

Evaluation of Instructional Media in Learning among Physics Education Students and Their Academic Performance in Cross River University of Technology Calabar, Nigeria



Ayeshung, Rose Imoniri¹, Stephen Ujum, Odey²

^{1,2} Department of Curriculum and Instructional Technology Faculty of Education Cross River University of Technology, Calabar, Nigeria

ABSTRACT: The research work is on evaluation of instructional media in learning among Physics Education students and their academic performance in Cross River University of Technology, Calabar. Instructional Medias are important implements used by both instructors and students in their teaching and learning process. Physics involves practical and theory such that the issue of teaching practical in Physics Education does not only involve the availability of instructional media but also the accessibility and utilization of instructional media as well. Two research questions and two research hypotheses were formulated to guide the study. Descriptive Survey research design was adopted for the study, 100 level, 200 level, 300 level and 400 level Physics Education students were used for the study. Population of the students were 103 students. The instrument used is Evaluation of Instructional Media and Students' Academic Performance Questionnaire (EIMSAPQ) involving items on availability and accessibility of instructional media as well as performance test. Pearson Product Moment Correlation Coefficient statistical analysis was used to test the hypotheses at 0.05 level of significance. The results shows that the availability and accessibility of instructional media significantly affect learning process among Physics Education students and their academic performance in Cross River University of Technology. It was recommended among others that, the University Physics Education laboratory should be well equipped and students should be allowed to have more access to the available instructional media.

KEYWORDS: Evaluation, Instructional Media, Physics Education, students.

INTRODUCTION

Evaluation of instructional media used in Physics Education is the assessment of their effectiveness in teaching and learning processes. Evaluation as defined by Camilus (2016) is the process of gathering and interpreting evidence regarding the problems and progress of students in achieving desirable educational goals by process of appraising their values and quality in measuring what they are supposed to measure. Instructional media in Physics Education are teaching and learning materials that are used to enhance teaching and learning in the schools. Schools cannot do without them as they boost learning by making it more realistic, reliable, appealing, as well as interesting. They are used to captivate learners' interest while building skills and developing learners' knowledge and self-confidence.

According to Inyang-Abia (2004), instructional media includes all human and non-human resources which may be used by the learner in isolation or in combination, formally or informally to facilitate the acquisition of knowledge, skills and morals. They help to educate students. In the life of a learner there is nothing as important as having the understanding of what is being taught as their performance is based on them. According to Olufumilayo (2014) the availability and use of instructional media are vital for the sustenance of improved participation in learning by students and also have positive impact on the level of teachers' motivation and academic achievement of learners. Similarly, instructional media are vital and important instrument that enables teaching and learning process to be successful, they contribute in improving learners active participation as it exposes them to the real world of learning as well as building understanding and retention because when things are seen, they are more remembered than when they are simply heard (Ngussa, Chiza, 2017). Instructional media are materials and physical means an instructor might use to implement instruction and facilitate students' achievement of the instructional objectives, examples of instructional medial are; computer, laboratory, classroom technology, blackboard and audio and video conferencing (1). Instructional media also include traditional means of delivering instruction (chalkboard, test books, overhead projectors and teachers), mass media used for education (newspapers, movies, radio and television), and the newer electronic instructional

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media (computers, interactive video, and multimedia systems) (2). Physics Education is an important sub-field within science education which focuses on teaching and learning of Physics both at secondary and university levels, it is also concern with physics teaching, preparation and the development and public understanding of Physics. Science Education provides good standards for people and leads to cultural development (Gunta & Tekollo, 2015).

In Wikipedia, Physics Education is referred to as the methods currently used to teach Physics (3). Studying Physics strengthens quantitative reasoning and problem solving skills that are valuable in areas beyond Physics as the aim is to prepare physics students to work on new ideas in Science and Technology, such as; in academic, government or in private sectors (4). The goal of Physics Education is to provide students with a broad understanding of the physical principles of the universe in order to help them develop critical thinking and quantitative reasoning skills that empower them to think about scientific problems and experiments, as well as to provide training (5). In view of the about statement, it can be seen that without the necessary instructional media for students to use, the goals of Physics Education might be difficult to obtained successfully. The use of instructional media stimulate students' learning outcome and improves their interest and academic performance in class activities and can also enhance the tutor's access to new ideas (Nwosu, John, & Ehud, 2017).

In a study conducted by Kola (2013) on instructional materials and improvisation in Physics class, results obtained indicates that what students sees cannot be forgotten easily, but what they hear can easily be forgotten. Results on impact of instructional materials carried out by Okonkwo (2015) shows that students taught with instructional materials perform better than those taught without instructional materials. The findings also indicates that instructional materials influence performance of students positively. The researcher further stated that countries all over the world especially Nigeria, a developing country develop technologically and scientifically. In another study conducted on the analysis of instructional media by Fadieny and Fauzi (2019), the results obtained indicates that instructional medias used for learning process are lacking in values ranging from 70% to 75%. The results they have also shows that 62% of the students have never used the instructional media such that their interest in using instructional media is categorized with a score of 82%. They further explained that in order to motivate students in learning Physics, it is necessary to apply learning media that are interesting and easy to access. The research findings of Abubakar (2020) shows that inadequate instructional materials in teaching has impact on the performance of students and can significantly improve students' interest on their academic excellence by improving their cognitive levels. Abubakar (2020) further suggested that for effective Physics Education there is the need for the use of instructional materials in order to conceptualize it to the student thereby transferring information to the students. Having discussed the important of the availability and accessibility of instructional materials media. This paper seeks to evaluate the importance of instructional media among Physics Education students and their academic performance in Cross River University of Technology, Calabar.

Statement of the problem

Learning process in Physics Education in schools is piqued with its own sets of problems. The issue of availability and accessibility of instructional medial is one thing and the evaluation of instructional media is another, that is, whether the instructional media are able to measure what they are supposed to measure during students learning process. Most at times students are more comfortable with theoretical aspect of learning Physics than the practical aspect. This is a cause for concern in the educational sector which should not be over looked. Thus the issues of availability and accessibility of instructional media during learning process be given serious consideration.

Purpose of the study

The purpose of the study is to examine the effect of evaluation of instructional medial in learning Physics Education and students' academic performance in Cross River University of Technology. The study sought to;

1. Determine the extent to which availability of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology
2. Determine the extent to which the accessibility of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology

Research questions

The following research questions were asked to guide the research work.

1. To what extent does availability of instructional media affect the learning of Physics Education and student' academic performance in Cross River University of Technology?
2. To what extent does accessibility of instructional media affect learning of Physics Education and students' academic performance in Cross River University of Technology?

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Research hypotheses

The following research hypotheses were tested in their null form at 0.05 significance level.

1. Availability of instructional media does not significantly affect learning of Physics Education and students' academic performance in Cross River University of Technology.
2. Accessibility of instructional media does not significantly affect learning of Physics Education and students' academic performance in Cross River University of Technology.

METHODOLOGY

A descriptive survey was adopted for the study. The study was carried out in Cross River University of Technology, Calabar, Cross River State, Nigeria. Students were the respondents of the questionnaire items. Population of the study were all Physics Education students, from first year to fourth year, totaling 103 students. 30 items questionnaire were drawn for students to freely indicate their responses. Six items were drawn for Availability of Instructional Media and another six items were drawn for Accessibility of Instructional Media while the remaining 18 items were on students' academic performance. The instrument used is Evaluation of Instructional Media and Students' Academic Performance Questionnaire (EIMSAPQ). Pearson Product Moment Correlation Coefficient was used to evaluate the availability and accessibility of instructional media. The population of the study were all 103 Physics Education students of the Department of the Curriculum and Instructional Technology. No sample was taken as the population size was manageable. The responses to the items were Strongly Agree, Agree, Disagree and Strongly Disagree with response point of 4, 3, 2, and 1.

RESULTS

The result is presented on hypothesis by hypothesis bases. All hypotheses were tested at 0.05 level of significance with appropriate degree of freedom.

Hypothesis One

Availability of instructional media does not significantly affect learning process of Physics Education and students' academic performance in Cross River University of Technology. The independent variable is availability of instructional media in learning process, while the dependent variable is students' academic performance. Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the hypothesis, the result is shown in Table 1.

Table 1. Pearson Product Moment Correlation Coefficient Analysis of availability of instructional media on students' academic performance in Physics Education. N=103

Variables	$\sum X$	$\sum X^2$	$\sum XY$	cal-r
Availability of Instructional Media	1246	12262		
Students' academic Performance in Physics Education	942	5890	12806	0.73

Significant at <0.05 , $df = 101$, critical $r = .195$

Result on Table 1, shows that the value of this coefficient indicate a positive relationship between students' academic performance in Physics Education and the availability of instructional media. The relationship is positive because the calculated r - value 0.73 does not carry a negative sign and was found to be greater than the calculated r - value of .195 when tested at 0.05 level of significance at 101 degree of freedom. Since the calculated r - value is greater than the critical r - value, the null hypothesis was therefore rejected. This means that the availability of instructional media significantly influence Physics Education students' academic performance in Cross River University of Technology, Calabar.

Hypothesis Two

Accessibility of instructional media does not significantly affect learning of Physics Education students' academic performance in Cross River University of Technology. The independent variable is accessibility of instructional media in learning process, while the

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dependent variable is student's academic performance. Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the hypothesis, the result is shown in Table 2.

Table 2: Pearson Product Moment Correlation Coefficient Analysis of accessibility of instructional media on students' academic performance in physics education N=103

VARIABLES	$\sum X$ $\sum Y$	$\sum X^2$ $\sum Y^2$	$\sum XY$	CAL-R
ACCESSIBILITY OF INSTRUCTIONAL MEDIA	1246	11480	12107	.28
STUDENTS' ACADEMIC PERFORMANCE IN PHYSICS EDUCATION	942	5890		

Significant $\alpha < 0.05$, $df=101$, critical $r = .195$

Result on Table 2 shows that the calculated r- value of 0.28 was found to be more than critical r- value of .195 when tested at 0.05 alpha level of significance and at 101 degree of freedom. The result shows a positive moderate significant relationship. This means that the null hypothesis was rejected as the accessibility of instructional media in learning process significantly affect Physics Education students' academic performance in cross River University of Technology.

DISCUSSION OF FINDINGS

Hypothesis One

Analysis of data in Table 1 shows that was a significant relationship between availability of instructional media in learning process in Physics Education and students' academic performance in Cross River University of Technology, Calabar. This finding is in line with the view of _____ that.....

Hypothesis Two

The finding of this hypothesis indicate a moderate relationship between accessibility of instructional media in learning process in Physics Education and students' academic performance in Cross River University of Technology, Calabar. This finding is supported by _____ who posited that.....

CONCLUSION

Instructional media are very important tools and boosters of learning process among Physics Education students. They facilitate learning processes. Evaluating their availability and accessibility are also essential in learning. Without them, learning becomes complicated and affect students' learning outcome which is their academic performance. Instructional media serves as motivating factors to students. Instructional media are of different types ranging from human to material media.

RECOMMENDATIONS

The following recommendations were made based on the findings of this study

1. University Physics Education laboratory of the faculty of education should be well equipped with modern instructional media and made available to students.
2. Instructional media should be made easily accessible to students for effective learning process.

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