Available online at www.elixirpublishers.com (Elixir International Journal)

Educational Technology

Elixir Edu. Tech. 90 (2016) 37670-37672

ISSN: 2229-712X

Relationship between Improvised and Standard Instructional Material with Students Academic Performance

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ARTICLE INFO

Article history:
Received: 1 May 2015;
Received in revised form:
8 January 2016;
Accepted: 13 January 2016;

Keywords
Standard instructional material, Students Academic Performance.

ABSTRACT
The research work was designed to find out the relationship between improvised and standard instructional material with academic performance in physics, in udu local government area of delta state. Some secondary schools in the area were used in the research. The data was collected via questionnaire in which students administered using chi-square method for the analysis; it was found out that the calculated value was more than the critical value which implied that there was significant effect of improvised and standard instructional material on the performance of secondary school students. This leads to the conclusion that government should endeavor to provide standard instructional materials for secondary school students so that there learning can be effective.

Introduction

Science has been regarded as the bedrock of which modern day technological breakthrough is build nowadays, countries all over the world especially the developing ones like Nigeria are striving hard to develop technologically and scientifically. Since the world is turning scientific oriented and all livelihood now depends on science and technology to function. According to Ogunleye (2002), science is a dynamic human activities concern with understanding the working of our world. This understanding helps man to know more about universe without the applications of science, it would have been difficult for man to explore the universe and its endowment. Science comprises of the basic discipline such as physics, chemistry, biology and mathematics. Investigation have shown that secondary school students are exhibiting lack lecture interest in science (Esiobu 2005) besides, physics as one of the science discipline remains one of the most difficult subject in the school curriculum according to the Nigeria Education Research and Development Council (NERDC) (Isola 2010) studies have revealed that the performance of Nigeria students in ordinary level physics was generally and consistently poor over the years (Akanbi 1983 and Omosewo 1999). Poor academic performance in physics could be attributed to many factors like the attitude of the students towards physics and the teacher's strategy which was considered as an important factor. This implies that mastering of physics concept might not be fully achieved without the use of instructional materials in teaching of physics without instructional materials may certainly resolved in poor academic performance. Frenzer, Okebukola and Jegede (1992) stressed that a professionally qualified science teachers no matter how well trained would not be able to put his ideas to practices and materials necessary for him or her to translate his competency into reality.

Bassey (2002) opined that science is resourced intensive and in a period of economy instability, it may be difficult to find some of the electronic gadgets and equipment for the teaching of physics in schools adequately. A situation that further compound by the economic situation of the country and at times some of the imported sophisticated materials and equipments are found expensive and irrelevant, hence the need to produced materials locally are highly recommended.

Researchers such as Ogunleye (2002) Obiocha (2006) reported that there were inadequate resources for teaching science subjects in secondary schools in Nigeria. They further stated that the available ones are not usually in good conditions. There is the need therefore for improvisation. Daramola (2008) however noted that improvisation demands adventure, creativity and perseverance on the part of the teacher such skills are only realizable through well planned training program on improvisation.

Statement of the Problem

The problem of the present study is to investigate the effects of using instructional materials on the performance on secondary school students in physics.

Research Questions

The following research questions are stated to guide the study.

1. What is the impact of instructional materials in the teaching of physics in secondary schools?
2. How effective are improvised instructional materials in the teaching of physics in secondary schools?
3. Is there any difference between the performance of student taught with improvised instructional materials and those taught with standard instructional materials?

Hypotheses

1. There is no significant difference in the response of male and female teachers on the impact of instructional materials in the teaching of physics in secondary schools.
2. There is no significant difference in the response of male and female teachers on the effectiveness of improvised instructional materials in the teaching of physics in secondary schools.
3. There is no significant difference between the performance of students taught with improvised instructional materials and those taught with standard instructional materials.

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Purpose of the Study

The general purposed of the study is to investigate the effect of improvised and standard instructional material on secondary schools student academic performance Udu Local Government Area of Delta State specifically.

1. To examine standard instructional material for teaching and learning of physics in secondary schools.
2. To investigate the improvised instructional material for teaching and learning physics in secondary schools.
3. To examine the factors affecting improvisation in secondary schools.
4. To examine available instructional material for teaching physics in secondary school.

Significance of the Study

This study is necessary because it will be of great benefit to the students, teachers and the society at large. Therefore to the teachers who has identified the effect of improvised and standard instructional materials in physics will make appropriate strategies to facilitates effective instructional materials of the subject in secondary schools if schools administrators and physics teachers consider the suggestions in planning their programmes, materials will be achieve.

Scope of the Study

This study was carried out to verify the effect of improvised and standard instructional materials on secondary school student's academic performance in physics in Udu Local Government Area of Delta State Nigeria.

Research Design

The research is to gather researcher to assess the effect of improved and standard instructional materials on secondary school student's academic performance in Physics Warri North Local Government of Delta State. The instruments used are well structured questionnaire.

Population of the Study

The population of the study comprises of five Secondary Schools in Udu Local Government Area of Delta State.

Sample and Sampling Technique

The sample was made up of one hundred students from five major schools in the study area. A multistage sampling was carried out first the Local Government Area was divided into five (5) communities were randomly selected, Ekete, Ovwain, Orhuwhorun, Usiefurun and Ujevwu. For these communities a sample random sampling was carried to select twenty students for each of the selected communities making a total of one hundred students.

The five Secondary Schools containing both male and female students. In each of the schools twenty students comprising of ten boys and ten girls were selected to get a fair response from the students, below are the samples of the schools chosen for the study in tabular form.

However in selecting the total numbers of students for this study a stratified sampling technique was a top rest hence a total number of twenty students cash from the selected five (5) schools sample of given grand total of one hundred students both male and female.

Research Instrument

The research developed questionnaire consisting of socio-economic characteristics and investigation section. The investigative section consists of basically questionnaire that border students mind, also prepared with five (5) points like type scale to measure the effect of improvised and standard instructional materials on Secondary School Students Academic Performance in Physics in Udu Local Government Area.

Another 10 items questionnaire was also prepared with a four (4) point likert scale to measure the barriers towards the effect of improvised and standard instructional materials on secondary school students academic performance in personal interview were also employed to elicit information from the students.

Validation of the Instrument

The questionnaire was subjected to validation of lecture in the department of Physics Education DELSU Unit of College of Education, Warri to ensure both content and construct validity.

Reliability of the Instrument

The reliability of the instrument was established with the using of the Test and Retest Techniques.

Method of Data Collection

Data collection involved both Primary and Secondary sources included Published and Unpublished information about the study area and other related areas of similar interest. Primary data were collected from the sample students using well structured and unstructured questionnaire administer.

Method of Data Analysis

Descriptive statistics was used for example Chi – Square analysis is used to illustrate distribution or spreading of some variables such as student opinion of effect of improvised and standard instructional materials on secondary school students Academic Performance in Physics, One hundred copies of questions were distributed and administer by the respondents.

Formulae: Shown below $x^2 = \frac{(o - e)^2}{e}$

Where "O" is observed value and "e" is expected value respectively.

Testing of Hypothesis I (Ho_1)

There is no significant difference in the response male and female teachers on the impact of instructional materials in the teaching of Physics in secondary schools.

The expected frequency (E) of each cell of the sample in the table above was calculated using the formula

$$E(RC) = \frac{FR \times FC}{N}$$

Where E = Expected frequency of the cell

FC = Total column frequency

FR = Total row frequency

N = Total frequency.

From the above table, the value of each cell was computed using the formula

$$X^2 = \Sigma \frac{(0 - E)^2}{E}$$

To determine critical X^2 value, we first determine the associated degree of freedom (df). The degree of freedom in a contingency table is given by

$$DF = (R -) (C - 1)$$

Where R = The number of rows

C = The number of columns

So, in this case, the X^2 – CAL which is given as 21.523 in greater than the X^2 – critical which is given as 12.292 at 0.05 level of significant with degree of freedom. Since X^2 – Cal is greater than the X^2 – Critical the hypothesis is rejected. These means there is no significant difference in the response of male and female teachers on the impact of instructional materials in the teaching of Physics in Secondary Schools Students.

Testing of Hypothesis Ii (Ho_2)

There is no significant difference in the response male and female teachers on the Factors Responsible for Teachers Improvisation of Instructional Materials in the Teaching of Physics in Secondary School students.

S/N	Name of School	Types of School	Male	Female	Total
1.	Orhuwhorun Secondary School	Mixed	10	10	20
2.	DE –Bride Secondary School	Mixed	10	10	20
3.	Ovwian Secondary School	Mixed	10	10	20
4.	Usiefurun High School	Mixed	10	10	20
5.	Excellent Pillars Secondary School	Mixed	10	10	20

S/N	SA	A	D	SD	TOTAL	DF	X^2 – CAL	X^2 – CRIT	LEVEL OF SIGN
1.	40	20	14	46	120	9	21.523	12.792	0.05
2.	30	38	12	40	120				
3.	50	14	20	36	120				

S/N	SA	A	D	SD	TOTAL	DF	X^2 – CAL	X^2 – CRIT	LEVEL OF SIGN
4.	20	19	40	41	120				
5.	30	20	18	52	120	41.299	29.328	9.00	0.05
6.	50	30	16	24	120				

S/N	SA	A	D	SD	TOTAL	DF	X^2 – CAL	X^2 – CRIT	LEVEL OF SIGN
7.	39	20	40	21	120	9		7.1	
8.	40	30	14	36	120		29.633		0.05
9.	50	14	18	38	120				

From the above table, it is observed that the X^2 – Calculated which is given as 41.299 is greater than the X^2 – Critical which is given as 21.328 at 0.05 level of significance with degree of freedom.

Since X^2 – Cal is greater than the X^2 – Crit the null hypothesis is rejected. This implies that there is significant difference in between Poor Administration in Secondary School and the Cal.

Testing of Hypothesis Iii (Ho_3)

There is no significant difference between the Performance of Students Taught with Improvised Instructional Materials and Those Taught with Standard Instructional Materials.

From the above table above, its observed that X^2 – Calculated which is given as 29.633 is given as 7.321 at 0.05 level of significant with a degree of freedom.

Since the X^2 – Cal is (>) greater than X^2 – Crit the null hypothesis is rejected. These means there is significant difference between the performance of Students Taught with Improvised Instructional Material and Those Taught without Improvised standard Instructional Materials.

Conclusion

The place of instructional material in the effective implementation of any education programme cannot be undermined instructional materials perform functions as the extension of the range of experience available to learners supplement and complement the teacher verbal explanations is making learning experience richer and providing the teacher with interest into a wide variety of learning activities.

Instructional materials emphasize instruction and enhance learning in the skills and attitude. This calls for on the part of the Physics teachers the ability of the teacher is to make us "Local" materials in place of "Standard" materials make lesson more effective and improvised students performance.

Recommendation

Base on the finding of the study, the following recommendations are made;

1. The teachers should make use of different instructional materials as long as they are relevant to their lesson content.
2. Government should assist in the supply of those instructional materials that could not be locally produced.
3. Teachers of physics should be supervised and assessed periodically in relation to there students performance.
4. The cost of procuring instructional materials should not be subsidized so that many stakeholders will be able to afford it.
5. Regular training, workshops is highly recommended. So that the teachers will be resourceful in using and selecting suitable instructional materials.

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