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Gender Influence on ICT Use by Undergraduates in Two University Libraries in NIGERIA

Abimbola Ojeniyi
[1]Seminary Librarian, S.S Peter and Paul Major Seminary, Bodija, Ibadan, Nigeria
E-mail: deleojeniyi@yahoo.com

Airen Adetimirin (Correspondence Author)
Department of Library, Archival and Information Studies, University of Ibadan, Ibadan, Nigeria
E-mail: aeadetimirin@gmail.com; aeadetimirin@yahoo.com
Tel: +234 802 333 6038; +234 809 870 5716

Abstract: ICT use helps to facilitate easy access to electronic information for research and learning purposes by undergraduates. The objective of this study was to investigate the influence of gender on the use of ICT among undergraduates in two university libraries in Nigeria. Undergraduates from three faculties were randomly selected to give a sample of 223, which is 30% fraction of the total population of 12,353. Questionnaire was the data collection method used. The undergraduates used ICT for research purpose and to support course of study. ICT use was higher among the undergraduates in Lead City University than those in University of Ibadan. ICT use was influenced by gender in both universities. Recommendations based on the outcome of this study were highlighted in this paper.

Keywords: Gender, ICT use, Nigeria, Undergraduate, University library

1 Introduction

Information and Communication Technology (ICT) is the means of accessing or receiving, storing, transferring, processing and sending ideas, perception or information through computers and other communication facilities (NCET, 1995 cited in Fabunmi, 2012). It refers to the hardware and software of electronic devices such as computers, radio, television, digital camera, telephone etc. and the networking of computers to improve communication. ICT plays a vital role in the development of any nation. It has been an instrument for achieving social, economic, educational, scientific and technological development (Adedeji, 2010). ICT has greatly influenced the educational sector especially on teaching, learning and research.

The application of ICT is not only emphasised in corporative business and the industrial sector, but it is an essential part of education at all levels (Allen, 2011). ICT, including computers, printer, telephone, the internet among others is generally believed to foster cooperative learning, provide more information and, through simulation, make complex learning experiences easier to understand. Therefore, the use of ICT cannot be ignored either by teachers or by students. This is stressed by Van der Westhuizen (2004) who points out that, in relation to the use of ICT for learning, technology holds a promise of improved access to information and increased interactivity

and communication between teachers and their students. ICT encompasses the effective use of equipment and programs to access, retrieve, convert, store, organize, manipulate and present data and information (Gay and Blads, 2005). E-learning, which is described as the use of ICT to enhance or support learning and teaching in education, has become increasingly important in tertiary education (Adedeji, 2010).

Information and Communication Technology (ICT) and information technology (IT) can be used interchangeably. Information can be seen as "idea" conceived in the human mind, while communication is the transfer of that information from the original source to the destination where it is needed with the intention to producing a change in behaviour of the receiver (Adekomi, 1999 cited in Fabunmi, 2012). When information and communication drifts away from the orthodox verbal and print media towards the more recent electronic media then the concept is known as ICT. This is why Badru (2002) defines "ICT" as the science and activity of processing, storing and sending information by using computers and other communication technologies. She further defined Communication Technology as the use of hardware and software to enhance communication. In other words, there is an overlap between the function of Information Technology and Communication Technology. According to her, it is due to this great similarity in the function of "IT" and "CT" that the two became fused into ICT.

The current rapid developments in the field of ICT have changed significantly the nature of work in academic libraries and other types of libraries as well. These rapid changes have brought about new opportunities like digital library, hybrid library, e-library, online cataloguing etc. to improve their resources management and services (Dhanavandan, Esmail & Mani, 2008). University libraries across the world have been adopting ICT based services in an effort to create an environment for students to engage in learning and gain access to information easier than ever (Ifinedo, 2006). The changes in libraries have occurred all over the world, and the developing countries are no exception to this. The use of ICT changed the entire scenario of the library such that library resources have moved ahead from simply being bibliographic to e-document, e-resources, e-books and e-journals. Etc. and many new services have been introduced.

ICT facilitates quick and easy access to a wide range of information and information resources worldwide for students, therefore, tertiary institutions strive to be up-to-date in their curricula and the provision and use of ICT by both students (undergraduates and postgraduates) and staff is non-negotiable. For ICT to be used effectively, they must firstly be available, users must be aware of their availability, must be able to access ICT to develop information literacy and technical skills required for their effective use. Access to library information through ICT increases the information accessible to individuals to support them in trying new strategies, thinking and creativity that are reflective in practice aimed at engaging them to new innovations through the use of ICT (Ololube, 2006).

Undergraduates who transform to employees need to be computer proficient because, they are sometimes expected to communicate via email, participate in discussion board, analyze data using SPSS, make presentations using PowerPoint, etc. (Bradlow, Hoch and Hutchinson, 2002). It has however been observed that the use of ICT in most university library in developing countries is far below expectation and users have aesthetic view of ICT and more often than not, use it as such (Adetimirin, 2012; Reffell & Whitworth, 2002). Moreover, as Rowley (2000) have observed, students make a low level use of electronic information resources in the library. Most library users are not aware of the kinds of information and services that are available; they do not know the sources of this information and cannot locate and retrieve information through the use of ICT because they are not information literate and so lack the technical knowhow of ICTs.

Computer usage by university undergraduates is one of the factors that determine their success or failure (Papastergiou & Solomonidou, 2005). Consistent students' use of computers is more or

less an integral part of the instructional process. Available literature on ICT use reveals that students are increasingly encouraged in the universities to use computers for assignments (Comber et. al., 2002); though students gained more ICT experience from home (van Braak & Kavadias, 2005; Ruthven, Hennessy & Deaney, 2005) and greater use of ICT at home reduces students' level of anxiety (Basile & D'Aquila, 2002).

Ibegwam (2004) carried out a study on use of the Internet by students of the College of Medicine, University of Lagos, Nigeria and found out all the 200 respondents used the Internet and majority used it to search for academic materials and visit other university websites. Ajuwon (2003) also carried out a study on the use of computer and the Internet among first year clinical and nursing students in University College Hospital, Ibadan, Nigeria and discovered that the students used these facilities to search for relevant information for their studies.

Studies have been carried out on undergraduates of university in developing and developed countries to examine factors that affect ICT use and have found that gender, age, accessibility, academic discipline, ICT skill and income affect ICT usage (Salako and Tiamiyu, 2007, Corbett and Williams, 2002). Other studies on the use of ICT by Nigerian undergraduates found that the undergraduates are aware of the importance of ICT to achieve their academic goals and therefore use them (Emwanta & Nwalo, 2013; Adetimirin, 2012; Fabunmi, 2012; Nwezeh, 2010). However, optimal use of these facilities by the undergraduates could be affected by factors such as gender, inadequate facilities, access, costs etc. Previous studies have indicated that there is persistent gender difference in computer attitude (Hashim & Mustapha, 2004); girls are less enthusiastic than boys (Volman & Van Eck, 2001); males are more engaged in entertainment related activities, while girls mostly use computer as information and communication tool (Papastergiou & Solomonidou, 2005).

The issue of gender gap in technology usage is gaining ground and attracting the attention of academic-researchers. Busch (1995) in Mckenzie (2002) succinctly noted that a gender difference towards ICT affects individual's interest, attitude towards ICT and its use. If gender is related to computer and other ICT anxiety, then the issue of gender is so relevant in this age when considering students' proficiency level in ICT usage.

The use of ICT in Nigerian university libraries undermines the substantial efforts that have been made over two decades to ensure that ICT use does penetrate all aspects of higher education in our universities. ICT are used in the library to provide access to enormous information. Despite universities' expenditure over the last decades on ICT to automate university libraries in Nigeria, it is observed that undergraduates' use of ICTs is not yet at its optimum, There has been a dearth of information on extent to which gender influenced undergraduates' level of ICT use in Nigeria. This study, therefore, seeks to investigate the extent to which gender affects the use of ICT by undergraduates in two Nigerian university libraries.

2 Objective of the Study

This research work is being carried out to investigate gender influence on use of ICT in Kenneth Dike library, University of Ibadan, Ibadan and Lead city University library, Ibadan.

The following are the specific objectives, to:

1. investigate the type of ICT available in the selected university libraries;
2. examine the purpose of use of ICT by undergraduates;
3. investigate the frequency of ICT use by undergraduates in the selected university libraries;
4. find out the hindrances to ICT use by undergraduates in the university libraries.
5. examine the relationship between gender and ICT use by undergraduates

3 Research Hypothesis

H_0: There is no relationship between gender and ICT use by the undergraduates in these university libraries.

4 Methodology

The descriptive survey research was adopted and purposive sampling technique was employed to select three faculties that were common in both universities: Science, Social Sciences and Law. A sampling fraction of 30% was used to select 223, the study population comprised 12353 undergraduates from Lead City University (LCU) and University of Ibadan (UI) and questionnaire was the instrument for data collection.

5 Results and Discussion

5.1 Availability of ICT Use to Undergraduates in University Libraries

The ICT that were readily available in both university libraries were computers system (87.4% in LCU and 75.7% in UI), printers (77.2% in LCU and 60% in UI) and photocopiers (85.5% in LCU and 60% in UI). Others included scanners, CD-ROM, internet facilities and online resources, but interactive board and electronic bulletin board were not available in both universities. However, the ICT availability in LCU Library was higher for all the resources than those in UI Library (As shown in Fig 1). This could be because LCU is a private university, owned by individual, charges high fees from students, and consequently has more funds to acquire ICT than UI which is a public university and funded by federal government, so it relies heavily on government subvention which is inadequate and cannot acquire adequate ICT.

This finding support those of Khan, Bhatti and Khan (2011) whom confirmed that ICT were available to students in their main library, departmental computer laboratory and university hostel. The result also agrees with some findings from studies carried out in some Nigerian university libraries which affirmed that computers, CD-ROMS, Internet, printers etc. were available in the libraries. (Adeniji, Adeniji and Ogunniyi, 2011; Etebu, 2010; Abubakar, 2010).

5.2 Purpose of ICT Use by Undergraduates

Students of both universities used ICT in the libraries for: supporting their course work (93.1% in LCU and 97.2% in UI), independent learning (93.1% in LCU and 94.2% in UI) and project report (95.1% in LCU and 95.7% in UI). Others included examination, assignment and leisure and entertainment purposes (As shown in Fig 2). This result is expected because undergraduates have to search for information to complete assignment, project report and study to have good academic result achievement.

Ibegwam (2004) agreed that University of Lagos Medical students used ICT for meeting their various academic needs. Raji and Godsy (2010) in a study on the ICT use among the Students of Arts and Science Colleges in Kerala revealed that they used the Internet mostly for gathering information for assignments, to know exam results or notifications by university, for sending and receiving emails, downloading music and for chatting. Rodr ́guez (2006) ascertained that an academic related activity was the major purposes of using ICT in his conducted studies in Venezuelan university. Mahmood (2009) agreed that 85% percent of students in a study conducted

agreed that they use ICT for educational related purpose which includes conducting researches, class assignment and others.

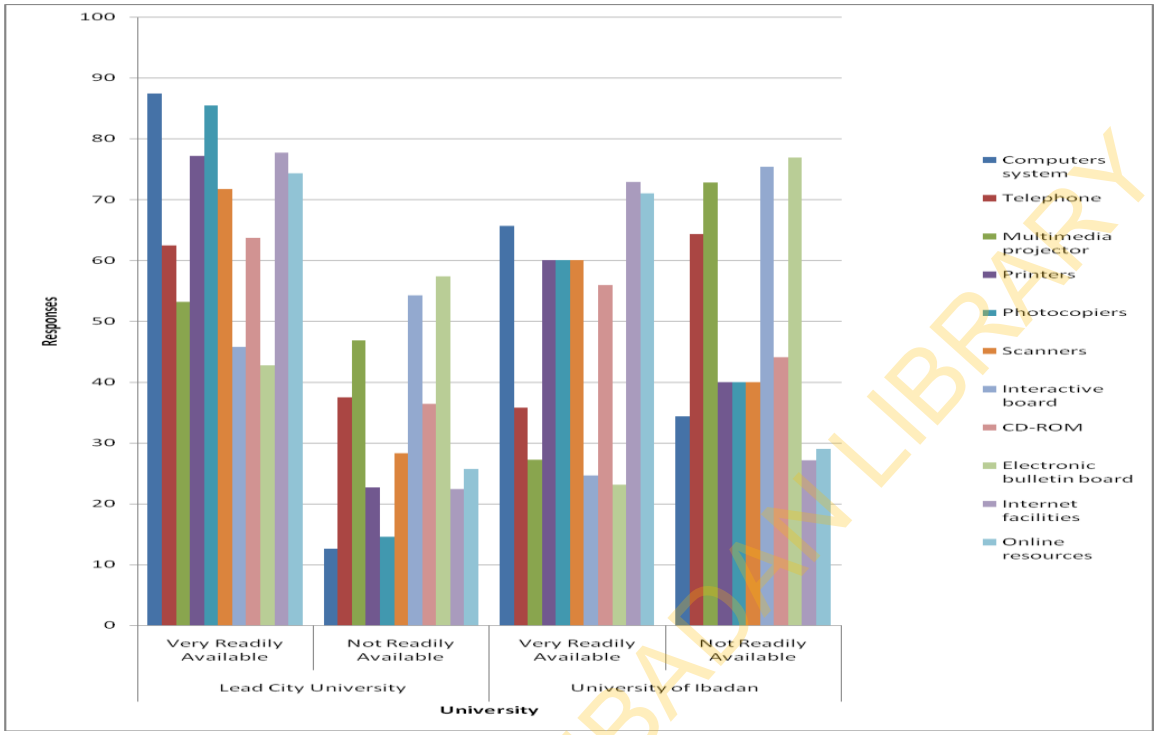

Fig 1. Availability of ICT in University Libraries

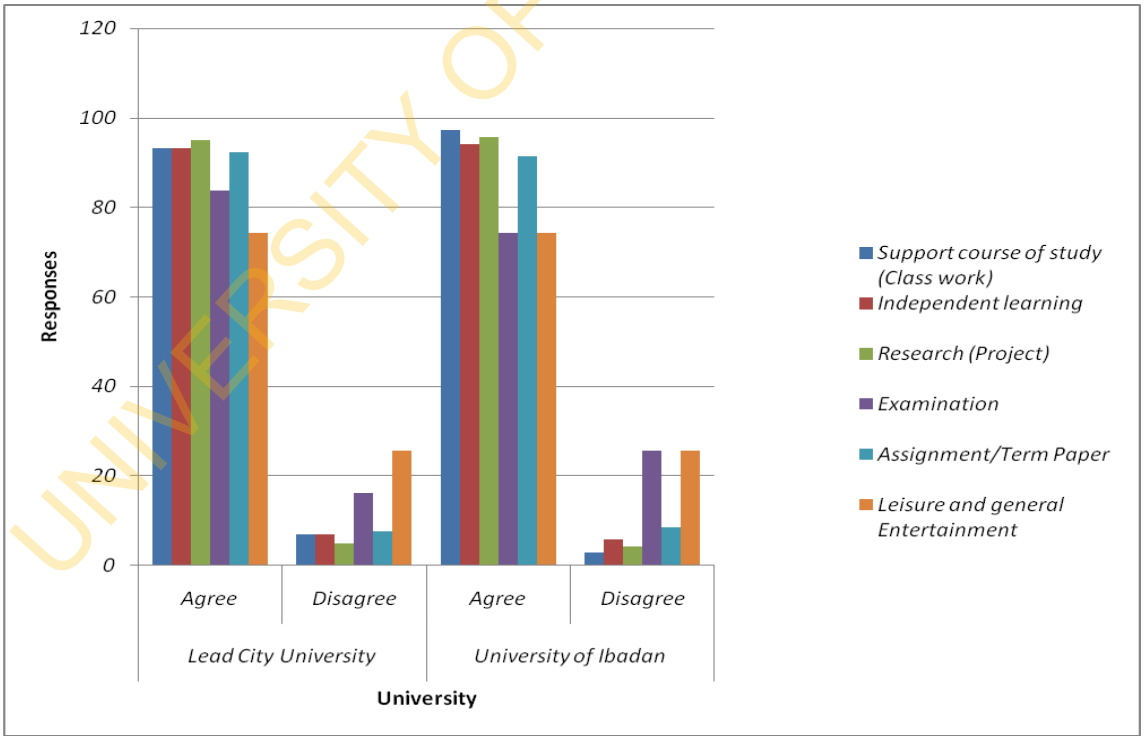

Fig 2. Purpose of Using ICT by Undergraduates

5.3 Frequency of ICT Use by Undergraduates

In LCU, photocopier, computer and internet facilities were most often used having response rate of 65.5%, 59.1% and 54.8% respectively, while in UI, computer (32.9%) and internet facilities (30.0%)was most often used. All the ICTs were not often used; electronic bulletin board, interactive board and multimedia projector were never used by undergraduates in both university libraries. The study showed that all ICT under the study were often used in LCU than in UI (Table 1). This signifies low use of the ICT generally which could be because they are aware of them and have low ICT literacy skills. The non-use of some ICT may be because they are used only by the library staff and not undergraduates.

This finding agreed with those of Khan, Bhatti and Khan (2011), Nwezeh (2010) and Rodr ǵuez (2006) on undergraduates' frequency of ICT use who reported that computers were used daily. However, Fabunmi (2012) on a study on undergraduates' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Nigeria concluded that 70(35%) used computer once a week, 140(70%) used CD-ROM occasionally and other ICT often used included internet, printer, scanner, multimedia projector and telephone (Adetimirin, 2012).

Table 1 Frequency of ICT Use by Undergraduates

ICT Resources	Lead City University						University of Ibadan					
	Often		Not Often		Never		Often		Not Often		Never	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Computers system	85	59.1	38	26.4	21	14.6	14	32.9	23	32.9	24	34.3
Telephone	74	51.4	28	19.5	42	29.2	10	20.0	15	21.4	41	58.6
Multimedia projector	50	37.0	50	35.0	43	30.1	3	8.6	23	32.8	41	58.6
Printers	76	53.2	38	26.6	29	20.3	5	15.7	27	8.5	32	45.7
Photocopiers	95	65.5	26	17.9	24	16.6	8	20.0	25	35.7	31	44.3
Scanners	74	51.4	35	24.3	35	24.3	4	12.8	27	38.6	34	48.6
Interactive board	54	38.0	41	28.8	47	33.1	2	7.3	19	28.0	44	64.7
CD-ROM	56	39.2	47	32.9	40	28.0	6	12.9	21	30.0	40	57.1
Electronic bulletin board	52	36.1	42	29.2	50	34.7	2	5.8	20	28.9	45	65.2
Internet facilities	79	54.8	34	32.6	31	21.5	11	30.0	26	37.1	23	32.9
Online resources	73	50.4	42	29.6	29	20.0	9	25.8	22	31.4	59	27.4

5.4 Hindrances to ICT Use by Undergraduates

Undergraduates in both universities encountered challenges in their use of ICT. The major hindrances were those to which more than 50% of the responses agreed to. The major hindrances included lack of ICT skills (55.3% and 62.8%), negative attitude of ICT staff (52.1% and 65.7%), cost (50% and 55.7%) and inadequate ICT (54.9% and 82.8%). The inadequate resources in both libraries could be as a result of poor funding of the universities especially in University of Ibadan which is a public university that depends largely on the subvention from the Federal government. Meanwhile, financial incapability (58.5%) was peculiar to only students of University of Ibadan. This could be as a result of the students coming from low-income families unlike those in LCU which is a private university (Table 2).

This finding affirmed those of Emwanta and Nwalo (2013) and Adetimirin (2012) in their studies on ICT use by undergraduates in Nigeria universities that revealed challenges to their use of ICT as lack of requisite computer skills, low ICT literacy skills, inaccessibility to ICT, inadequate ICT and unstable power supply. The result also agrees with that of Amkpa (2000) that majority of the students in University of Maiduguri did not use the ICT provided in the library effectively because they lacked technical know-how.

Table 2 Hindrances to ICT Use by Undergraduates

Hindrances	Lead City University				University of Ibadan			
	Agree		Disagree		Agree		Disagree	
	No	%	No	%	No	%	No	%
Lack of ICT Skill	79	55.3	64	44.8	44	62.8	26	37.2
Attitude of ICT staff	74	52.1	68	47.9	46	65.7	24	34.3
My Age	44	30.8	99	69.3	11	15.7	59	84.3
Financial Incapability	62	43.6	80	56.3	41	58.5	29	41.5
Technophobia	60	43.8	77	56.2	23	32.8	47	67.1
Costly	71	50.0	71	50.0	39	55.7	31	44.3
Inadequate ICT resources	78	55.0	64	45.1	58	82.8	12	17.2
Inaccessibility to these ICT resources	71	50.0	71	50.0	49	71.0	20	29.0
Not conducive environment	53	37.3	89	62.6	34	48.6	36	51.5
Frequent downtime of server	76	53.5	66	46.4	57	81.4	13	18.6

Hypothesis: There is no relationship between Gender and ICT Use by the Undergraduates.

The frequency of gender and ICT use of undergraduates was correlated and it revealed that there was a positive significant relationship between gender and ICT use (r=0.497**, N=210, P<0.01). This implied that about 25% of the variation in use of ICT was accounted for by gender, while the remaining 75% was due to chances by other related factors which were not accounted for in this study.

Table 3 Correlation of Gender and ICT Use by Undergraduates

Variable	Mean	Std. Dev	N	R	P	Remark
Gender	15.0191	6.41510	210	0.497**	0.01	Sig.
ICT use	38.2679	13.54639				

In a related study by Agbatogun and Lawunmi (2009), it was revealed that gender contributed 2.3% to the prediction of ICT use. Jorge et. al. (2003) in a study on use of the ICTs and the perception of e-learning among university students concluded that the use of ICTs is more closely related to gender than the student's year group, as women often made less use of ICT. They reported further that men usually become familiar with ICT before women and used it more frequently in

various places (home, the university, etc.) and have a wider knowledge of different types of software.

6 Conclusion and Recommendations

ICT was used by the undergraduates especially for academic related purposes like; research and project writing, assignment and term paper writing and independent learning, but not at optimum level. This was caused by lack of ICT skills; negative attitude of ICT staff, cost and inadequate ICT affected their use. Gender influenced the use of ICTs among the undergraduates. For increased use of ICT, library administrators must provide more infrastructural support, ICT facilities and training to improve the ICT literacy skills of undergraduates and reduce gender influence.

References

[1] Abubakar, B. M. (2010), Availability and Use of Information and Communication Technology (ICT) in Six Nigerian University Library Schools. *Library Philosophy and Practice* 2010 (May), [Online] Available at: http://unllib.unl.edu/LPP/bappah-abubakar.pdf (May 24th, 2013).

[2] Adeniji, M.A., Adeniji, S.E. and Ogunniyi, S. (2011) Availability and Use of ICT in Olabisi Onabanjo University Library. *PNLA Quarterly*, 75(3), (Spring 2011).

[3] Adedeji, O.A. (2010). The Development of Modern Information and Communications Technology in Ibadan: Creative Educational Publications Ltd. P. 58.

[4] Adetimirin, A. E. (2012). ICT Literacy among undergraduates in Nigerian Universities. *Education and Information Technologies*, 17(4): 387-397.

[5] Agbatogun, A.O. and Lawunmi, O.M. (2009), Gender, Computer Access and Use as Predictors of Nigerian Undergraduates' Computer Proficiency. *African Research Review*, Vol. 3(4), July, 2009. Pp. 61-78.

[6] Ajuwon, G. (2003), Computer and internet use by first year clinical and nursing students in a Nigerian teaching hospital. BMC *Medical Informatics and Decision Making*, 3(10), [Online] available at: http://www.biomecentral.com/1472-6947/3/10 (October 21st, 2006).

[7] Allen, M. C. (2011), Third-Year Students' Perceptions of the Use of ICT at a Teacher Training College in Namibia. Unpublished M. Phil Theses submitted to the Department of Curriculum Studies, Stellenbosch University, Namibia.

[8] Amkpa, S. A. (2000). Students' use of University of Maiduguri Library: An evaluative study. *Gateway Library Journal, 2*(3), 70-80.

[9] Badru FM (2002). Using Information and Communication Technology to Pursue the Goals of Primary Education. A paper presented at the National Conference of Nigeria Association for Educational Media and Technology (NAEMT) from November 20-23, 2002, Ibadan.

[10] Basile, A and D'Aquila, J (2002). An experimental analysis of Computer Mediated Instruction and student attitudes in a Principle financial accounting course. *Journal of Education for Business*, 137-143.

[11] Bradlow, E.T., Hoch, S.J. and Hutchinson, J.W. (2002). An Assessment of Basic Computer Proficiency Among Active Internet Users: Test Construction, Calibration, Antecedents and Consequences. *Journal of Educational and Behavioral Statistics*, 27 (3), 237-253.

[12] Comber, C., Watling, R., Lawson, T., Cavendish, S., McEune, R. and Paterson, F. (2002). ImpaCT2: Learning at home and school: Case studies, Becta, Coventry, GB.

[13] Corbett, B.A. and Williams, J.D. (2002). Canadian students' access to and Use of Information and Communication Technology. A paper presented at the Pan-Canadian Educational Research Agenda Symposium "Information Technology and Learning", Montreal, Quebec.

[14] Dhanavandan, S., Esmail, S. M. and Mani, V. (2008). A Study of the Use of Information Communication Technology (ICT) Tools by Librarians, *Library philosophy and Practice*, August 2008. Pp 1-8.

[15] Emwanta, M. and Nwalo, K.I.N. (2013). Influence of computer literacy and subject background on use of electronic resources by undergraduate students in universities in South-western Nigeria. *International Journal of Library and Information Science* Vol. 5(2), pp. 29-42, [Online] Available at: http://www.academicjournals.org/IJLIS (May 24th, 2013).

[16] Etebu, T (2010). ICT Availability in Niger Delta University Libraries. *Library Philosophy and Practice* 2010 (March). [Online] Available at: http://unllib.unl.edu/LPP/etebu3.htm (May 24th, 2013).

[17] Fabunmi, F.A. (2012). Undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University, Ado-Ekiti, Nigeria. *International Journal of Library and Information Science*, Vol. 4(7), pp. 121-130, December 2012. [Online] Available at: http://www.academicjournals.org/ijlis (May 21st, 2013)

[18] Gay, G. and Blads, R. (2005). Information Technology for CXC CSEC, Oxford University Press, UK.

[19] Hashim, H. R. and Mustapha, W. N. (2004). Attitudes towards learning about and working with computers of students at UITM. *The Turkish Online Journal of Educational Technology*, 3 (2), 1303-6521.

[20] Ibegwam, A. (2004). Internet access and usage by students of the College of Medicine, University of Lagos. *The Information Technologist*, Vol.1(1&2), 81–87.

[21] Ifinedo, P. (2006). Acceptance and Continuance Intention of Web-Based Learning. Technologies (WLT) among University Students in a Baltic Country. *The Journal of Information Systems in Developing Countries*, *23*(6), 1-20.

[22] Jorge, C.M., Jorge, M.C., Guti érrez, E.R., Garc á, E.G. and D áz, M.B. (2003). Use of the ICTs and the Perception of E-learning among University Students: a Differential Perspective according to Gender and Degree Year Group. *Interactive Educational Multimedia*, number 7 (October 2003), pp. 13-28.

[23] Khan, S. A., Bhatti, R., and Khan, A. A. (2011), Use of ICT by Students: A Survey of Faculty of Education at IUB. *Library Philosophy and Practice* 2011 (December) [Online] Available at: http://unllib.unl.edu/LPP/khan-bhatti-khan.pdf (May 24th, 2013).

[24] Mahmood, K. (2009). Gender, subject and degree differences in university students' access, use and attitudes toward information and communication technology (ICT) *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2009, Vol. 5, Issue 3, pp. 206-216.

[25] McKenzie, M. (2002). Gender issues in the use of computer in the third class working paper. [Online] Available at: http://www.computing.dcu.ie/research/papers/MCE/2002/0602.doc (February 28th, 2013)

[26] Nwezeh, C. M. (2010). The Use of ICT in Nigerian Universities: A Case Study of Obafemi Awolowo University, Ile-Ife, *Library Philosophy and Practice* 2010.

[27] Ololube, N. P. (2006). Appraising the Relationship between ICT Usage and Integration and the Standard of Teacher Education Programs in a Developing Economy. *International Journal of Education and Development using Information and Communication Technology*, *2*(3), 70-85.

[28] Papastergiou, M., and Solomonidou, C. (2005). Gender issues in Internet access and favourite Internet activities among Greek high school pupils inside and outside school. *Computers & Education*, 44 (4), 377- 393.

[29] Raji and Godsy (2010), ICT use among the Students of Arts and Science Colleges in Kerala, Society for the Promotion of Alternative Computing and Employment Thiruvananthapuram March 2010. Research Report number SPACE-RR-1-2010, [Online] Available at: http://www.space-kerala.org/files/StudentICT-Final.pdf (May 20th, 2013).

[30] Reffell, P. and Whitworth, A. (2002). Information fluency: Critically examining IT education. *New Library World 103* (1182/1183), 427-435.

[31] Rodr ́guez, G. C. (2006), Educative uses of ICT, technological skills and academic performance of the Venezuelan university students (Barineses): A causal perspective *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2006, Vol. 2, Issue 4, pp. 28-43.

[32] Rowley, J. (2000), The question of electronic journals. *Library Hi Tech*. 18(1), 46-54.

[33] Ruthven, K., Hennessy, S. and Deaney, R. (2005). Incorporating Internet resources into classroom practice: Pedagogical perspectives and strategies of secondary-school subject teachers, *Computers & Education*, 44 (1), 1–34.

[34] Salako, O. and Tiamiyu, M. (2007). Use of search engines for research by postgraduate students of the University of Ibadan, Nigeria. *African Journal of Library, Archives and Information Science*, 17(2), 103–115.

[35] Van Braak, P., and Kavadias, D. (2005). The influence of social-demographic determinants on secondary school children's computer use, experience, beliefs and competence, *Technology, Pedagogy and Education*, 14 (1), 43–60.

[36] Van der Westhuizen D (2004). The design and the development of a web-based learning environment, In: S. Gravett & H. Geyser (Eds.). Teaching and learning in higher education. Pretoria: Van Schaik.

[37] Volman, M., and Van Eck, E. (2001). Gender equity and information technology in education. The second decade. *Review of Educational Research*, 71(4): 613–631.