IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT), ON STUDENT'S ACADEMIC PERFORMANCE IN POST-SECONDARY SCHOOLS; CASE STUDY OF FEDERAL COLLEGE OF AGRICULTURE ISHIAGU, IVO LGA, EBONYI STATE-NIGERIA

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ABSTRACT: *Information and communication Technology (ICT) have found application in virtually all spheres of human Endeavour, particularly education and training. However, it is not precisely evident if the use of ICT enhances student's academic performance, or not. This paper investigates the level of availability and access students have to ICT facilities on campuses, as well as the technical know-how they possess, with regards to the use of ICT facilities. The Federal College of Agriculture Ishiagu is used as case study. Chi square was used to test postulated hypothesis. The study determined whether the use of ICT impacts positively on the academic performance of students of the Federal College of Agriculture Ishiagu Ebonyi State-Nigeria. The paper made recommendations which aim at encouraging effective use of ICT to boost student's academic performance in Post-Secondary Schools.*

KEYWORDS: IT, ICT, Chi square, Hypothesis, Hypotheses.

INTRODUCTION

The terminology ICT (Information and Communication Technology) originated mainly due to the emergence of the internet, recent innovations in the area of digital telephony, as well as invention of different communication devices. ICT includes technologies such as desktop and laptop computers, software, peripherals and connections to the internet that are intended to fulfill information processing and communication functions. (Islam M.S and Fouji M. H 2010).

Prior to these, the term information technology (IT) was predominantly used. According to the Oxford English Dictionary, the first recorded use of the term Information Technology IT was in 1985 when Leavitt and Whisher wrote in the Havard Business review (XXXV 41/1): "The new technology does not have a single established name. We shall call it IT". By 1984 the term, according to the National Westminster Book quarterly Review of 13 August, had become established in Britain, by then it seemed to have taken on a new meaning. "The development of cable television was made possible by the convergence of telecommunications and computing technology (… generally known in Britain as IT)", by the end of the twentieth century. The use of IT had burgeoned. Large accounting firms have IT departments, there are specialist IT lawyers, some governments have ministries of IT, Universities have established IT facilities, IT Journalist are legion and IT professionals abound. Major Keary (2004).

This paper seeks to investigate the relationship between the use of ICT facilities and students academic performance, in post secondary institutions. The paper is divided into eight segments, the first part is the introduction, the second part is the statement of the problem, the third past delineates the research questions/hypothesis, while the fourth parts states the objectives of the study, the methodology used for the study is clearly stated in the fifth part. In

the seventh part the findings / Analysis and result are presented. The last part of the work is devoted to recommendations and conclusion.

Statement of the problem

The use of ICT (Information and communication Technology) facilities in education has both positive and negative effects on student's academic performance. For instance, due to exposure of students to a wide pool of information via the internet they may get distracted and focus on content that is not related to their academic work, thus affecting their academic performance negatively. However if properly utilized ICT facilities can help enhance students academic performance. One of the major problems students face in Post Secondary schools is inadequate access to ICT facilities, this may be due to reasons such as cost and administrative procedures required before students can have access to ICT facilities. In situations where ICT facilities are readily available students may not poses the technical know-how required to use of such facilities.

Educationists and school administrators can fully maximize the use of ICT in order to enhance student's academic performance, when they appreciate the fact that the mere provisions of ICT facilities does not translate to enhanced academic performance of students.

Research objectives

1. To investigate the effect of the use of ICT facilities on student's academic performance in post secondary schools.

2. To investigate the level of proficiency students possess with regards to of ICT facilities.

3. To investigate if students have adequate access to ICT facilities on school campus.

Research questions

1. Does the use of ICT facilities enhance student's academic performance in post secondary schools?

2. Do students posses the required technical abilities on how to utilize ICT facilities?

3. Do students face bottlenecks in accessing ICT facilities on campus?

Hypothesis of the study

1. There is a relationship between the use of ICT facilities and students academic performance

2. Students in post secondary schools possess the required technical know-how on how to utilize ICT facilities on campus.

3. Students have adequate access to ICT facilities

DISCUSSION

Do students employ the use of ICT facilities to support their studies?

Various researchers have obtained different results on studies which investigate the use of ICT facilities by students. According to (Islam M.S. and Fouji M.H 2010). Some researchers such as Anstine and Skidmore (2005). Coates et al. (2004). Navarro and Shoemaker (1999). Terry, Lewer and Macay (2003), Brown and Liedholm (2002). Angrist and Lavy. 2002; Banerjee et al., 2004; Goolsbee and Guryan 2002; Kirkpatrick and Cuban, 1998, and Leuven et al. (2003), demonstrate that there is no evidence of a key role for ICT in higher education. However according to Mbah T.B. (2010), data reveals that University student's daily use of ICT to support their studies with regards to use of computers to support studies, 83% say they use the computer daily to support their studies. As such study habits are actually improving because of the advent and wide use of the internet hypertext and multimedia resources (Liu, 2005).

In terms of internet access on and off campus the research revealed that very few students (36%) prefer to have internet access on campus at the university IT center, while vast majority of students (64%) have internet access off campus. Particularly at cyber cafes (62%) Liu (2005) and Ramirez (2003) report that students print material from the internet in order to study and read later on.

Garrison and Kanuka (2004) compared blended learning environment and traditional learning environment and observed that more effective and efficient learning occurs in blended learning environment and that the success level of students is raised. This gives students a wide range of material to get information to help them study.

METHODOLOGY

In order to achieve the objectives of the study we have used primary source of information. Primary data have been taken from the respondents through a prepared questionnaire that included both open ended and closed ended questions. Chi-square was used to test the hypotheses.

The sample size was determined on the basis of three (3) categories of students namely OND (Ordinary level Diploma) students, ND (National Diploma students) and HND (Higher National Diploma) students of the Federal college of Agriculture, Ishiagu. The sample size consisted of 68 students.

ANALYSIS AND RESULT

The chi-square test was used to test the acceptability of the hypotheses. It measured the discrepancies existing between observed and expected frequency by the formula:

A Confidence interval of (0.05) is used to test all three hypotheses.

Where

df   =   (R-1) (C-1)   where   N = Grand Total

R = Number of rows $\qquad$ R_i = Rows Total

C = Number of columns $\qquad$ C_j = Column total

O_{ij} = Observed frequency of the ijth cell $\quad$ e_j = Expected frequency of ijth cell

χ^2 (chi-square) is a measure of discrepancy existing between the observed and expected frequencies from a statistical survey

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1} \frac{(O_j - C_j)^2}{e_j} \qquad e_j = \frac{R_i C_j}{N}$$

If $\chi^2 = 0$ ved and theoretical frequencies agree exactly however if $\chi^2 > 0$ they do not agree.

The larger the value of the greater the discrepancy between deserved and expected frequencies.

In practice expected frequencies are computed based on a hypothesis H_o. If this hypothesis is greater than a critical value, we conclude that the deserved frequencies differ significantly from the expected frequencies thus accepting the null hypothesis H_o.

We must look with suspicion where χ^2 values are too close to zero because it is rare for expected frequencies to agree too well with the observed frequencies.

Degree of freedom

The degree of freedom is given by v = (h-1) (k-1), where h is the number of rows and k the number of columns. If the expected frequency e_j can be computed without having to estimate population parameters from sample statistics.

Table 1: Sample details

level of study	Actual no of students Sampled	% Sampled against
OND	5	7.4%
HND1	51	75%
HND2	12	18%

From the questionnaire three contingency tables were obtained each contingency table is used to test a certain hypothesis. There exist two hypotheses for each hypothesis, a Null hypothesis denoted Ho and an Alternate hypothesis denoted H1.

Hypothesis I

Ho: Students posses required technical know-how on use of ICT facilities

H1: Students do have technical know-how on use of ICT facilities.

Table2: Students Literacy Level

	OND	HND1	HND2	TOTAL N
Computer Literate	3 (3.53)	35 (36.00)	10 (8.47)	48
Non-Literate	2 (1.47)	16 (15.00)	2 (3.53)	20
TOTAL	5	51	12	68

In the contingency table above, the values in bracket are the expected frequencies, whereas the values outside the brackets are observed frequencies. Using the values above, the calculated chi square is as follows;

$$\chi^2{}_{cal} = 1.31$$

While the critical chi square value read from the chi square table is;

$$\chi^2{}_{2,\,0.05} = 5.99$$

Critical chi square value as read from the chi square table is; $\chi^2 = 5.99$

Since the calculated chi square (χ^2) value, being 1.31 is less than the critical chi square value. We accept the alternate hypothesis H1 and reject the Null hypothesis Ho. Hence we conclude that students of the Federal College of Agriculture do not have the required Technical know-how to fully utilize the ICT facilities on campus.

Hypothesis II

H_1: Students have adequate access to ICT facilities on campus

Ho: Students do not have adequate access to ICT facilities on campus

Table3

	OND	HND1	HND2	TOTAL
Agree	2 (1.99)	5 (5.56)	20 (19.46)	27
Strongly Agree	2 (1.25)	4 (3.5)	11 (12.25)	17
Disagree	1 (1.54)	5 (4.32)	15 (15.13)	21
Strongly Disagree	0 (0.22)	0 (0.62)	3 (2.16)	3
TOTAL	5	14	49	68

$$\chi^2{}_{cal} = 3.95$$

Critical chi square value $\chi^2_{6,\,0.05}$ = **12.6**

Since calculated chi square value $\chi^2_{cal} < \chi^2_{6,\,0.05}$ critical we reject the Null hypothesis Ho and accept the alternate hypothesis H1.Hence we deduce that student do not have adequate access to ICT facilities at the Federal College of Agriculture Ishiagu.

Hypothesis III

Ho: Use of ICT facilities to enhance student's academic performance

H1: The Use of ICT facilities does not enhance student's academic performance

Table 4:

	OND	HNDI	HNDII	TOTAL
Agree	3 (0.04)	26 (23.78)	4 (6.79)	33
Strongly agree	1 (0.74)	5 (7.20)	4 (2.06)	10
Disagree	1 (1.69)	16 (16.57)	6 (4.74)	23
Strongly Disagree	0 (0.15)	2 (1.44)	0 (0.41)	2
TOTAL	5	49	14	68

χ^2_{cal} = **72.93**

Critical chi square value $\chi^2_{6,\,0.05}$ = **12.6**

From the contingency table above we have obtained a chi square value χ^2_{cal} value = 72.93, since this value is greater than the critical chi square value

$\chi^2_{6,\,0.05}$ = 12.6. We accept the Null hypothesis Ho and reject the alternate hypothesis. Hence we conclude that the use of ICT facilities enhances student's academic performance.

CONCLUSION/RECOMMENDATION

From the interpretation of the results of this paper, it is evident that students of the Federal College of Agriculture Ishiagu, do not possess the required technical know -how to fully utilize the ICT facilities on the school campus. They do not have adequate access to ICT facilities in the school campus. However it has been established that the use of ICT facilities enhances student's academic performance.

We recommend that school administrators of post secondary institutions should make conscious efforts to ensure that the students have basic computer skills and knowledge on the use of ICT facilities. This will enable them to fully utilize the use of the ICT facilities. Government at various levels should make adequate provision of computers, internet access and other ICT facilities.

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APPENDIX-1

Survey Questionnaire

[This questionnaire has been designed only for the student of the Federal University of Agriculture Ishiagu Ivo L.G.A Ebonyi State]

Reference number

1. Are you a student of Federal College of Agriculture Ishiagu Yes   No

2. Indicate your current level of study   _____

3. Indicate your sex Male   Female

4. Are you computer literate? Yes   No

5. Do you know how to use the internet Yes   No

6. How many times have you used the internet to do your school assignment Yes   No

7. Have you ever had access to the schools internet cloud facility Yes   No

8. Do you have an account on any social Network i.e. facebook, twitter, 2GO Yes   No

9. Have you ever received information from any social media that aided you to do your School work? Yes   No

10. Tell me what you thought about each of the following statements

   It is difficult to access computers and other ICT facilities on campus

   Strongly disagree   disagree   Agree   Strongly agree

   I obtain higher grades whenever I use the internet

   Strongly disagree   disagree   Agree   Strongly agree

   Students need more access to ICT facilities on Campus

   Strongly disagree   disagree   Agree   Strongly agree