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ICT KNOWLEDGE AS A PREDICTOR OF GOOD ACADEMIC PERFORMANCE OF STUDENTS IN TERTIARY INSTITUTIONS IN SOUTH-WEST, NIGERIA

By

IRO-IDORO, Charlotte Bose (Ph.D)

Abstract

This study sought to determine ICT Knowledge as a predictor of good academic performance of students in tertiary institutions in South-West, Nigeria. The study employed a descriptive survey research design of ex-post facto type. Three Research hypotheses were formulated and tested at 0.05 level of significance. Data were collected using one standardized instrument ICT Knowledge while a self-developed questionnaire was administered to assess good academic performance of the students. The research questionnaires were administered to One thousand five hundred students which were selected from three tertiary institutions in South-West (one University, one Polytechnic and one College of Education in Lagos, Ogun and Ondo State) through stratified random sampling technique. Data were analysed using Pearson Product Moment Correlation, t-test and Multiple Regression Statistical Methods. The study revealed that there is a significant relationship among the variables of the study, there is a significant prediction of ICT knowledge on good academic performance of the students while there was no significant gender difference in good academic performance of the students. Conclusion and recommendations were drawn based on the findings of the study.

Keywords: ICT Knowledge, Good Academic Performance, Tertiary Institution, Students and Gender.

Introduction

Good Academic Performance indicates that a student is eligible to continue his or her academic career when he/she is not on academic probation, disciplinary probation or suspension /expulsion from the college. **Naeema (2011) opined that formal** education is recommended for students to gain a better understanding of the goals, purposes, and benefits behind such new communicational tools. Information and Communication Technology (ICT) is one of the most valuable driving forces promoting economic, social, educational, medical, security and political growth in the economy. As ICT is being used increasingly in education as indicator to monitor their impact and demonstrate accountability to funding sources.and the public are ever more needed, indicators are required to show the relationships between technology use and educational performance. There is also a need to show that education should be seen as using technology not only as an end in itself, but as a means to promote creativity, empowerment and equality and produce efficient learners and problem solvers (Aristovnik, 2012).

Aramugam 2011 opined that technology changes the way of learning in the classroom. Students are no longer bound physically by the bricks and mortar that surround them. Instead, they have at their fingertips the opportunity to explore the world and take in vast amounts of information along the way. We are only just beginning to realize the potential of technology in helping to improve students' learning and increase academic performance. Studies within the educational institutions suggest that students have been using computers for a variety of purposes. On average, for over seven years (Quan-Haase, 2007), almost all students report owning computers (Hargittai, 2007; Malaney, 2004–2005), and the majority of students at universities have been online for more than six years (Quan-Haase, 2007;

Hargittai, 2007). Malaney (2004–2005) found that Internet use had increased significantly among students in recent years. Specifically, Gordon, Juang, & Syed (2007) report that the top five uses of the Internet in their convenience sample of undergraduate psychology students were e-mailing friends, getting help with school work, talking with friends, e-mailing family, and IM.

In a Canadian study, Quan-Haase (2007) found that 78 percent of the students reported owning a cell phone, but only 36 percent used it daily. Hargittai (2007), in a study of all incoming students at the University of Illinois-Chicago, found that almost 97 percent had a cell phone. In Nigeria, Adenuga & Ayodele (2012) found out that 3488 (87.7%) of their participants made use of mobile phones; 357 (9.0%) made use of laptop: 116 (2.9%) made use of desktop computers and 15 (0.4%) respondents made use of other means of accessing the web-page, not for academic attainment but for social networking. Bandura, (1997), Mabekoje (2010), Adenuga & Ayodele (2009), Junco & Mastrodicasa, (2007); Lenhart, Madden, & Hitlin, (2005) noted that students and young adults use a variety of technologies at very high levels, much higher than other age groups. Unfortunately, little is known about the impacts of the use of these technologies on students' academic standing especially within the Nigeria context.

Jehanzeb & Bo (2013) assert that with the widespread availability and use of personal microcomputers at homes and schools, a large body of literature has emerged during the last two decades suggesting that computer use can have a positive effect on academic achievement. In this respect academic achievement is usually understood to mean performance on both standardized and non-standardized assessments (such as grade point average [GPA]) in general areas of literacy (House, 2010; Junco, 2012; Wit, Heerwegh, & Verhoeven, 2012). Computer use by both the teachers (computer assisted instruction [CAI]) and students have

been shown to have a direct and generally positive effect on academic achievement (Chandra & Lloyd 2008; Kulkarni, 20[illegible] Park, Khan & Petrina, 2009).

In a sample of 130 students from a middle school in Ohio, Li & Zhao (2007) investigated the effect of quantity and quality of computer use on academic achievement, their analysis of variance results showed that both quantity and quanlity are significant predictors of academic achievement. Also, **Jehanzeb & Bo (2013) found that** both the quantity and quality of computer usage were found to be significant predictors of achievement.

Barrow et al. (2009) found that technology use had a positive effect on students' test scores. Similarly, Banerjee et al. (2005) found that use of technology improve students' academic performance in computer-assisted mathematics instruction. Other studies have found little or no effect. On the other hand, Leuven et al. (2007), Goolsbee & Guryan (2006), Angrist & Lavy (2002), and Rouse & Krueger (2004) found no evidence that the use of technology (computers and software) had a positive impact on students' achievement. Therefore, additional research is needed to understand the circumstances under which the use of technology can have a positive impact on students' learning outcomes.

Purpose of the Study

The purpose of this study was to investigate ICT Knowledge as a predictor of good academic performance among tertiary students in South-West, Nigeria. This will help to give direction to programmes aimed at increasing students' academic performance. There are inconsistencies in previous research on good academic performance of students in tertiary institutions. We have not been able to find studies in which all these predictors have been examined together to influence students' academic standing. Therefore, this study is crucial to the understanding of

the predictors of students' good academic performance in South-West, Nigeria.

Hypotheses

In order to achieve the purpose of this study, the following hypotheses were tested at the .05 level of significance.

1. There is no significant relationship among the variables of the study (technology knowledge and good academic performance of students).
2. There is no significant prediction of technology knowledge on good academic performance of students.
3. There is no significant difference in good academic performance of students based on gender and discipline.

Research Design: This study adopted an ex-post-facto survey research design where questionnaire were used to collect data from the respondents on the studied variables.

Participants: A total of one thousand five hundred (1500) students from University of Lagos, Federal Polytechnic Ilaro, and Adeyemi College of Education who had spent at least one academic year with the institution were purposively selected for this study. The stratified sampling technique was used to select respondents to reflect strata of the disciplines (course of study), which include the science based and non-science based courses. Also, a simple random sampling technique was used to select the participants based on gender and discipline. The age range of the respondents is between 16- 30 years with mean age of 18.23 and standard deviation of 8.15.

Measures

Biographical Information Sheet: The biographical data information sheet was used to collect information on the participants' gender (male or female), age in years, and field of study.

ICT Knowledge Scale (ICTKS): ICTKS was used to measure the construct of ICT knowledge for good academic performance of students in this study. This was measured by 12 items using a 5-point Likert response format. The internal consistency reliability of the TKS by Cronbach's alpha = .81. To gather information on good academic performance of students, the researcher with the help of research assistants went into the various departments that participated in the study and collected data by interacting with the students. Before handing over questionnaires to students, the research assistants approached and make sure that students are not in one academic year but already had GPA result which is a compulsory variable of the study.

Control Variables: Two control variables included in this study were: course of study and gender. These variables were measured as follows:

Course of study: The respondents were requested to report their course of study as either science-oriented course or not, and was coded as follows: science-oriented = 1 and non-science oriented =2.

Good* Academic Performance of Students' *Questionnaire (GAPSQ) was a self-developed questionnaire made up of 15 items. It measures the extent at which a student is eligible to continue in attendance if not on academic probation or disciplinary probation/suspension/expulsion from school. The scale adopts a four-point Likert-type format ranging from 1 (strongly disagree) to 4 (strongly agree). The internal consistency of the scale by Cronbach's alpha a = .79 for the present sample.

Procedure: A set of questionnaires for assessing biographical data, technology use, self-efficacy and students' academic

standing questionnaire were administered on the sample through the assistance of two (2) research assistants.

Data Analysis: Product moment correlation, t-test and multiple regression analyses were used to analyse the data collected.

Results

Table 1: Descriptive Statistics of Participants Based on the Variables of the Study

S/N	Variable	Category N=(1483)	Frequency	%
1	Sex	Male	647	43.6
		Female	836	56.4
2	Age	Under 18years	587	39.6
		18years above	896	60.4
3	Field of Study	Science-related courses	748	50.4
		Non-Science related	735	49.6
4	Ever Knowledge of ICT	Yes	1500	100.0
		No	Nil	Nil
5	Frequency Usage of ICT	Hardly Ever	Nil	Nil
		Daily	1257	84.8
		Twice or thrice weekly	226	15.2
6	Accessibility Means	Mobile Phones	984	66.4
		Laptop	327	22.0
		Other means	172	11.6
7	Available Resources Used	Academic Journals	567	38.2
		Database	488	32.9
		Electronic Libraries	107	7.2
		Blogs/Forums	913	61.6
		Search Engines	1321	89.1
		Social Network Engines		

The result of the analysis of the demographic variables of the study revealed that male respondents were 647 representing 43.6% while female respondents were 836 (56.4%). Respondents less than 18years of age were 587 (39.6%) while those above the ages of 18 years were 896 (60.4%). 50.4% of the students are from sciences and 49.6% are from non-science oriented disciplines. All the participants agreed that they have ICT knowledge in the course of their study, while the frequency of usage revealed that 84.8% used technology daily and the remaining 15.2% used it twice or thrice per week.

On the accessibility means used by the participants, 66.4% of the respondents used their mobile phones, 22% made use of laptop, while the remaining 11.6% made use of other means like desktop at cybercafé. Statistics on the available resources used by the participants revealed that 89.1% were on social network engines while 32.9% made use of electronic libraries, 7.2% used blogs/forums, and 61.6% made use of search engines.

Table 1: Correlation matrix of the Relationship between ICT knowledge and good academic performance of students'

Variables	ICT Knowledge	Good Academic Performance of Students
ICT Knowledge	1.000	.397*
Good Academic Performance of Students'	.397*	1.000

*Correlation is significant at the .05 level (2-tailed)
**Correlation is significant at the .01 level (2-tailed)

The results in Table 1 indicated that there is a significant relationship among the variables of the study. A significant high relationship was observed between ICT Knowledge and academic performance of students (r = .397). The findings imply that ICT knowledge and academic performance of students are positively related to one another.

Table 2: ***Model Summary of the multiple Regression Analysis of the significant influence of ICT knowledge on good academic performance of students'***

	R	R^2	Adj.	RSE	Change Statistics				
Model					R^2 Change	F Change	df1	df2	Sig. F Change
Predictor Variable	.583	.340	.340	13.009	.340	23.709	2	1483	.013

a. Prediction: (Constant), ICT Knowledge
b. Dependant Variable: Good Academic Performance of Students.

The results in Table 2 revealed a significant influence of ICT knowledge on good academic performance of students' ($R = .583$; $R^2 = .340$; $F_{(2,1483)} = 23.709$; $P < .05$). This revealed that ICT knowledge accounted for 34% of the variance on academic performance of students'. This finding rejected the hypothesis, which stated that there is no significant influence of ICT knowledge on good academic performance of students.

Table 3: *T-test analysis showing difference in students' perception of service quality based on gender, career choice, and school type*

Gender	N	X	SD	Df	t-cal.	t-crit.	P
Male	647	68.518	17.432	1481	1.217	1.96	Not Significant
Female	836	69.011	16.687				
Science	748	70.899	18.751	1481	3.428*	1.96	Significant
Non-Science	735	65.547	15.883				

The results presented in Table 3 revealed that the obtained value of t is 1.217 for the gender difference in students' academic standing which is less than the t- critical value of 1.96 and 0.05 level of significance. This implies that there is no significant gender difference. Further analysis of the result based on the respondents' mean scores reveal that female students with average mean score of 69.011 are better off in their academic performance of students than their male counterparts with a mean score of 68.518.

The section that measures the difference between science and non-science students revealed a significant difference between science and non-science good academic performance of students. The science students had an average mean score of 70.899 over their non-science counterparts with a mean score of 65.547.

Discussion of Findings

Findings of the first hypothesis revealed that ICT knowledge on good academic performance of students' are positively related to one another. It can be deduced that individual belief about themselves to achieve educational goals and appropriate knowledge of ICT can enhance their academic

success or career. This finding corroborates the earlier findings of Arumugam (2011) that students have at their fingertips the opportunity to explore the world and take in vast amounts of information along the way in order to improve their learning and increase good academic performance. Also, the studies of Adenuga & Ayodele (2009); Bandura (1997); Mabekoje (2010).

ICT knowledge was reported by the outcome of this research account for 34% of the variance on good academic performance of students'. The finding of this study is in line with the position of previous research that technology (Quan-Haase, 2007; Hargittai, 2007; Malaney, 2005, Adenuga & Ayodele, 2009; Forester, Kahn, & Hesson-McInnis, 2004) is an important factor relating to students'. successful implementation of academic goals.

The last findings show no gender difference in good academic performance of students while a significant difference was observed based on discipline. Although, this finding revealed no significant difference based on gender but a significant difference on discipline, yet this could be due to the students' orientation about their field of study.

Conclusion and Recommendations

Higher institutions around the world are moving rapidly to introduce ICT into all aspects of teaching and learning processes not just as a means of striving to get accreditation and be more competitive in the global market, but to improve academic excellence. It should be noted, however, that good academic performance of students' can be influenced negatively by students' maladaptive behaviour and unseriousness, it can also be improved through strong technological knowledge.

As noted by **Naeema (2011)** formal education is recommended for students to gain a better understanding of the goals, purposes, and benefits behind such new communicational tools. Encouraging academic staff as well, is another realizable

recommendation. This will lead directly to encouraging group academic communication in a way that will decrease students' fruitless computer knowledge. It will also extend their efforts to learning and problems solving rather than endless youthful social communication and achieve better utilization of the Internet and available technologies rather than wasting time and money in unproductive applications, which will eventually affect even their commitment to learning.

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