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# **Information and Communication Technologies: A Need for Curriculum Reform for Library and Information Science Education in Nigeria**

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## **ABSTRACT**

Information and Communication Technologies The present revolution of Information and Communication Technology (ICT) necessitates a total overhaul of Library and Information Science curriculum to reflect the change. Most library operations and services now adopt the use of ICT. Hence, there is urgent need to integrate ICT into LIS curriculum in order to train LIS graduates who can stand the test of time. This paper highlights the need for reform of LIS curriculum, various changes brought about by ICT in libraries, advantages of ICT, the training models, strategies, skill acquisition for effective operations. It highlights the various challenges of integrating ICT to library curriculum such as policy issues and inadequate technological infrastructure, lack of fund, erratic power supply, technophobia and poor bandwidth problem. It finally suggests that there is need for the formulation and implementation of policies by all the stake holders to integrate ICT training to all education sectors; and that Government should provide adequate ICT infrastructure to leverage the problems of integrating ICT to curriculum development.

**Keywords:** Education, Information and Communication Technologies, Reform, Curriculum Reform, Advantages of ICT In libraries, ICT Training Strategy

## **INTRODUCTION**

Education plays a pivotal role for the development and progress of any nation. Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, abilities, attitudes and competencies through training, teaching, mentoring and coaching. Education is a veritable instrument for inculcating the right attitude for personal growth and development. It is an indispensable tool that plays a crucial role for sustainable national development. Appachu (2019) asserts that the educational system of a nation is the true indicator of its strength, its quality of life and well-being of its citizens and its potential to find its place in the world. Adeogun (2003) is of the view that education is the major weapon for the eradication of unemployment and ignorance. Fafunwa in Nwabuisi (2008) posit education as the human act of informing, forming and strengthening of the powers of the body and mind: a process for

transmitting culture for the knowledge to ensure social control and guarantee rational direction of society. Stan (2014) sees education as the act or process of imparting or acquiring general knowledge, developing the powers of reasoning and judgment, and generally of preparing oneself or others intellectually for mature life. It is the wealth of knowledge acquired by an individual after studying a particular subject matters or experiencing life lessons that provide an understanding of something (Terry, 2011). Education is therefore seen as the base upon which the human development is built upon. In education sector, many tertiary institutions have realized the potentials of integrating Information and Communication Technologies in classrooms as a veritable tool in enhancing teaching and learning. Ahmed (2012) stressed that the ICT adoption in educational system has become a background for driving the potentials of new technological devices which revolutionize the educational system. He maintained that the convergence of a variety of technological, instructional, and pedagogical developments altered teaching and learning process in recent times.

The contemporary paradigm shift in library operation and service brought about by the revolution in Information and Communication Technology (ICT) require a proactive training and ICT skill acquisition in order to fit into the new digital library environment. ICT is basically an electronic based system of information transmission, reception, processing and retrieval which has dramatically changes the way we think, the way we live and the environment in which we live, Ogunsola (2005). Nwachukwu (2005) defined ICT as a device or tool that allows for the collection, storage, processing or the communication of information. It has brought a dramatic changes and innovations in the instructional delivery and management processes in the education sector. The introduction of ICT training in the curriculum is quite indispensable for reforming Nigerian education system for better and quality teaching, learning and research. The infusion of ICT in teaching and learning has transformed the pedagogy strategy and this demands for a reform of the curriculum in education system in general and in LIS education in particular. Hence, Nigeria's education system needs a holistic reform of the curricula to reflect the present digital environment. The utilization of ICT in all facets of life especially in information handling and learning environment necessitates that both the teacher and the students must be trained to acquire ICT skills and competences in order to function effectively in the digital/hybrid library environment.

Library and information science schools (LIS) and professionals have witnessed remarkable changes and globalization of library operations and services as well as competitions beyond traditional, institutional, national and regional boundaries. This new environment has made it indispensable for LIS schools to strive to improve their quality of programmes in order to participate in global educational networks as well as develop innovative strategies and competencies to produce graduates for lifelong learning and whose work place spans the whole world. Mohammed (2008) asserts that “Information and Communication Technologies (ICTs), particularly the Internet, Intranet and other network technologies have continued to impact positively on the methodologies of library and information service delivery, education and training of information providers as well as the information needs and seeking behaviour of the information seekers and users”. Hence, the present education and training of LIS student/professional should be such that will equip them with the competencies and skill to cope with the changing library environment and be employable in the job market in any part of the world. Adogbeji (2007) rightly observed that librarian competency is very crucial to the successful implementation and application of ICT to library operations. Ochnlla (2003) observes that the LIS job market requires additional and new competencies such as computer literacy, word processing, spreadsheet, data base construction and management online searching and retrieval, CD-ROM services, others include electronic current awareness services, automatic indexing and abstracting, virtual reference services, digitization, desktop publishing, c-publishing, library automation, social networking, telefacsimile. Incorporating ICT in LIS curriculum is of paramount importance in order to achieve the educational goals and objectives in the present digital environment. Hence, there is greater need for reform and infusion of ICT knowledge and skills into LIS course content. Hundu (2014) assert that the Current LIS programmes need new reforms and LIS lecturers need to explore more innovative practices and unconventional approaches to combine computer and information system courses into LIS core courses. Olorundarc (2007) in Ozioko and Nwabueze (2010) noted that the increasing trend of the use of ICT in class room work across the globe has been necessitated by three factors which include;

- Electronic technological devices are being used to prepare the present generation of young people for a future work place that will undoubtedly be characterized by information technology (IT). Preparing students and the wider citizenry for tomorrow's world can

only be done through a careful use of ICT tools, computers internet spreadsheets and database.

- ICT tools make schools more efficient in the teaching-learning enterprise. Classroom teachers' personal professional development and academic productivity have been greatly enhanced.
- ICT tools are being used to improve, reform or learn actively either on an independent basis or working closely with other.

### **Changes brought about by ICT in LIS profession**

ICT have brought about a lot of changes in information handling, transforming the way in which information is acquired, processed, retrieved and disseminated. The changes brought into the LIS profession by ICTs can be divided into two major categories, namely: the transformatory changes, on the one hand, and evolutionary changes on the other hand. In the transformatory changes, the library and information science profession has harnessed ICT to perform old tasks better through the automation of housekeeping tasks such as reference works, circulation, acquisition and serials management which are performed more efficiently in an ICT environment. Evolutionary changes on the other hand, include the emergence of new functions arising out of an expanded, demand- driven information society, wider and/or interdisciplinary jurisdiction and closer focus on user needs (Sutton, 2001).

The knowledge of internet search, networking, database management, digitization, web design, metadata creation, communication and retrieval technologies have become core to the library profession. In view of these changes, information professionals should competently be equipped to navigate information networks in order to provide a worthwhile service to the increasing and changing information needs of user. Consequently, LIS curriculum needs a total overhaul and reform to integrate ICT concepts, knowledge, skills, and competencies into the core curriculum content. Hence, a proactive practical ICT training remains indispensable to enable graduates to adapt effectively to the changing information environment.

Diso and Njioku (2007) in their study concluded that the training of librarians in Nigeria is inadequate, and needs radical restructuring to produce librarians suited to deliver services in a digital or technological based library in knowledge based society. Obviously, the general library environment is gradually but continuously changing from analogue to digital and/or hybrid

library environment as a result of the present ICT revolution. The concept of a library as a physical place where one can visit to access information has dramatically changed to service which provide organized access to the intellectual records wherever it resides whether in physical place or in scattered digital information spaces paving way to the present model of hybrid libraries (Carr, 2001).

### **The Concept of Reform**

The current education system in most developing countries, Nigeria in particular is majorly theoretical rather than practical. This inadvertently result in the production of half-backed graduates who do not have the skills and competences required in the workforce. The present scenario urgently requires a total overhaul and reform in the curricula to accommodate the changes brought about by ICT. Reform in education means to first evaluate, assess and reappraise the existing education system in terms of standards, structure, quality, quantity, teachers, welfare, classrooms and curriculum. Reform basically starts with problem identification, analysis and evaluation of the existing system in order to adopt changes to improve on the system. The Oxford Advanced Learner's Dictionary of contemporary English (6<sup>th</sup>ed.) defined the term "reform" as to improve a system by making positive changes to it. It entails adopting policies and practices to ensure better quality education. It is a planned change in the school system function, from teaching methodologies to content and evaluation models for more effective teaching and learning process. The goal of any reform is to reflect change to ensure effective, functional and productive system. Ozioko and Nwabueze (2010) noted that reform come up as a way of ensuring, that the educational system is structured and made to be more relevant to the needs and aspirations of the society through the injection of new ideas, new research findings and new approaches into the system. A reform is a process of improving by alternation, correction of errors or removal of defects or simply to put into a better form or condition, (Ekwujuru. 2007). Educational reform is a comprehensive reworking or rebuilding of the educational system for the ultimate purpose of improving teaching and learning (Achunine, 2006).

Curriculum reform therefore is a process of positive changes in the education policy, putting right what is wrong, improvement from deficiencies, initiating ideas, inculcating innovations and action plans and total overhaul of the curriculum to reflect quality training for

the changing environment. It is a transformatory plan that brings about a systematic change in educational theory and practice in any educational system. For any curriculum to be relevant, it has to be flexible and dynamic in order to accommodate changes. Hence, reforming any curriculum therefore supposes that the curriculum should be redesigned to accommodate new knowledge, skills and practice. The Curriculum Corporation, 2006 revealed that using ICT as a tool for learning enables students to:

- Efficiently and effectively access digital information to assist with investigating issues, solving problems and decision making;
- Produce creative solutions to support learning and develop new understanding in areas of learning;
- Communicate, share and work collaboratively in local and global environment, understand the legal, ethical, health and safety implications of using ICT and their responsibilities as users and developers; and Develop new thinking skills to support learning.

It is indispensable to reform LIS curriculum in order to accommodate the ever changing technologies that has formed the basis of teaching and learning. Curriculum reform in LIS schools ensures a flexible teaching and learning environment that incorporates new technologies, learning techniques and facilities to facilitate teaching and learning in the present digital library environment. Ali (2009) emphasized that "any education that does not reform itself by introducing changes engendering new processes, and addressing new challenges and expectations, modifying current practices so as to reposition the education to meet new national development challenges will become moribund and lead to national retrogression, as well as constant crises in education and ultimately incipient decay". Malekabadizadeh (2009) emphasized that it is necessary reform the organization, curriculum, training material and equipment, and instructor preparation

### **Integration of ICT in LIS curriculum in Nigeria**

Educational curriculum generally is constantly undergoing changes as a result of the revolution in Information Communication Technology (ICT). The term "ICT" describes the use of computer-based technology and the Internet to make information and communication services available to a wide range of users. The term is used broadly to address a range of technologies,

including telephones and emerging technology devices. Central to these is the Internet, which provides the mechanism for transporting data in a number of formats including text, images, sound, and video. The quality of any learning activity is highly dependent on the curriculum content. Opara (2009) emphasized that a worthwhile curriculum should be dynamic in order to be relevant. Hence, curriculum should be constantly revised in order to effect changes in the changing environment. The major significant change in the new curriculum is the fact that ICT is now an integral part of most subjects taught in schools. This integrated approach has put more requirements on both the teacher and the students to acquire the necessary ICT skills in order to face the new challenges. Integrating ICT skill acquisition in LIS curriculum must be considered as a key developmental factor for effective information handling, teaching and learning. One of the striking impacts of integrating ICT in library and Information Science education is e-learning. E-learning according to Eke (2010) covers a wide set of applications and processes, including computer based learning, web-based learning, virtual classrooms, and digital collaboration. It encompasses any form of education, training, teaching and learning through Computer-Based, Web-Based, distance or online learning environment that uses an information network which include the internet, and intranet (LAN) or extranet (WAN), for course delivery, interaction, evaluation and/or facilitation. It is an innovative approach for instructional delivery in electronically mediated, learner-centered and interactive learning environments to anyone, any place, anytime by utilizing the internet and digital technologies in concert with instructional design principles. It makes information available and accessible anytime-anywhere without any physical boundary.

There has been divergent curriculum in LIS schools in Nigeria. Different LIS schools operate on its own curriculum. Opara (2009) noted that a review of the curriculum of LIS schools revealed that while some emphasize more library science course others strive to strike a balance between library and information science. In some LIS schools, the issues of subject base are still controversial and not welcomed. However, there is a need for more emphasis on practical ICT skills in order to be well equipped to face the present challenges in the present digital/hybrid library environment. Igun (2005) noted that Nigeria education system is still specializing in producing a mediocre work force in the universities by equipping the university graduates with mainly theoretical knowledge (principles), educated individual needs both theoretical knowledge and practical skills in order to be balanced.

Although some library schools in Nigeria have adopted some ICT based programs in their curriculum, the big question is: how effective have these programmes impacted on the LIS Students? The issue is not just teaching the courses, but emphasizing on practical ICT skills which has been seriously lacking. This will enhance effective communication, teaching, learning, research and problem-solving. Moreover, some LIS teachers do not possess the necessary ICT skills needed to coach their students. There is also need for training and re-training of LIS professionals in order to impart ICT knowledge to their students. On this note, Udoh stated inter-alia:

the information studies programmes in the various Nigerian library schools should emphasize information technology both in theory and practice. The new breed information worker needs to be well informed about the tools for practicing his or her profession. The onus of accomplishing this task lies with our library schools. Furthermore, the teachers handling the training of LIS students in Nigerian library schools need to be re-trained in the modern theory and practice of information technologies if they are to meet with the demands of the society and the Nigerian labour market

### **Advantages of ICT In libraries**

Oyedokun (2018) noted that the use of Information and Communication Technology (ICT) facilities in performing library functions are becoming very useful in the libraries because it makes service delivery to the user faster and more efficient. He went further to stress that ICT skills are imperative such that, they now have an enduring impact on career development of LIS professionals. It is very crucial for library and information science professionals to acquire ICT skills in order to be more competitive in the face of competition with other professionals. Without adequate ICT skills, librarians would not be able to cope with information explosion of today's information society. There are a lot of advantages in the use of ICT in libraries especially in a networked environment which include:

- Increased easy access to information globally;
- Preservation of large amount of information in a reduced volume such as the use of CD-ROM;
- Opportunities to deploy innovative methodologies and more interesting material in library services;
- Enables better management of library operations by improving the productivity, operations and library services;

- Enables optimum utilization and sharing of resources among institutions thereby reducing the costs of implementing ICT;
- It is a veritable tool for e-learning and it offers a platform for collaboration and interoperability of libraries globally.

### **ICT Training: models of Delivery**

ICT is crucial as an underpinning tool to support learning, teaching and research. Within this context, it is critical that both students and staff (the teacher) have sufficient ICT knowledge and skills to allow them to make effective use of technology in their working and learning environments. The integration of ICT skills in the education curriculum offers a range of services to support the development of staff and student ICT skills. For students, these will include ICT orientation for all new students, access to ICT training resources, laboratory and self-study materials, while for staff; it includes ICT on the job training, workshops, access to ICT training resources, laboratories and self-study materials. Richmond (2002) indicated that there are three general approaches to the instructional use of computers and the Internet, namely:

- ❖ Learning about computers and the Internet, in which technological literacy is the end goal;
- ❖ Learning with computers and the Internet, in which the technology facilitates learning across the curriculum; and
- ❖ Learning through computers and the Internet, integrating technological skills development with curriculum applications

### **ICT Training Strategy**

Ensuring good understanding of ICT practices and a firm grip of ICT competences will enable both the staff and the students to better adapt and fit into the present ICT-driven environment. there are three levels of training that are important for both staff and students.

- 1. Awareness Raising:** This comprises an introductory level, focusing on developing an appreciation of what ICTs are, and how they can support teaching and learning practices of staff and students. This includes familiarizing the students with different ICT facilities such as computer hardware and software packages.

2. **Skills Acquisition:** Focuses on generic skills which are the basic skills required to manage and manipulate a computer. It entails the inculcation of specialized ICT skills into the students for effective data creation and management.
3. **Application:** This entails the utilization of the acquired ICT skills in information management and services. Students need to apply the acquired skills into practical use such as internet search, database management, online cataloguing, web publishing, metadata creation, networking, digital reference services, trouble-shooting etc.

### **ICT Skill Acquisition**

Integrating ICT skill acquisition in LIS curriculum must be considered a key developmental factor for effective information handling especially in the face of ICT-driven environment. The process of learning (lectures, tutorials, completing assignments and conducting research) is becoming more intertwined and dependent on Information and Communication Technologies, Achuonye (2011). Hence, ICTs are now prevalent in academic environment and every other human endeavor. Consequently, it has become imperative for the reform of LIS curriculum to integrate ICT as a core component of the curriculum. LIS curriculum must be redesigned to accommodate new knowledge, skills, and practices. This is because most traditional library routines are now done with computer technologies such as online acquisition of materials, online cataloguing and Online Public Access Catalogue (OPAC), digital reference services.

The pervasive nature of ICT has an implication for both the learning environment and employment requirement. In our contemporary environment, ICT skill is a very important criterion for employability in any establishment. A trained librarian with ICT skill is better equipped and has the opportunity to establishing an information or documentation center as a private enterprise. On this note, Tella and Adu (2009) emphasized that "embedding the use of ICTs in the curriculum must be considered a key priority and part of national strategy for learning in an online world by every developing countries of the world". The reason for this is because we live in a technological world where information and communication technologies (ICTs) are fundamental to most activities.

The training of librarians in the 21<sup>st</sup> century must integrate the aspect of Digital Information Management System (DIMS). This is because most libraries especially in developing countries are digitizing their local resources and are in a hybrid form. On this note, Zhou (2005) describes the responsibilities of a digital librarian as follows-

- Select, acquire, preserve, organize and manage digital collection;
- Design the technical architecture of digital library;
- Plan, implement, and support digital services such as information navigation, consultation and transmit services;
- Establish friendly user interface over network;
- Set up relative standards and policies for the digital library;
- Design, maintain and transmit add-valued information products; and
- Insure information security.

### **Challenges of Integrating ICT to Library Curriculum**

Tinio (2002) indicated that effectiveness, cost, equity, and sustainability are four broad intertwined issues which must be addressed when considering the overall impact of the use of ICTs in education. There is a very serious challenge of accepting that most library activities can no longer be divorced from ICT. Some of the challenges facing the integration of ICT to education curricula especially in developing countries include:

**Policy issues:** The formulation of policies that will drive a proactive integration of ICT across all education sectors. Adoption of ICT policies in teaching, learning and research in developing live-living learning and as a transformatory tool to national development;

**Inadequate technological infrastructure** to support the integration of ICT to education curricula. There are little or no infrastructure, equipment, and learning resources in most developing countries. This refers to inadequate hardware and software and low internet connectivity;

**Erratic power supply:** most developing nations of the world especially Nigeria are still facing very low electricity supply. This is a very serious challenge for effective ICT development in teaching and learning;

**Lack of fund:** The present economic recession is a very big challenge to the development of education in developing countries. One of the greatest challenges facing the development of education in Nigeria is poor funding. The severe budget cut and its attendant implication of widening the digital divide between Africa and other parts of the world is worrisome challenge. A lot of money is needed to purchase adequate bandwidth and network connectivity, server, generator, computers, software and maintenance cost;

**Technophobia:** Most students and staff alike have not really embraced the use of ICT in teaching and learning process. Most lecturers especially the older ones have developed fear, dislike and negative attitude towards the use and manipulating of computers while most of them are resistance to change.

**Poor bandwidth problem** - Most academic institutions in the developing countries have limited bandwidth to support application of ICT and E-learning practice. The greater the bandwidth, the faster the data transfer. Hence, the amount of data sent or received over any given time is limited by bandwidth.

**Inadequate trained personnel:** There are not enough competent personnel to impart ICT skills to students. Most lecturers are still analogue in their mode of teaching the students. They lack adequate ICT skills and competency for proper training of the students. Oyedokun (2018) identified constraints to ICT skills acquisition for library staff which include tight working schedule, lack of motivation, personal trait, lack of experience, inadequate ICT training and inappropriate library science curriculum for adequate ICT training and competency.

## **Conclusion**

ICT is continuously playing very important roles in information handling. Various library routines are constantly changing from manual to electronic forms. Owing to these changes, it is imperative to redesign, reform, develop and integrate a worthwhile curriculum for LIS teaching and learning that will reflect the inevitable change brought about by ICT in education process.

## **Recommendations**

From the foregoing, the following are recommended:

- The formulation and implementation of policies to integrate ICT training to all education sectors;
- Government should provide adequate ICT infrastructure to leverage the problems of integrating ICT to curriculum development;
- Provision of constant power supply;
- Provision of fund and strong financial support to development of education;

- Adequate ICT orientation to students and staff to familiarize them with various ICT facilities and keep them abreast with the constant changes brought about by ICT integration in LIS teaching and learning process.
- The issue of training and retraining to adopt and utilize ICT facilities in teaching, learning and research is very important in order to acquire new and relevant ICT skills to enable them meet up with the present challenges.

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