EVALUATION OF ICT LITERACY SKILLS AMONG STUDENTS OF FEDERAL POLYTECHNIC OFFA, KWARA STATE, NIGERIA: A REVIEW OF RELATED LITERATURES.

Dr. Razaq Femi Quadri (CLN)[1], Olaleye Samuel Abiodun[2]

[1]College Librarian, Federal Polytechnic Offa, Kwara State
[2]Federal Polytechnic Offa, Kwara State

Abstract

The purpose of the present paper has been undertaken with a view to evaluate the ICT skills of students amongst the College Library Users of Federal Polytechnic, Offa, Kwara State. So far, economic research has failed to provide a clear consensus on the level of ICT literacy skills of student's in Polytechnics and how it affects their academic achievement. Our paper aims to summarize the main findings of the literature and to give complementary explanations.

The first explanation focuses on the concept and revolution of ICT in the 21st century on standard explanatory factors. The emergence of polytechnics in Nigeria was discussed in relation to the establishment of Federal Polytechnic Offa, Kwara State.

The second phase of the review advocates on the importance of ICT literacy skills as well as the purpose of use, frequency and the effect of the skills on academic activities of polytechnic students. The challenges facing the ICT skills of polytechnic students were evaluated in which several recommendations were made.

I. Introduction

Information Communication Technology (ICT) is one of the important buzzwords of today's IT world. It has changed the society into information society and our way of life. It has been integrated in every walk of our life and its impact has been evident in railway, air reservations, banking and insurance sectors, postal services, biotechnology, bioinformatics, biomedical sciences, health care sector, telemedicine, media and communications teaching learning, library and information services, printing technology, e- resources, digitization of documents, digital library, library networking, e-commerce,& trade, entertainment, etc. It has penetrated in everywhere and its make our life comfortable and easy. (Sinha 2011).

Technology has brought a vast new world of information resources into our homes, classrooms and offices, and there is considerable pressure upon us to use it. We are accessing, analyzing and communicating information faster than ever before and feel compelled to keep up with the mass of ever-changing news and information perpetually collecting at our fingertips. It is clear that in today's world, having a computer is not enough because increased exposure to technology does not automatically lead to increased ability to use it. A measure of success today is how well one can evaluate, manage and communicate all forms of information within a technological environment.

Libraries are being transitioned from the four walls to the cyber environment. Library resources are being transformed from print to digital and web resources. Information has been disseminated speedily around the globe due to advanced means of telecommunication. Therefore, it is being used extensively and has resulted in tremendous growth of information. The growing ICT-driven information services have posed challenges to library and information professionals (Ansari, 2013). The digital landscape has been transformed over

the last decade. Businesses, public services, individuals and families all use computers; online facilities have shaped the way our economy is run and the way we live our lives. Our young people have grown up as digital natives and millions of adults have now joined them. It is a story of technological advance and rapid change; of government investment and public- and private-sector partnerships. We all know that the pace of change will not slow down. Although the number of people who lack basic skills has reduced, there still remains a significant percentage of the population who are not part of this revolution. They lack the basic skills to access ICT and are at risk of being left further behind in a world that becomes ever more digital, these are Information and Communication Technology (ICT) skills.

Furthermore, despite widespread consensus about the need for ICT literacy among college students, there is little information available to tell us the dimensions of the need or what might be done to address it. Higher education institutions are just starting to identify ICT as a core competency (as opposed to "information literacy" or "technology literacy"). A few institutions, such as California State University and Purdue University, are taking that a step further to classroom, faculty and library professionals are working together to integrate technology into the curriculum and create discipline-specific assignments that require critical use of information resources. Yet there is still a need to measure the effectiveness of these efforts and to evaluate whether students have obtained the ICT skills they need to be successful in an information-rich, technology-based society.

In this age of information explosion, information is delivered in different formats, beyond the limitation of our imaginations. Hence, the potentials of electronic networks are breathtaking. The ever increasing presence of computer networks and the evolution of internet in the last decades have added value to the role of computers in higher institution of learning (Miltiadou and Savenye, 2003). Education is one of the key sectors that have been transformed by the application of the technology. Yushau, (2006) attested that computer has been integrated into the education system more than four decades ago.

The rapid development of information technology in all countries has changed the individual and social life of everybody. The rapid expansion of borders of knowledge has forced students to abandon the traditional methods of obtaining their needed information and rather use the opportunities provided for them by the advancement of information and computer technologies. As a result of the changes in the last few decades, nowadays a great amount of information in the field of health and medicine, in the electronic form, is available. In some

of the developed countries, electronically based education is rapidly growing, and most of their students have an appropriate level of ability in the use of computers or ICT. Since lack of students' ability in computer skills or application of ICT can have a direct impact on access of their needed information, one can assume that this situation can also impact their academic success.

II.   Polytechnics in Nigeria

The establishment of the polytechnic system in Nigeria came up in the late 1970s with the mindset of instating another level of tertiary institutions asides the university system. This was enacted through the promulgation of Decree no. 33 of 1979. The provisions of the decree, among others, state that the main purpose of the polytechnic education is to produce the middle-level manpower for the nation's economy. These institutions are to engage in research suitable for the development of both human and material resources needed by the nation's industry and economy. The training of competent personnel that would fit into these positions requires adequate and free access to well organized sources of information (Adegboro, 2000). Librarianship is a crucial factor in the training of such professional personnel. This is because librarianship helps to update knowledge and improve the standards of teaching and learning ability. (Tella et. al, 2010).

The position of librarianship in education is becoming more important than ever before, particularly at this period in Nigeria when most parents can no longer purchase textbooks and other reading material for their children due to economic hardship. In addition, science and technology textbooks are not only rare but very expensive. Consequently the library provides an alternative that can make available the information resources for the intellectual growth of the students.

III.   Federal Polytechnic Offa, Kwara State, Nigeria

The Federal Polytechnic, Offa located at the southern end of the town along the Offa-Oshogbo Way, while its permanent site is currently being rapidly developed along Ojoku Road, came into existence in 1992. A presidential pronouncement for its establishment was made at the Palace of His Royal Highness, Olofa of Offa, Oba Mustapha Olawoore Olanipekun Ariwajoye II, by the then Military President, Ibrahim Babangida during a state

visit in 1991. Consequently, a local task force was then constituted by His Royal Highness, the Olofa, under the Chairman of Alhaji Tiamiyu Olatinwo with six other eminent indigenes of Offa and Chief Ayotunde Raji as Secretary. This local task force prepared the ground for easy take off of the Polytechnic. The pioneer Rector of the Polytechnic, Engr. (Mrs.) Taiwo Adeife Osemeikhian, administered both administrative and academic matters in the Polytechnic from February 1992 to year 2000, under the supervision of a Federal task force led by the Director of Science and Technology, Federal Ministry of Education.

The task force was responsible for taking major policy decisions affecting the polytechnic and performing the functions of the Governing Council. She handed over to the immediate past Rector, Dr Razaq Bello from whom the current Rector, Dr Mufutau Olatinwo, took over to pilot the affairs of the Polytechnic since 2006 as Ag. Rector, and later as the third substantive rector in 2008. From this humble beginning, the Polytechnic has developed to its present state with 20 courses offered at National Diploma (ND) level, and 22 courses at Higher National Diploma (HND) level and Pre-ND programs in Arts and Science. The institution is proud of over 5,000 students in its care.

The Polytechnic's library, which was established at the same time, has been playing supportive roles in the actualization of the mission and vision of the institution. The collections of the library are made up of fifteen thousand books in different fields, and two hundred and fifty serial titles. The library is digitalized; hence, it is connected to the internet. Moreover, the institution has an information and telecommunication centre that is internet-driven with staff of information technology (IT) professionals and non-professionals. The Library is well positioned to carry out its mandates to the entire staff and students of the Polytechnics. The Library was established to provide information resources in support of teaching, learning, and research. In doing so, it has the following specific objectives, among others, to carry out:

To collect and preserve the most up-to-date materials for teaching and research consultation services of the Polytechnic

2. To collect and preserve information resources in books and non-book formats

3. To give user-oriented services to the Polytechnic community through current awareness services (CAS)

4. To provide materials on history, language, culture, and socio-economic and technological development in Nigeria

5. To provide reading environments in a useful variety of locations

6. To maintain inter-library co-operation with other libraries around the world

7. To facilitate access to information communication technologies.

IV.   ICT Literacy Skills

Traditionally, literacy can be explained as the ability to read, write and do arithmetic. These skills were considered necessary and vital for everyone to function in society, to achieve one's goals, and to develop one's potentials. As technologies advanced and computers and information became more widely available, the skills needed to function successfully have gone beyond the mere basic skills of reading, writing and doing arithmetic since they had to broaden to include new skills such as technology literacy, information literacy and information and communication technology (ICT) literacy. In addition, because governments and businesses increasingly rely on the internet as a means to communicate, disseminate information and conduct business, the skills required from citizens for full participation in such activities have changed.

In the ninety's, literacy was defined as one's ability to read, write and use computers to solve problems in his life, job, and society in order to reach personal goals and to develop his knowledge and potential. In addition, use of computer and other new technologies are primarily the cogent requirements of the technology era (Lamanauskas & Vilkonis, 2007). In 1996 the United States Department of Education defined technology literacy (computer literacy) as the "ability to use computers and other technology to improve learning, productivity and performance" (p. 5) (U. S. Department of Education, 2010). All educational systems emphasize the importance of computer literacy in the 21st century (Saade & Kira, 2009). ICT literacy goes beyond reading, writing and doing arithmetic and includes understanding how to work with computers, operating and use computer software and hardware to process information.

Claro et al. (2012) defined literacy in Information and Communication Technology (ICT) as the capacity to solve problems of information, communication and knowledge in digital environments and indicated that ICT literacy requires both functional skills and higher-order cognitive skills. The mastery of functional skills is a prerequisite for ICT literacy since these serve as problem solving tools in digital environments. Hence, ICT literacy is not possible

without functional ICT skills. In this age of globalization, the importance of ICT to people generally and students in particular cannot be overemphasized. This is true because ICTs facilitate quick and easy access to a wide range of information/information resources worldwide. In fact, it is now unthinkable to imagine a world without information technology. The provision and use of ICT is part and parcel of the entire system, to both the students, information professionals and the institutions. (Quadri, 2012).

Fourie (2004) opined that ICT literacy skills are part of a global world that is increasingly shaped by electronic networks and information technology in this ICT-oriented environment, library professionals must become ICT literate in order to survive. Markauskaite (2006) believed that ICT literacy "refers to knowledge of technology applied to information problem solving". Education Testing Service (2007) defined ICT literacy as using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate and create information in order to function in a knowledge society. Lowe and McAuley (2002) defined information and communication technology literacy as "the skills and abilities that will enable the use of computers and related information technologies to meet personal, educational and labour market goals". Ebijuwa (2005) defined ICT as tools used for collection, processing, storage, transmission, and dissemination of information.

Bresnahan, Brynjolfsson, and Hitt (2002) found that ICT skills played a large and widespread role in shifting relative wages among U.S. workers since 1980, with higher pay going to individuals with greater ICT skill levels. Both Graham (2001) and Shrestha (2009) noted that most college of agriculture graduates needed ICT skills to enter and advance in their professional careers. Pouratashi and Rezvanfar (2010) noted that higher education will continue to feel the pressure of educating graduates with appropriate ICT skills for the workforce. Their research also found that as students become familiar with specific ICT tasks they are more willing to use them. Many in higher education believe students enter college already proficient in ICT skills and use (Kaminski, Switzer, & Gloeckner 2009).

Information and Communication Technology (ICT) literacy skill is the ability to effectively and critically navigate, evaluate and create information using a range of digital technologies. It requires one "to recognize and use that power, to manipulate and transform digital media, to distribute pervasively, and to easily adapt them to new forms". ICT literacy does not replace traditional forms of literacy. It builds upon the foundation of traditional forms of literacy (Jenkins, 2009). ICT literacy is the marrying of the two terms ICT and literacy;

however, it is much more than a combination of the two terms. Digital or electronic information is a symbolic representation of data, and literacy refers to the ability to read for knowledge, write coherently, and think critically about the written word (Warschwer & Tina 2010)

V.   ICT Skills among Polytechnic Students

Discussions on Information Technology in Education typically emphasize the technology rather than the information. Widespread technology has meant that people encounter more information, in a greater variety of formats, than ever before. Technology is the portal through which we interact with information, but people's ability to handle information to solve problems and think critically about information tells us more about their future success than their knowledge of specific hardware or software. These skills known as Information and Communications Technology (ICT) literacy comprise a 21st century form of literacy, in which researching and communicating information via digital environments are as important as reading and writing were in earlier centuries.

ICT literate students master content faster, are better problem-solvers, become more self-directed, and assume greater control over learning. Beyond the classroom, ICT literacy is essential for being productive citizens in a knowledge-driven society, and employers want their employees to have these skills. As a result, college and university administrators are beginning to require them as competencies for graduation. This focus has led to campus wide initiative to improve students' ICT literacy skills. However, there are still several still challenges to affecting the improvement in the ICT literacy skills of the students.

ICT literacy students explore a wide variety of topics, including how people find, use, summarize, evaluate, create, and communicate information while using digital technologies. Research also encompasses a variety of hardware platforms, such as computer hardware, cell phones and other mobile devices and software or applications, including web search or internet applications more broadly. As a result, the area is concerned with much more than how people learn to use computers (Gui & Argentin, 2011).

Kulik's (1994) meta-analysis study revealed that, on average, polytechnic students who used ICT-based instruction scored higher than students without computers. The students also learned more in less time and liked their classes more when ICT-based instruction was included. Li *et al.* (2003) pointed out: "First, web-based instruction presents information in a non-linear style, allowing students to explore new information via browsing and cross-

referencing activities. Second, web-based teaching supports active learning processes emphasized by constructivist theory. Third, web-based education is enhanced understanding through improved visualization and finally, the convenience, it could be used any time, at any place". Fuchs and Woessman (2004) present two hypotheses explaining the mixed results shown in the literature. The first one states that, with all else being equal, ICT constitutes an input in the students of polytechnics learning process that should help produce better learning output. ICT use can enhance learning by making education less dependent on differing teacher quality and by making education available at home throughout the day. Authors argue that the use of ICT can positively transmit knowledge to students. Furthermore, ICT use can help students exploit enormous possibilities for acquiring information for schooling purposes and can increase learning through communication.

Information and communications technology (ICT) literacy skills can be a great tool for self-development among the students. Speaking generally, it has be observed that advances in the use of technology can improve economic opportunities for the poor, increase delivery of services to the underserved, improve governance, and benefit social change. World Bank Group strategies in ICT have focused on promoting reform, increasing access, supporting ICT human capacity, and supporting ICT applications. But access and use of the internet and broadband is still much lower in poorer countries especially Nigeria due to lack of necessary skills to adapt and adopt these ICT facilities for personal development and national use. The education standard of Nigeria is falling every day.

In the developed world, schools are continuously updating their curriculum for digital literacy to keep up with accelerating technological developments. This often includes computers in the classroom, the use of educational software to teach curriculum, library and course materials being made available to students online. In Nigeria, we are still considered as under developed when it comes to the use of ICT technological gadgets in our educational system. Some students in our polytechnics cannot still operate a computer system without assistance not to the extent of sending mails. Therefore, the statement of problems will address issues of literacy/skills levels among polytechnic students, because they are the primary information users/clients.

There is a growing acceptance among academics, education policy-makers and employer groups that the development of ICT skills is part of the role of higher education. Employers are seeking graduates with a range of knowledge on ICT skills and personal attributes in

addition to degree status (B-HERT, 2002). According to Akintunde (2004), information and communication technology (IT) because of its appropriateness and utilization. Beebe (2004) posited that ICT is a short term for computers, software, networks, satellite links and create, exchange and use data, information knowledge. The use of ICT has increased and broadened the impact and skills of polytechnic students on how to seek information electronically. The ICT skills that have become increasingly important in the pursuance of a degree-level education will affect both how students manipulate these e-learning resources and the way they are used for learning. ICT skills deal with the application of ICT to specific purposes. It is not just about using software package or using operating systems, neither is it concerned with keyboarding skills and students' ability to copy-type or follow instructions. Rather, ICT skills among undergraduates is about students' ability to use their knowledge about ICT to find, develop and present information; whether it is text, image, or number, or all of these integrated task.

In order to utilize the growing range of ICTs, students must acquire and practice the skills necessary to exploit them. As Dutton (1990) suggested that the skills required maximizing the potential of ICTs are much more than those required for searching printed sources. These skills include a knowledge of computer operations, knowledge of the structure of databases and instructions which must be input into the computer by the student, as well as an understanding of the ways in which the instructions are linked with one another. Nikitakis (2007) stated that ICT skill refers to the ability of fully understanding and acquiring a wholeness of capacities, such as recognizing, spotting, evaluating and making effective use of the given information. Hence, one should possess not only the basic computer usage skills, but also communication, inquiry and information retrieval capabilities.

Akintunde (2004) stated that the ability to use computer is not the only ICT skill needed to exploit the information located on the internet. In order to make the most of this online content, one must be information or ICT literate. Haywood (2003) affirmed that for student to achieve a successful academic pursuit, they must acquire various ICT skills that include: understanding the use of computer to perform various tasks such as opening applications, creating and modifying documents, spreadsheets or presentations. Some basic typing skills will be necessary; having ability to identify various ICT technologies and their uses.

Iwona (2008) noted that in order to utilize the growing range of electronic resources, students must possess and practice the skills necessary to exploit them. These skills include basic

knowledge of computer, proficiency in using productivity software, electronic communication skills as well as internet skills. These skills are necessary to successfully matriculate throughout the learning process as well as to complete and secure future employment. Therefore, the increased use of computers and the level of internet use by polytechnic students in an important measure of technological development.

VI. Challenges of ICT Skills among Polytechnic Students

According to Quadri (2012), there are number of challenges facing polytechnic students on the use of ICT in information utilization for academic and research activates particularly in libraries in Nigeria. Firstly, (Manda, 2006). Noted that inadequate technological infrastructure to support the integration of ICTs in the curricula is a major challenge. This refers to issues as poor or lack of national ICT policy, low internet connectivity, inadequate supply of electricity, inadequate number of PCs, etc. There is need for policies that deregulate satellite communication and other telecommunication links, regulate ISPs, regulate government and cross-border data flows, etc. ICT policies can help address stringent tax regimes that still treat computers, communication equipment and other peripherals as luxury items, thus imposing heavy import duties on them and subsequently rendering these items very expensive. Internet access is now widely available, but the efficiency is poor as many libraries in African countries experience downtime, several times a week (Manda, 2006). The telecommunication services are the root cause of these downtimes in terms of, either, low bandwidth, technical faults and other network configuration problems. As Jensen (2005) puts it, there are also "many external systemic factors such as electricity, transport networks, import duties" etc., which impact on internet service delivery on the African continent. In some institutions, access is limited, not only by the number of internet service points, but also by the time that access is available or permitted, leave alone the difficulty of bandwidth. Yet for research purposes, access to the internet is no longer a luxury or privilege for only a few people because in academic circles, access to the internet and hence to the world's stores of knowledge is a necessity. Libraries in African still need to lobby to gain greater access to internet resources for academic students and researchers. Thus there is urgent need for improved ICT policies and infrastructure in polytechnics in Nigeria.

ICT skills are important as it is a pre-requisite for networking of e-library services and resource sharing. It also enables promotion of e-learning, usage of e-Journals / e-Books and creation of electronic institutional repositories. The operations in a library require ICT skills

in order to achieve and utilize more efficient and effective excellent library and information services. ICT infrastructure would involve hardware, software, and other telecommunication facilities. Sufficient ICT skill is very essential for the successful accessibility and maximum utilization of ICT in libraries in obtaining the needed information. Possession of ICT skills to access and process vast amount of information coupled with the ability of students and information users to transmit this information from one location to another has tremendous impact on the sending, storing, retrieving, and disseminating of information in libraries. The value of electronic resources and services are much appreciated if the information users are equipped with the necessary literate skills to easily share, distribute, update, manipulate, and rapidly searched and use it to answer their information needs. Lastly, the usage of all e-resources is becoming high and well appreciated. The impact of ICT literacy skills of the students of polytechnic has promoted the usage of electronic resources in terms of e-journals, e-books, and to as well performs other academic and research activities.

There is no doubt that ICT can be a major source of sharing knowledge and information and they have come to complement physical library resources. Their availability and adoption in teaching, study and learning especially in developed countries have increasingly improved students" information seeking and retrieval. There is thus a general belief that Federal polytechnic students will make effective use of these facilities to address their information needs but research has it that in spite of all these benefits derived from the usage of ICT facilities that some students do not make extensive and effective use of it.

Conclusion

Polytechnic students with high ICT/computational literacy skills are more likely to use the electronic information resources more than those with inadequate ICT skills. More so, web enabled services are provided through library web page. New services include access to the internet and internet based tools and services, access to electronic information sources and digital library of local and institutional documents. Journals, books, dissertation and theses, course material and patents are some of important sources of information that are now available in electronic form. Electronic resources provide 24 hours anywhere flexibility and convenience of use by multiple users and full text searches and faster delivery. Subject gateways are one of the useful tools to provide web access to internet resources.

Finally, it is necessary to be proactive and to develop a stronger understanding of future learning needs and future learning environments. Prospective work on ICT-enabled learning would help the polytechnic students to grasp the opportunities offered by ICT to prepare for learning in the 21st Century that embraces digital technologies for better learning, for better assessment of learning outcomes and achievements, for better teaching and for better social inclusion.

Recommendations

1. The Sourcing of funds by various Polytechnics from the Government of Nigeria to procure ICT equipment is not an easy task. However, various other private agencies and companies should also see it as priority to help Polytechnics to procure the needed equipment in order to make ICT in education at all levels sustainable. Also, funds should be made more available to equip e-libraries with sophisticated technological equipment needed for e-resources.

2. Training courses on ICT literacy should be included in the curriculum and organized for the awareness and use of e-resources for students of Federal Polytechnic Offa, Kwara State. Consequently polytechnic institutions in Nigeria have to promote enhanced ICT educational modes such as electronic learning (e-learning) and mobile learning (m-learning) in order to serve the needs of the Nigerian citizens who cannot get access to onsite education at Polytechnic campuses as a result of insufficient educational resources.

3. Access to internet should be made available at little or no cost for students of Federal Polytechnic Offa, in other to use e-resources often. The enhancement of education through ICT by various Polytechnics in Nigeria requires policies that involve the ICT contribution of teaching and non-teaching staff and the students. All stakeholders of Polytechnics have a role to play if ICT implementation will be successful. Relevant issues such as teacher-student ratio, number of staff/lecturers and the procurement of appropriate and relevant ICT infrastructure involving the requisite hardware and software have to all be taken into consideration by Polytechnics in Nigeria.

However, in Federal Polytechnic, almost all departmental libraries and the Main Library in the Campus are equipped with Personal Computers (PCs) that have high/standard specifications and are connected to either wireless or wire-line/cable internet connectivity through a main Polytechnic server. Additionally, more is still needed to be done as many staff

of the Polytechnic libraries doesn't even have a personal laptop talk less of having the skills to operate and carryout activities on it.

REFERENCES

[1]   Adel Ben Youssef & Mounir Dahmani   *(2010)* The Impact of ICT on Student Performance in Higher Education: Direct Effects, Indirect Effects and Organizational Change; Monograph "The Economics of E-learning" http://rusc.uoc.edu

[2]   Bryant, J.; & Poustie, K. (2001). *Competencies needed by public library staff.* Gutersloh. Ger.: Bertelsmann Foundation.

[3]   Claro, M., Priess, D. D., San Martin, E., Jara, I., Hinostroza, J. E., Valenzuela, S., Cortes, K. & Nuss-baum, M. (2012). Assessment of 21st century ICT skills in Chile: Test design and results from high school level students. *Computers and Education, 59, 1042-1053.* doi: 10.1016/j.compedu.2012.04.004.

[4]   Donald M. Johnson ,Leslie D. Edgar , Casandra K. Cox (2012) Student and Faculty Perceptions of ICT Use in Undergraduate Agriculture Courses; *Journal of Agricultural Education Volume 54, Number 3, pp. 171 – 185 DOI: 10.5032/jae.2013.03171*

[5]   Ebijuwa, A.A. (2005). Information and Communication Technology in university libraries: The Nigeria experience. *Journal of Library and Information Science 7* (1&2): 23-30.

[6]   Educational Testing Service. (2007), *Digital transformation: A framework for ICT literacy: A report of the international ICT literacy panel*. Available at: http://www.ets.org/Media/Tests/Information_and_Communication_Technology_Literacy/ictreport.pdf

[7]   Fourie, I. (2004), Librarians and the claiming of new role: How can we try to make a difference? *ASLB Proceedings, 56*(1), 62-74.

[8]   Fourie, I., & Bothma, T. (2006). Addressing the digital divide in teaching information retrieval: a theoretical view on taking students from ICT access to knowledge sharing. *The Electronic Library,* 24 (4):469-489.
http://digitalcommons.unl.edu/libphilprac/762

[9]   Irvin R. KATZ & Alexius Smith MACKLIN (2013) Information and Communication Technology (ICT) Literacy: Integration and Assessment in Higher Education; *IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 15, Issue 3 (Sep. - Oct.*

2013), PP 70-75 e-ISSN: 2279-0837, p-ISSN: 2279-0845. www.Iosrjournals.Org www.iosrjournals.org 70 | Page

[10] Lowe, G., & McAuley, J. (2002). Adult literacy and lifeskills survey, Information and Communication Technology literacy assessment framework. 1-14. 13 August 2002 www.ets.org/all/ICTL_2nd_framework.pdf.

[11] Markauskaite, L. (2006). Towards an integrated analytical framework of information and communication technology literacy: From intended to implemented and achieved dimensions. *Information Research, 11*(3). Available at: http://www.informationr.net/ir/11-3/paper252.html

[12] Munira Nasreen Ansari (2010) ICT Skills Proficiency of Library Professionals: A Case Study of Universities in Karachi, Pakistan; Chinese Librarianship: an International Electronic Journal, 36. URL: www.iclc.us/cliej/cl36ansari.pdf

[13] Nana Yaw Asabere (2013) Using Information and Communication Technology (ICT) to Improve Polytechnic Education in Ghana; International Journal of Computer Science and Telecommunications [Volume 4, Issue 9, September 2013]; Journal Homepage: www.ijcst.org

[14] Omotunde Oluwatobi, Babalola Yemisi(2014) Influence of Information Technology Competence and Demographic Characteristics on Undergraduate Student's Perception of E-Portal, International Journal of Scientific and Research Publications, Volume 4, Issue 6, June 2014 1 ISSN 2250-3153, www.ijsrp.org

[15] Quadri, Ganiyu Oluwaseyi, "Impact of ICT Skills on the Use of E-Resources by Information Professionals: A Review of Related Literature" (2012). *Library Philosophy and Practice (e-journal).* Paper 762.

[16] Sanusi Rufai Buhari, Gambo Ibrahim Ahmad, Bashir HadiAshara (2014) Use of Social Media among Students of Nigerian Polytechnic, International Conference on Communication, Media, Technology and Design, *24 - 26 April 2014, Istanbul – Turkey* 302

[17] Tella A., Owolabi K.A., Okechukwu R. (2012) Student use of the library: A case study at Akany Ibiam Federal Polytechnic, Unwana, Nigeria, Chinese Librarianship: an International Electronic Journal, 29. URL: http://www.iclc.us/cliej/cl28TOA.pdf.

[18] Umeji, Ebele C., Efe Francis Ejedafiru; Lucky U. Oghenetega Information /Ict Literacy Levels and Skills among Librarians in Madonna University Library, Okija