

TEACHING PHYSICS FOR INTEREST: THE EFFECTIVENESS OF USE OF IMPROVISED INSTRUCTIONAL MATERIALS

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Abstract

The paper was designed to investigate the use of improvised instructional materials on students' interest in physics. The study adopted quasi – experimental design and was carried out in southern senatorial district of Cross River State, Nigeria. A total of one hundred and twenty (120) senior secondary school physics students participated in the study. The opinion of the students was obtained using Physics Opinion Inventory (POI) with reliability of 0.63. Two research questions were formulated and answered using means and standard deviation. The results show a significant difference in the interest between treatment and control groups, no significant difference exist in the interest of male and female students in physics. The paper conclude that, instructional materials provided to students facilitate students' interest and that teachers should encourage students to see physics at their door steps by developing positive attitudes and interest towards physics.

Key Words: Teaching, Physics, Interest, Male, Female, Instructional Material.

Physics occupies a very crucial position in the scientific and technological development of any country in the world. Steps should be geared towards encouraging youths to develop positive attitudes and interest in the study of physics. In spite of effort made towards encouraging more students to study physics, studies such as those of Igwe, (2003), Etukudo, (2000), Orji (2000), Oladele and Lasisi (2006), Maduabum (1989), show that physics has the least popularity and interest index among school science subjects in Nigeria. That is to say there is lower interest index in physics than other science subjects due to students' negative attitudes and interest towards physics. It is therefore necessary to seek for an alternative way that could be used to improve students' interest in physics. The study therefore sought to find out the use of improvised instructional materials on students interest in physics.

Research carried out by (Nwargu, 2006), on the use of improvised instructional materials, interest and achievement in science. He observed that teachers improvise instructional materials in secondary schools without involving the students in the production of the materials. However, the Federal Republic of Nigeria, FRN (2004) emphasizes activity based and child centred learning which can develop students' interest and awareness in science most especially in physics. This implies that teachers should encourage students to develop interest in physics by providing instructional material to the students and the students fully involved in the materials provided for teaching and learning of physics.

Abonyi (2004) defines interest as the readiness to react towards or against a situation, person or thing, for example, love or hate or fear or resentment to a particular degree or intensity. He believes that interest is an internal state that influences individual action. Therefore interest in physics implies the action and reactions, feeling and impression a student has towards physics. This actions and reaction can enhance the teaching and learning of physics in Nigerian secondary schools. The worry is how do teachers teach physics so as to develop students interest in the subject. That is why the paper considered the use of improvised instructional materials in the teaching of physics with the view to developing students' attitude and interest in physics.

Purpose of the Study

The main purpose of the study is to investigate the use of improvised instructional materials on students' interest in physics. The study aimed at determining the effect of:

- (i) Use of improvised instructional materials on the interest of secondary school students in physics.
- (ii) Use of improvised instructional materials on the interest of male and female physics students.

Research Questions

The following research questions were asked to guide the study:

- i. What is the effect of use of improvised instructional materials on the secondary school students' interest in physics?
- ii. What is the effect of gender on the secondary school students' interest in physics?

Method of the Study

The method adopted the quasi experimental design. The population for the study consisted of 780 physics students (all senior secondary three (SSIII) physics students), in all the secondary schools in the Southern Cross River State, Nigeria (Calabar Education Zone,2013).. A simple random sampling technique was used to select the sample and the sample size is one hundred and twenty (120) out of seven hundred and eighty (780). Two schools were selected by simple random sampling technique through balloting by replacement which were assigned to the treatment and control group. Treatment groups were schools with equipped materials and the control groups were schools without physics materials.

The instrument for data collection was the Physics Opinion Inventory (POI) which consisted of twenty five (25) items with SA, A, S, and SD were validated by three experts in physics education. The instrument was pilot tested and the reliability coefficient was 0.63. The instruments were administered to the physics students in the two schools selected for the study. The physics teacher used for the experiment were trained. This helped to make the approach to the treatment group different from the control group. In order to avoid subject interaction among students, the selected schools were far apart from each other and by this, students from one school did not know what the students from other schools were doing. In other to avoid novelty effect, which might arouse to increase students' interest and motivation on the part of the students, simply because they were doing something different or new, the administration of the pretest and posttest were extended to all the intact classes of the streams used for the study.

The data collected were analysis using mean and standard deviation to answer the research questions.

Results

The results of the study are presented in table and in accordance with the research questions.

Research question I: What is the effect of use of treatment on student interest in physics?

Table I: Mean interest index of treatment and control group

Variables	Interest		
	Mean	SD	No
Treatment	65.24	32.85	70
Control	34.78	11.96	50

Result on table 1 above shows the mean interest of 65.24 and standard deviation of 32.85 for the treatment group and mean interest of 34.78 and standard deviation of 11.96, for the control group. This implies that the students with improvised instructional materials had higher mean interest in physics than those of the control group. The treatment group had a better interest than the control group in physics. Students who are taught and exposed to physics equipment develop higher interest in physics than those taught without materials.

Research Question 2

What is the effect of gender on students' interest in physics.

Table 2: Mean and standard deviation on the interest of male and female students

Variable	Sex	Mean Interest	SD	No
Treatment	Male	50.25	12.68	34
	Female	50.14	11.56	30
Control	Male	50.49	15.45	32
	Female	49.50	14.66	24

Result on table 2 above show mean interest of males as 50.25 with standard deviation of 12.68 while the females have a mean interest score of 50.14 and standard deviation of 11.56. The males had almost the same mean interest as that of the female in physics for the treatment group. For the control group, the mean interest and standard

deviation for male is 50.49 and 15.45 while the mean interest and standard deviation for the females is 49.50 and 14.66 respectively. This implies that treatment had no effect on sex. Boys and Girls have the same interest in the teaching and learning of physics irrespective of instructional materials provided. The result is not in favour of both the male and the female.

Discussion

The result of the study shows that the treatment group had improved interest than control group in physics. This could be attributed to the influence of improvised instructional materials that were exposed to the physics students. This result is consistent with the findings of Oladele and Lasisi (2006), and Folorunso and Nwosu (2006) who obtained no significant difference in the interest of the treatment group.

The study shows that there is no significant main effect of gender on students' interest. This is not connected with the fact that when the students are made to develop interest in physic, it does not have disparity in sexes. The result obtained are expected because there was manipulation of materials, not only by the teacher but by the physics students who are involved in the teaching learning situation.

Conclusion / Recommendation

Based on the findings of this study, it could be concluded that, interest in physics by the students will be higher if the students are made to develop positive attitude towards physics by providing instructional materials during class lessons. There was no significant main effect of gender on students' interest in physics. Encouraging science students by the use of instructional materials will help to develop higher students' interest in physics at all levels of gender.

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