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# Effects of Information and Communication Technology Facilities on the Academic Performance of Students in Computer Application Course in Federal Colleges of Education in North-West Nigeria

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**Abstract**
The aim of this work was to find out the effects of using information and communication technology facilities on the academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria. Related literature was reviewed. The research design was descriptive survey design. Two research questions and two hypotheses were raised to guide the study. The chi-square statistical instrument was used in analyzing the data at .05 level of significance. The sample of the study was made up of 318 randomly sampled students and lecturers from five Federal Colleges of Education in North-West, Nigeria. The result revealed that Lecturers should develop computer skills and be properly trained in the use of ICT facilities in teaching and learning computer application course and that That ICT facility alone has no effect on how the students understand lectures, how the lectures are being taught and the academic performance of students in computer application course. Based on this finding, it was recommended that Head of Departments should make sure that computer oriented courses are taught by lecturers who are trained in the use of ICT facilities in teaching and learning.
**Keywords**: Communication, Information, Computer, Technology, Performance, Education.

## 1.0 Introduction

Nigeria, as a developing country is faced with economic and social problems such as poverty, unemployment, corruption and different types of crime. Shettima (2010) stated that the Federal Government in a bid to alleviate these problems has to reform many sectors of the economy including the educational sector. According to Njoku (2009), it is in the process of finding the solution to many of these problems confronting the nation that the Revised National Policy on Education in 2004 made provision for the introduction of the use of Information and Communication Technology (ICT) facilities in teaching and learning at all the levels of education. This was aimed at providing employed skills to the students.

Computer application course was included in Business Education programme curriculum in Colleges of Education in Nigeria in order to prepare the students who would be future teachers with basic computer and Information and Communication Technology (ICT) skills at the Colleges of Education level in Nigeria. It then becomes necessary that computer oriented course like computer application should be taught and learned with adequate Information and Communication facilities. These facilities should be a replica of those used in computer related occupation world-wide. Eze (2008) opined that computer application as a skilled course should be taught with adequate Information and Communication Technology facilities in order to motivate and increase the interest of the students towards better academic performance.

Apart from the need to develop employable skills to the students, the performance of students in a developing country like Nigeria is decreasing and has become a cause of concern to stakeholders in education in Nigeria. This could be attributed to the large class size, inadequate teaching facilities, etc. Hence, Ekula (2012) observed that with the increasing large class-size in Federal Colleges of Education in North-West Nigeria, there is a great need to provide ICT facilities that will enable the Lecturers to communicate effectively with the students. He maintained that theses ICT facilities will contribute in no small measure to increase their learning interest, motivate and increase their academic performance of students especially in computer/ICT related courses. This was in line with the findings of Abimbola (2009) that the application of computer and other ICT facilities in teaching and learning will motivate the students and increase their interest in learning computer related courses and as a result increase their academic performance.

In educational institutions, success is measured by academic performance, as career competition grows ever fiercer in the working world; the importance of students doing well in school (academic performance) has caught the attention of parents, the society, government and educational institutions. Ibraheem (2010) stated that poor academic achievement in skill oriented course could be attributed to many factors among which availability of facilities itself was considered as an important factor. This implies that the mastery of computer related concepts might not be fully achieved without the use of ICT facilities. The teaching of computer oriented courses without ICT facilities may certainly result in poor academic achievement. He stressed that a professionally qualified

 

Lecturer no matter how well trained, would be unable to put his ideas into practice if the school setting lacks the facilities necessary for him to translate his ideas into reality.

ICT facilities encompasses the computer hardware and software, the network and several other devices (video, audio, photography camera, etc.) that convert information (text), images, sound, motion, and so on into common digital form (Yusuf, 2000). Information and Communication Technology (ICT) facilities are instructional materials which teachers use as alternative means of communication to transmit curriculum content to the learner. ICT combines two or more different types of instructional materials at the same time in a presentation. With the supply of ICT facilities in the Federal Colleges of Education in North-west Nigeria, everybody expect to see the effects of these facilities in teaching and learning.

It is based on this background that a study on the effects of using information and communication technology facilities on the academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.

### 1.1 Statement of the Problem

It has been widely acknowledged that Information and Communication Technology facilities can be used to improve the quality of teaching and learning at any level of education. In fact Information and Communication Technology facilities are becoming part of the daily tools for teaching and learning, thus their use in education by teachers and students is becoming a necessity.

The researcher observed that the students offering computer oriented courses always complain of learning computer application without the necessary information and Communication Technology facilities. They argued that lack of ICT facilities affects their interest and motivation in teaching and learning computer application as a course. Akale (2006) posited that students' academic performance can only improve if all the facilities required in teaching and learning the course are available and properly been used in teaching the students in this ICT era.

Secondly, assessment of students' academic performance in computer application course from 2002 to 2007 was mainly on theories taught rather than the theoretical and practical aspect of computer application course. Hence, Ekula (2003) attributed poor academic performance of students in Colleges of Education on either the lack of seriousness of the students to perform their academic responsibilities or lack of facilities for teaching and learning skilled-oriented courses.

The supply of these ICT facilities and the training of Lecturers on the use of these ICT facilities in teaching and learning by Federal Ministry of Education in collaboration with the National Commission for Colleges of Education (NCCE) and Education Trust Fund (now Tertiary Education Trust Fund) have been on for the past six years. Now, the ICT laboratory has been properly equipped with the required facilities, the lecturers (human resources) have been provided but how these facilities have affected the academic performance of students in Computer Application course has not been ascertained. Hence, the researcher has to carry out a study on the effects of using information and communication technology facilities on the academic performance of students in Federal Colleges of Education in North-West Nigeria, using computer application course as a case study.

### 1.2 Objectives of the Study

The general objective of this study is to find out the effects of using information and communication technology facilities on the academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria, using computer application course as a case study. The specific objectives of this study are:

1. Examine the effects of human resources (trained lecturers) Information and Communication Technology facilities on academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.
2. Find out the effects of using Information and Communication Technology facilities on academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.

### 1.3 Research Questions

The study is aim at answering the following questions:

1. What are the effects of human resources (trained lecturers) Information and Communication Technology facilities on academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria?

2. What are the effects of Information and Communication Technology facilities on academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria?

### 1.4 Research Hypotheses

In line with the research questions formulated, the following null hypotheses were postulated and tested:

1. There is no significant effect of human resources Information and Communication facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.
2. There is no significant effect of Information and Communication Technology facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.

## 2.0 Methodology

### 2.1 Research Design

Descriptive survey design was used for this study. Descriptive survey design according to Nworgu (2006) is a way in which a group of people or items is studied by collecting and analyzing data from only a few people or items considered to be representative of the entire group. Also, Anikweze (2010) opined that survey design permits the gathering of information from large sample of people relatively quickly and inexpensively.

### 2.2 Population for the Study

The population for this study comprised of all the Lecturers of Computer application and all the NCE II students offering Computer application course in the five Federal Colleges of Education in North-West Nigeria. There are twenty-two (22) Lecturers and one thousand, one hundred and thirty-six (1136) students giving a total population of one thousand, one hundred and sixty (1160).

### 2.3 Sample Size

A sample of three hundred and eighteen (318) lecturers and students was used for this study. All the twenty-two (22) lecturers who were trained by the National Commission for Colleges of Education (NCCE) at Dialogue Computers in Kaduna on the use of ICT facilities in the Federal Colleges of Education used in this study were all used because they were not many. A sample of two hundred and ninety-six (296) students was selected from the one thousand, one hundred and thirty-six (1136) students using Yaro Yamane formula for a finite population.

### 2.4 Instrument for Data Collection

A questionnaire tagged Assessment of the Effects of Information and Communication Technology on the Academic Performance of Students in Computer Application course Questionnaire (APCAQ) was designed by the researcher which was used for data collection. The questionnaire was used to collect information from lecturers and students who were the respondents for this study. The instrument was of two sections (A and B). Section A consisted of the biographical data of the respondents. Section B consisted of ten (10) questionnaire items.

The ten (10) items were close-ended questions. They are placed in four (4)-point rating scale of Strongly Agreed (SA), Agreed (A), Disagreed (D), and Strongly Disagreed (SD).

### 2.5 Validity of the Instrument

To ensure that the questionnaire measure what it intend to measure experts in the field of psychometrics and computer education were consulted. The experts established that the instrument was in line with the aim of the research and was valid for the desired outcome.

### 2.6 Procedure for Data Analysis

Frequency, percentage and mean were used to analyze the data to answer the research questions. The mean for each item was calculated based on the four (4) – point rating interval used in the study. The null hypotheses were tested using the Statistical Package for Social Science (SPSS) version 16.0 chi-square statistics ($\chi^2$) at 0.05 level of significance. This was in line with Osuala (2004) who stated that chi-square ($\chi^2$) is used to test hypothesis of relationship between one independent variable and one dependent variable.

To ease the statistical analysis, all the Strongly Agreed and Agreed were taken as “Agreed”. Similarly, all the Disagreed and Strongly Disagreed were taken as “Disagreed”.

**Decision Rule:** A weighted mean score of 2.50 and above was considered as useful or agreed, while a weighted mean score of 2.49 and below was considered not useful or disagreed with respect to the research questions. This is because the mean rating of 4+3+2+1 = 10/4 = 2.50 in testing the null hypotheses, if the calculated chi-square ($\chi^2$) value is less than the table value the null hypothesis was accepted, while if the calculated chi-square ($\chi^2$) value is greater than the table value the null hypotheses was rejected.

## 3.0 Analysis of Data

### 3.1 Research Question One (1)

*What are the effects of human resources Information and Communication facilities on academic performance of students in computer application in Federal Colleges of Education in North-West Nigeria?*

Item 1 – 5 were used to answer this research question. The details of the responses are summarized in the table 1 below:

**Table 1. Percentage and Mean of Effects of Human Resources ICT Facilities on Academic Performance of Students in Computer Application Course**

| S/N | ITEMS | SA | A | D | SD | TA | TD | TR | %A | %D | X | RATING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Lecturers that do not have computer knowledge should not teach computer application course. | 756 | 174 | 92 | 25 | 930 | 117 | 1047 | 88.83 | 11.17 | 3.29 | 2nd |
| 2 | Knowledge of computer is not enough to teach computer application course. | 600 | 282 | 86 | 31 | 882 | 117 | 999 | 88.29 | 11.71 | 3.14 | 3rd |
| 3 | Lecturers should be trained in the use of ICT facilities. | 768 | 171 | 82 | 28 | 939 | 110 | 1049 | 89.51 | 10.49 | 3.30 | 1st |
| 4 | Lecturers without computer skills and trained in the use of ICT facilities does not motivate and increase the interest of students in teaching and learning computer application course | 648 | 168 | 94 | 53 | 816 | 147 | 963 | 84.74 | 15.26 | 3.03 | 5th |
| 5 | Use of Lecturers without computer skills and trained in the use of ICT facilities has no effect on the academic performance of students in computer application course. | 652 | 210 | 98 | 36 | 862 | 134 | 996 | 86.55 | 13.45 | 3.12 | 4th |
| **AGGREGATE MEAN SCORE = 3.18** | | | | | | | | | | | | |

Source: Field survey 2014

The above table revealed that the respondents did accept that Lecturers should be trained in the use of ICT facilities. The aggregate mean score of 3.18 indicates that both lecturers and students who are the respondents unanimously agreed that lecturers' knowledge of computer and obtaining computer skills and knowledge have an effect on the academic performance of students in computer application course.

### 3.2 Research Question Two (2)

*What are the effects of Information and Communication Technology facilities on academic performance of students in computer application in Federal Colleges of Education in North-West Nigeria?*

Item 6 – 10 were used to answer this research question. The details of the responses are summarized in the table 2 below:

**Table 2 Percentage and Mean of Effects of ICT Facilities on Academic Performance of Students in Computer Application Course**

| S/N | ITEMS | SA | A | D | SD | TA | TD | TR | %A | %D | X | RATING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Students can be motivated to learn computer application course without ICT facilities. | 196 | 105 | 200 | 134 | 301 | 334 | 635 | 47.40 | 52.60 | 2.00 | 5th |
| 7 | Lack of ICT facilities does not make lectures in computer application interesting. | 492 | 282 | 130 | 36 | 774 | 166 | 940 | 82.34 | 17.66 | 2.96 | 4th |
| 8 | Inadequate ICT facilities affect students understanding of computer application course. | 596 | 243 | 118 | 29 | 839 | 147 | 986 | 85.09 | 14.91 | 3.10 | 2nd |
| 9 | The use of ICT facilities has no effect on teaching and learning computer application course. | 584 | 228 | 126 | 33 | 812 | 159 | 971 | 83.63 | 16.37 | 3.05 | 3rd |
| 10 | Use of ICT facilities has no effect on the academic performance of students in computer application course. | 624 | 249 | 84 | 37 | 873 | 121 | 994 | 87.83 | 12.17 | 3.13 | 1st |
| **AGGREGATE MEAN SCORE = 2.85** | | | | | | | | | | | | |

Source: Field survey 2015

The table above revealed an aggregate mean score of 2.85 which indicates that both lecturers and students who are the respondents unanimously agreed that an ICT facility has no effect on the academic performance of students in computer application course.

### 3.3 Test of Hypotheses

The two null hypotheses raised for the study aimed at further probing into the research questions of the study. All the null hypotheses were tested with chi-square ($\chi^2$) statistics at 0.05 level of significance.

#### 3.3.1 Null Hypothesis One (1)

*There is no significant effect of human resources Information and Communication Technology facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.*

The calculated chi-square ($\chi^2$) was summarized in the table below:

**Table 3 Chi-square ($\chi^2$) Test for Hypothesis One (1)**

**Chi-Square Tests**

| | Cal. value | df | Table value | Asymp. Sig. (2-sided) | Decision |
|---|---|---|---|---|---|
| Chi-Square | 20.464 | 3 | | 0.000 | |
| Likelihood Ratio | 20.507 | 3 | 7.82 | 0.000 | Rejected |
| N of Valid Cases | 1590 | | | | |

The result showed that the observed (calculated) chi-square ($\chi^2$) value of 20.464 is greater than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant effect of human resources Information and Communication Technology facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria was rejected. This implies that human resources ICT facilities have an effect on academic performance of students in computer application course.

#### 3.3.2 Null Hypothesis Two (2)

*There is no significant effect of Information and Communication Technology facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria.*

The calculated chi-square ($\chi^2$) was summarized in the table below:

 

**Table 4 Chi-square ($\chi^2$) Test for Hypothesis Five (5)**

**Chi-Square Tests**

| | Cal. Value | df | Table value | Asymp. Sig. (2-sided) | Decision |
|---|---|---|---|---|---|
| Chi-Square | 5.372 | 3 | | 0.147 | |
| Likelihood Ratio | 5.054 | 3 | 7.82 | 0.168 | Accepted |
| N of Valid Cases | 1590 | | | | |

The result showed that the observed (calculated) chi-square ($\chi^2$) value of 5.372 is less than the critical (table) value of 7.82 at 0.05 level of significance. Therefore the null hypothesis which stated that there is no significant effect of Information and Communication Technology facilities and academic performance of students in computer application course in Federal Colleges of Education in North-West Nigeria was accepted. This implies that ICT facilities alone have no effect on the academic performance of students in computer application course.

## 4.0 Major Findings

The major findings of the study are summarized as follows:

1. That information and communication facilities are useful in teaching and learning in Federal Colleges of Education in North-West Nigeria.
2. Lecturers should develop computer skills and be properly trained in the use of ICT facilities in teaching and learning computer application course in Federal Colleges of Education in North-West Nigeria. These items were rated 1st, 2nd and 3rd in table 1.
3. That adequate ICT facility motivates and increases students' interest in learning in Federal Colleges of Education in North-West Nigeria.
4. That ICT facility alone has no effect on how the students understand lectures, how the lectures are being taught and the academic performance of students in computer application course. These items were rated 1st, 2nd and 3rd in table 2.

## 4.1 Discussion of Major Findings

The study revealed that lecturers should have computer skills and be properly trained in the use of ICT facilities in teaching and learning in Federal Colleges of Education. These items were rated 1st, 2nd and 3rd in table 1. The mean score of respondents agreed that computer application course should be taught by lecturers that are computer trained and possess the skill to handle ICT facilities in teaching computer application course. The respondents also agreed that this will help to motivate the students in learning computer application course and increase the students' academic performance. Hence, the test of null hypothesis one (table 3) showed that there is a significant relationship between human resource ICT facilities and academic performance of students in computer application course. These findings agreed with Ige (2011) who stated that a well trained lecturer who is an expert in the use of instructional facilities in teaching and learning will increase the academic performance of the students.

Finally, the study revealed that the use of ICT facilities has no effect on the academic performance of students in Federal Colleges of Education. From the study the respondents confirmed that ICT facility alone has no effect on how the students understand lectures, how the lectures are being taught and the academic performance of students in computer application course. These items were rated 1st, 2nd and 3rd in table 2. This was supported from the test of null hypothesis two (table 4) where the null hypothesis which stated that there is no significant effect of Information and Communication Technology facilities and academic performance of Business Education students in computer application course was accepted. Hence, Shettima (2010) argued that the relationship between the use of ICT and student performance in higher education is not clear, and there are contradictory results in many studies. He maintained that earlier educational research has failed to provide a clear consensus concerning the effect on students' academic performance.

## 5.0 Conclusion

Based on the major findings of the study, it could be concluded that Information and Communication Technology (ICT) facilities is one of the modern instructional facilities used in teaching and learning different subjects including computer application. With the supply of these facilities in Federal Colleges of Education in Nigeria, it is expect that lecturers who are trained on the use of these facilities will use it to improve difficulties encountered in the process of teaching and learning, especially in computer oriented courses. The inability to put these ICT facilities into use has caused many of them not being installed or are installed to dilapidate. It could also be concluded especially based on the findings that the use of ICT facilities in teaching and learning is very important. This is because it does not only motivate the students, but also increase their interest in learning.

 

### 5.2 Recommendations

Based on the findings and conclusion of the study, the following recommendations are made:

1. Head of Departments should make sure that computer oriented courses are taught by lecturers who are trained in the use of ICT facilities in teaching and learning.
2. Head of Departments should make sure that the ICT facilities are properly used in teaching and learning computer oriented courses.
3. The College management should provide alternative power supply at the ICT laboratory.
4. The College management should provide a computer lap-top to all the lecturers as this will encourage them to apply ICT facilities in teaching and learning.
5. Students should be allowed to use available ICT facilities especially for class work.
6. Parents/Guardians should encourage their children by enrolling them into ICT programs at an early stage. This is to help them acquire knowledge and exposure about ICT facilities before attending higher institutions.
7. Management of Colleges of Education should make or include the use of presentation software packages or training as a compulsory subject in the colleges as they will also help students to get use to ICT facilities.
8. ICT facilities should be provided to colleges and lecturers at an affordable or cheaper rate, as this will raise the consciousness and reawaken them on ICT usage.

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