Gender Difference in Information and Communication Technology Use among University Students

Emmanuel Kusi Achampong

Department of Medical Education, School of Medical Sciences, University of Cape Coast, Cape Coast, Ghana

eachampong@ucc.edu.gh

Abstract

Background: The aim of this study is to assess the information and communication technologies (ICT) skills of students in the University of Cape Coast.

Methods: Design: Cross sectional study. Participants: First year students (n = 84) attending University of Cape Coast, Cape Coast, Ghana. Main outcome measures: Self-reported assessment of competence on ICT-related topics and ability to perform specific ICT tasks. Further information related to frequency of computer use (per week, month), years of computer use, reasons for use and access to computers.

Results: The highest levels of competence in generic ICT areas were for email, Internet and file management. For other skills such as word processing most respondents reported average levels of competence. The abilities to perform specific ICT skills were average – more than 60% of the participants were able to perform the core specific skills assessed.

Conclusion: This study has found an average level of ability to use ICT facilities among first year students in a leading university in sub-Saharan Africa. Attention is required to develop interventions that can improve ICT skills, as well as computer access, in order to bridge the digital divide.

Keywords

Information Communication Technology; Students; Computer

Introduction

Computer capabilities are essential for success in the business and academic world. Technological advances necessitate teaching, learning, maintaining and upgrading of computer-related knowledge. Students' formal education represents a key opportunity to learn and develop computer skills needed for their personal use and professional career. While educational institutions are challenged to provide up-to-date equipment and software packages, educators must also recognise the need to keep abreast of pertinent instructional techniques and trends.

Computers are often seen as the gateway to membership in the global information society and a requirement for the workforce of the future [1]. Since computing continues to have a significant impact on the world, an understanding of computer technology and its uses is important for all members of our society to be effective consumers and producers in the 21st century and beyond [2].

In most, if not all, business organisations, a computer is as customary as a pen and paper. Today's organisations demand that workers have a basic level of computer literacy due to their dependency on computers to operate better, faster, and cheaper. Therefore, it is likely that in almost all areas of employment the computer will be a basic tool that is essential for accomplishing job responsibilities. [3] found that students lack computer skill in various computer applications that are necessary to support and enhance their learning experience. In [4], the authors discussed the effects of student and faculty expectations along with curricular issues in achieving success.

ICT competencies play an important role in developing a nation. Despite the importance of ICT competencies in students learning, much research has not been done in Ghana to ascertain the level of these competencies among university students. [5] pointed out that knowledge; skills and confidence with computer technology are assets for those who want to enter into the competitive employment market.

Furthermore, with the increasing use of ICT in education all over the world, new skills and competencies among students are necessary for them to learn effectively. Besides that, [6] stressed that students who did not have access to computers and the Internet technology were likely to get further behind their peers who did have such access. [7]

further emphasized that they would potentially miss out the 70 percent of jobs which require moderate or high level of computer knowledge and eventually ended up in the 10 percent low-pay jobs that do not require technical knowledge. Although students have greater access to PCs and the Internet than ever before [8], there is increasing assumption that the computer literacy training provided by tertiary institution has become redundant [9].

But as mentioned by [7] p. 61, "with the increased use of ICT in society in general and schools in particular, it becomes imperative that students should be equipped with digital literacy competencies in order to exploit information resources that the electronic age engenders." School leavers may not possess the necessary computer skills for their university education although they have been using electronic devices frequently [10]. In fact, there is an urgent call for IT training to be given to fresh university students in order to obtain successful learning outcomes from the use of IT and to satisfy the needs of the future employers [11].

One of the recurring themes in the underutilisation of ICTs is the lack of relevant competencies with females often cited as more affected than males. Computer literacy means knowing some basics of ICT to, for example, save and open a file, use a word processing program, and send and receive email for starters. Moreover, with the increasing use of ICT in education the world over, new skills and competencies among students are required for them to effectively learn.

Methodology

The University of Cape Coast is one of the rare sea front universities in the world.

The study was based on survey research design. The study was undertaken using first year undergraduate students to identify the level of competency with respect to basic computer skills for academic work.

The sample for this study consists of eighty four (84) students. There were fifty three (53) males and thirty one (31) females. The Computer Skills Survey utilised in this study was designed to capture demographic information, computer experience, computer access, computer usage, and students' perception of their computer application skills. The first section of the survey, personal data, was designed to capture demographics of the participants. The second section, computer experience, was designed to capture students' access to and experience with computer applications. The basic computer skills assessment tool assessed students' skill proficiency in word processing, spreadsheets, database software, presentation graphics, email, internet, file management, programming and computer system setup.

Using a four (4) point Likert scale (1=none, 2=basic, 3=average, 4=advanced), respondents were also asked to rate their ability to use software applications to perform specific tasks.

In addition, respondents were asked where they got their training in the basic computer software from, whether from school, work or self.

Results

Descriptive Statistics

TABLE 1 FREQUENCY DISTRIBUTION OF MALES AND FEMALES

Sex	Frequency	Percentage (%)
Male	53	63.1
Female	31	36.9

From table 1, 63.1% of the participants were males and 36.9 were females.

TABLE 2 LAST USE OF COMPUTER AMONG PARTICIPANTS

			When did you last use a computer?					Total
			Almost everyday	Within last week	Within last month	Within last year	More than a year ago	
Sex	Male	Count	28	15	4	3	3	53
		% within sex	52.8%	28.3%	7.5%	5.7%	5.7%	100.0%
		% within last use of computer	66.7%	60.0%	57.1%	60.0%	75.0%	63.9%
	Female	Count	14	10	3	2	1	30
		% within sex	46.7%	33.3%	10.0%	6.7%	3.3%	100.0%
		% within last use of computer	33.3%	40.0%	42.9%	40.0%	25.0%	36.1%
Total		Count	42	25	7	5	4	83
		% within sex	50.6%	30.1%	8.4%	6.0%	4.8%	100.0%
		% within last use of computer	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

From table 2, 52.8% of males use computer almost every day whilst 46.7% of females use computer almost every day.

TABLE 3 HAVE A COMPUTER IN SCHOOL

			Do you have a computer in school?		
			Yes	No	Total
Sex	Male	Count	36	16	52
		% within sex	69.2%	30.8%	100.0%
		% within have computer in school	69.2%	55.2%	64.2%
	Female	Count	16	13	29
		% within sex	55.2%	44.8%	100.0%
		% within have computer in school	30.8%	44.8%	35.8%
Total		Count	52	29	81
		% within sex	64.2%	35.8%	100.0%
		% within have computer in school	100.0%	100.0%	100.0%

From table 3, 69.2% of males indicated that they have a computer in school as against 55.2% of females.

TABLE 4 MEAN AND STANDARD DEVIATION DISTRIBUTION

Competencies	**Mean and SD**	**Mean and SD (Male)**	**Mean and SD (Female)**
Word processing	2.60 (sd = 0.98)	2.67 (sd = 0.93)	2.48 (sd = 1.06)
Spreadsheets (Excel)	2.14 (sd = 0.96)	2.31 (sd = 0.93)	1.82 (sd = 0.95)
Presentation package	1.83 (sd = 0.94)	1.88 (sd = 0.99)	1.75 (sd = 0.84)
Email	2.97 (sd = 0.89)	3.04 (sd = 0.90)	2.85 (sd = 0.89)
Internet	2.91 (sd = 0.85)	2.92 (sd = 0.90)	2.89 (sd = 0.75)
File management (save, delete, copy, merge, find)	2.94 (sd = 1.04)	2.96 (sd = 1.01)	2.89 (sd = 1.10)

Note: None = 1, Basic = 2, Average = 3, Advanced = 4

From table 4, email had the highest overall mean (2.97). Skills in presentation packages had the lowest mean which was 1.83 between both sexes. The use of the internet had a high mean among both sexes (male=2.92 and female=2.89). The highest mean with respect to females was the use of the internet and file management which had 2.89 for both competencies. With respect to males, the highest mean was the use of email (3.04) and second to it was file management skills (2.96). Females trailed behind their male counterpart in all the competencies indicated in table above.

TABLE 5 ONLINE RESOURCES FOR LEARNING

Books and Journals	**Percentage (%)**
Electronic Books	25.0
Online Journals	23.8

From table 5, only 25.0% of all the respondents make use of electronic books.

Discussion

The paper assessed ICT competence of a representative sample of first year university students in the University of Cape Coast, Ghana and have found substantial limitations in computing skills among both male and female students. From the study, 69.2% and 55.2% of males and females respectively have their own personal computer in school. This is encouraging as compared to some few years ago when the price of computers was a disincentive for its acquisition.

A mean generic score of 2.60 would be equivalent to approximately 3 point (average) in each of the 11 skills studied.

A study conducted in Nigeria by Ajuwon [12] reports that only 42.6% of the sample studied could use the computer. Another study conducted in Nigeria [13] indicated that 79.0% of students had little or no computer skills. As compared with figures from Nigeria, the results of this study indicate that about 60.0% of students have competencies in computer skills.

In a study conducted in Tanzania, [14] the internet was the most common application utilised by the students, especially for email communications (75.0%). Internet and email use was high among the students in this study (mean = 2.91). This is consistent with other similar studies conducted in Tanzania.

Despite majority of students having personal computers, they are rarely used for learning. From the study, very small percentage of students used online journals and electronic textbooks for their students (online textbooks = 25.0%). There are a whole lot of academic resources on the internet which students can use for their personal studies. Most of the students still prefer to use textbooks (71.4%) and photocopies of textbooks (51.2%) for their studies. Students (both male and female) must be encouraged to use electronic resources for their studies.

Conclusion

The study has found an average level of ability to use ICT facilities among first year students in one university in sub- Saharan Africa. These findings reinforce the idea that more is needed to bridge the digital divide than simply increasing the number of computers. Some would argue that increasing the number and distribution of computers will eventually result in an improved skills base. This paper would support this. University of Cape Coast first year students are keen to learn new skills and are aware of the implications of being left behind in the technological revolution. The main concern of such a scenario is that without direct intervention, the time required to attain these skills increases, to the further detriment of some of the world's most vulnerable societies. The price of computers has really affected students' acquisition of these devices. It is clear from the results that males are more skilful in using basic software as compared to females even though the difference is not significant.

REFERENCES

B. Idowu, R. Adagunodo and B. Idowu. Gender difference in computer literacy among Nigeria undergraduates' students - A case study of Obafemi Awolowo University student, Nigeria, The African Symposium - An On-line Educational Research Journal, 2004. vol. 4, no. 3.

G. A. Ajuwon. Computer and internet use by first year clinical and nursing students in a Nigerian teaching hospital. BMC Med Inform Decis *Mak* 2003, **3:**10. PubMed Abstract | BioMed Central Full T ext |PubMed Central Full Text.

J. Keengwe. Faculty integration of technology into instruction and students' perceptions of computer technology to improve student learning. *Journal of Information Technology Education, 6*, 2007.169-180. Retrieved March 26, 2008 from http://jite.org/documents/Vol6/JITEv6p169-180Keengwe218.pdf

J. Carter, & R. Boyle. Teaching delivery issues: Lessons from computer science. *Journal of Information Technology Education, 1*(2), 77-89. 2002. Retrieved March 26, 2008 from http://jite.org/documents/Vol1/v1n2p077-089.pdf

K. F. Lim and K. Amanda. IT skills of university first year undergraduate students: Two 2001 matriculation cohorts, UniServe Science News, vol. 18. 2001.

M. E. Hoffman and D. R. Vance. Computer literacy: What students know and from whom they learned it, ACM SIGCSE Bulletin, vol. 37, no. 1, pp. 2005. 356-360.

M. Messineo and I. Y. DeOllos. Are we assuming too much? Exploring students' perceptions of their computer competence, College Teaching, vol. 53, pp. 50-56. 2005.

M. Samuel, J. C. Coombes, J. J. Miranda, R. Melvin, E. J. W. Young and P. Azarmina. Assessing computer skills in Tanzanian medical students: an elective experience. BMC Public Health. 2004

N. Jane. Computer skills of first-year students at a South African university, in Proceedings of the 2009 Annual Conference of the Southern African Computer Lecturers' Association 2009, Eastern Cape, South Africa, (SACLA '09), Mpekweni Beach Resort, South Africa, 2009. June 29-July 01, 2009.

O. O. Odusanya and O.A. Bamgbala: Computing and information technology skills of final year medical and dental students at the College of Medicine University of Lagos. Niger Postgrad Med J 2002, **9:**189-93. PubMed Abstract

R. McCoy. Computer competencies for the 21st century information systems educator. *Information Technology, Learning, and Performance Journal, 19*(2), 21-35. 2001.

S. Stover. Remapping the digital divide. *The Information Society, 19*, 2003. 175-277.

Thomas Rivera Policy Institute, Latinos and Information Technology: The promise and the challenge, prepared for the IBM Hispanic Digital Divide Task Force, 2002.

T. Adeyinka and S.M. Mutula. Gender differences in computer literacy among undergraduate students at the University of Botswana: Implications for library use, Malaysian Journal of Library & Information Science, vol. 13, no. 1, pp. 59-76. 2008.