organized by Kwara state ministry of education and human capital development (MOEHCD). 13th-15th may, 2013. www.nislt.gov.ng.
- Nnaka, C. U. & Anaekwe, M. C. (2004). Application of research findings in Science, Technology and Mathematics Education (STME) of enhance classroom instruction: The place of Cooperative learning strategy. *Science Teachers' association of Nigeria proceedings of the 45th Annual Conference*.
- Richard, F. (2012). *Goals of the introductory physics laboratory*. America Association of physics Teachers. Retrieved 4/11/3013
- Ogbeba, J. A. & Ogbeba, E. A. (2007). Material resources for effective Biology teaching in senior secondary schools of Benue sate. Multi-disciplinary journal of Research Development, 9(2), 134-140.
- Ogbeba, J. A. (2009). *Effective of prior knowledge of instructional Objectives on senior secondary school students' motivation and Achievement in biology*. Unpublished Ph.D. thesis, Faculty of education, Benue state University, Makurdi.

- Omosewo, E. O. (1999). The impact of the use of behavioural objective on students' achievement in Physics. In *Innovation Approaches to Education and Human Development*. Vol.4 Eds C.Ezeomah, U. Effiong, U. Akpan and T.O. Oyetunde, pp 90-96. A textbook published by the University of Jos, Nigeria. ISBN 978-2949- 24-8.
- Umoren, G. U. & Aniashi Sylvester Ogong (2007). Prior presentation of behavioural objectives and students' achievement in Biology. *Educational research and Review*. 2(2), 22-25.