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Review

ICT competency framework for library and information science schools in Nigeria: The need for model curriculum

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All professions and disciplines stumble upon change internally and externally, and to move forward successfully in this information age, change and evolution are necessary and inevitable especially in the area of information and communication technology, as well as the digitization of information of all kinds. These Digital age scenarios have set the scene for changes in many spheres and in particular for Nigerian Library and Information Science schools. The influence of Information and Communication Technology (ICT) on every discourse of human knowledge is undisputed and is also considered all pervasive, this indicate the pressing need to educate and train the library and information manpower towards a sustainable ICT competence. The LIS curriculum development in Nigeria has shown considerable strides in infusing ICT competencies as most LIS schools have developed relevant ICT courses and also merged relevant ICT knowledge in traditional curriculum. However, most LIS schools teach these ICT courses theoretically because they have inadequate laboratories of computers and poor Internet access. The problems are to be found in the overall ICT policy and infrastructures both at national and institutional levels, as well as the lack of sustained funding, appropriate equipment, expertise and management in Nigeria and LIS schools in particular. This paper discusses the pros and cons of ICT competency and LIS Education Scenario in the Nigeria and stresses the need for ICT competency framework and model curriculum.

Key words: ICT competency, framework, library and information science, curriculum.

INTRODUCTION

The power and influence for which Information and Communication Technology (ICT) has for education in general and library and information science profession in particular is undeniable and is also considered all-encompassing to library and information practice and training. This power and influence of the ICT render both the faculty members, practitioners and students in search of ICT competencies and integration and adaptation of such competencies into various teaching subjects in the discipline of library and information science in Nigeria. This also indicates the pressing need for the education of both the faculty members and aggressive training of library and information manpower towards sustainable ICT competence.

However, in Nigeria the situation on ground has made the field still to suffer from such concepts as the 'digital divide' that is, the differences in the technological competencies of the country. It is this fact today which makes education distinct in quality and skills which vary among the developed and developing countries. Though

developing countries are backward in ICT developments, Nigeria inclusive, its full complement of application and utilization is still at a distance. Take for example, the price; the developing countries have to pay for journal subscriptions and membership to consortia modes of journal acquisitions. Hence some of these issues have to be addressed to younger generation through education and training in Library and Information Science (Karisiddappa, 2004). For a sustainable development, acceptability and recognition of library profession in Nigeria, where majority found it as a last resort of career development, today ICT has become essential knowledge that can reshape and readdress the situation to viable profession that people will begin to rush for. In this context a new model curriculum integrating the traditional and, modern knowledge with ICT and thought has to be proposed and implemented (Asundi and Karisiddappa, 2001). Despite overall progress achieved by developed nations in this context they are often undergoing brainstorming sessions to evolve new competencies for the information professionals especially in the area of ICT.

ICT AND LIBRARY AND INFORMATION SCIENCE IN HIGHER EDUCATION

According Minishi-Manjaja (2007) in higher education and human capacity building, there are significant patterns of change because ICTs are impetus for change in traditional concepts of teaching and learning, as well as prime motivation behind the change in scholarly and professional activities. In another review Manir (2008) stated that, for last two decades we have heard about computers or Information Technologies that are changing/transforming higher institutions, they would provide a new way on how teaching and research are conducted, the way students will learn. Library and Information Science (LIS) academic departments at different level are not left behind from these transformations, which made them to witness not only this increasing globalisation of higher education but also that of the LIS work place including the consequent extension of competition beyond traditional, institutional, national and regional boundaries (Minishi-Manjaja, 2007). This environment has made it important for LIS Education and Training to strive to improve their quality of programmes, on the one hand to be able to participate in educational networks and develop innovative strategies in planning and administration of LIS education (Minishi-Manjaja, 2007).

Curry (2000) noted that, to produce graduates whose workplace spans the whole world, ICT need to be incorporated in the Library and information teaching and learning. Thus, it is a foregone conclusion that ICTs are significant in the achievement of LIS educational goals/objectives and the fulfilment of the primary tasks of LIS schools. Hence, with this conclusion came the realisation that there is need for greater infusion of ICT knowledge and skills into LIS course content, as well as thorough diffusion of ICT competencies into the LIS students (Minishi-Manjaja, 2007). Sutton (2001) observes that the changes brought into the LIS profession by ICTs can be divided into two major categories, namely, the natural evolutionary changes, on the one hand, and transformatory changes, on the other.

The rapid increased in the use of computers, the Internet, electronic resources, databases and the World Wide Web in all aspects of human activities including the most important education and information processing and retrieval has become a very promising and vital component of the enabling structure for LIS career development. This platform is exhibiting the fact that faculty members, students, practitioners those involved in information services need to be sufficiently prepared with ICT competencies that will help them to handle both the users of information and the use of technologies in the information search, provision and management. Thus, the knowledge of information literacy, networking, communication and retrieval technologies has become very important to the LIS profession and LIS schools. In addition to this, Curry, (2000) maintained that, information professionals, and/or LIS graduates have to be able to navigate information networks competently so as to provide relevant services and materials for their users. Consequently, LIS curriculum need to consolidate ICT concepts, knowledge, skills and proficiency into core competencies, and LIS schools need to provide adequate content and practice that will enable LIS graduates to adapt and use ICTs effectively.

ICT scenario in Nigerian library and information science schools

Discussing the situation of ICT's and LIS education in Nigeria, entails the prevailing conditions of the faculty staff, the students, practitioners and LIS schools themselves in the formulation of effective curriculum that will provide effective competencies in rendering services to users. However, Library and Information science schools still face many challenges in trying to provide appropriate and sustainable solutions for improving curriculum and skills that will support development in all ramifications. In so far as ICT is concerned, Adeya (2001) observes that there are constraints against the development of ICT in Africa such as inadequate computerisation, inadequate infrastructure and inadequate human capacity, most of which relate to the economic disadvantage of these countries.

This scenario has been attested by Diso (2009) that, Nigeria is characterised by underdeveloped economy, unstable political culture and chaotic socio –cultural environment, with low productivity and low capacity utilisation, low industrialisation, poor infrastructure, unemployment and underemployment and pervasive poverty. Other such characteristics include high rates of illiteracy, insecurity, popular (general) apathy, traditionalism, poor reading culture, poor information environment and at the state level, poor policy formulation and implementation. All these problems have undermined the development of library and Information science schools in Nigeria especially with regards to the deployment of ICTs. However, the conditions under which faculty staff, students, practitioners and the system in particular operates are not in consonance with the objectives that are set to work base on, as such the system is seriously emasculated by:

a) Under funding
b) Poor motivation of faculty staff leading to migration, brain drain, low productivity and unethical practices.
c) Graduating unqualified practitioners, leading to change in profession and working environment.
d) Poor infrastructures/ instructional facilities for teaching and learning.
e) Lack of or absence of collaboration or linkages between institutions of learning at national and international levels.
f) Lack of Networks with global knowledge system (Diso, 2007).
g) Lack of clear Policy formulation and implementation with regards to educational development.
h) Lack of qualitative and adequate research output.

LIS schools in Nigeria have yet to debate publicly on the issues of convergence and collaboration with related information fields. However, library and information science schools and universities in Nigeria are so strapped for funds that discussions of the educational options possible among converging information disciplines such as represented by the “I School” phenomenon in the US or Europe, and other parts of Asia have not been given airplay. Added to anxieties in the Nigerian context is a view among higher education administration that publication and research outputs of library and information science faculty members are less valued or are seen as less research-oriented than those of other disciplines (Manir 2007). While recognizing and endeavouring the LIS schools in Nigeria to fulfil their roles and become visible in the information age. LIS education in Nigeria needs to have a balance interest for futuristic goals with realism about the base and pace of change that Nigerian universities and higher institutions can expect to achieve given the financial and infrastructural inadequacies and uncertainties that is, the dilemma of the digital divide. It is an understatement to state that LIS education in Nigeria faces challenges in curricula issues. In addition, LIS schools in Nigeria should have content with emerging disciplines such as Knowledge Management, Information system, which will offer positively new benefits to emerging graduants the expertise to the management of indigenous knowledge and also pose the challenge of ‘stealing the show’ (Jain, 2006).

Diso (2007) indicated that, it is important to point out peculiarities of different institutions, in terms of operating environment, socio –cultural and economic factors may place demands that may not allow uniform application of curriculum. Flexibility in perspective is necessary to provide room for options that suit different cultural environments and institutional preferences. In fact, variation is necessary to offer a variety of choices and alternative for student’s preferences and abilities. The LIS curriculum development in Nigeria has shown considerable strides in infusing ICT competencies as most LIS schools have developed relevant ICT courses and also merged relevant ICT knowledge in traditional curriculum. However, most LIS schools teach these ICT courses theoretically because they have inadequate laboratories of computers and poor Internet access. Several African LIS educators and scholars have reiterated the need to produce efficient and effective graduates equipped with competencies for working in the current information environment, which though still largely traditional, is increasingly becoming ICT-dependent (Adeya, 2001; Odini, 1999; Aina and Moahi, 1999; Thapisa, 1999; Kigongo-Bukenya, 2003; Minishi-Majanja, 2004; Ocholla, 2003).

Ocholla (2003) observes that the LIS job market requires additional and new competencies such as computer literacy, word processing, spreadsheets, database construction and management, online searching and retrieval, CD-ROM services. Others include electronic current awareness service, automatic indexing and abstracting, text digitisation, desktop publishing, electronic publishing, library automation systems, telecommunications, selection of software and hardware, home page design and administration, facsimile transmission, and archiving of audio visual and electronic documents. It is unfortunate, that LIS curriculum in Nigeria did not integrate majority of the courses or competencies highlighted above by Ocholla which made the Job market in Nigeria unattractive to the practitioners. This negative development has been caused by the Government for not providing effective policy formulation and implementation especially with regards to ICTs deployment in the educational development.

As indicated by Diso and Njoku (2007) and Diso (2007)

discussed the courses that are offered in the LIS schools in Nigeria, from these courses it can be conspicuously seen that ICTs integration in the LIS curriculum in Nigeria is still at it infant stage where majority of the LIS schools have no competencies in teaching these courses. In line with this Diso and Njoku (2007) concluded that the training of librarians in Nigeria is inadequate, and needs radical restructuring to produce librarians suited to deliver service in a digital or technological based library in a knowledge-based society. This statement is in line with Zakari (2008) in order to attract students into library and Information programme, the programmes offered in LIS schools and in any other departments of an educational institution should prepare the products to be competent enough to cope with the expectations of prospective employers of labour and also be self reliant when the need arises. Some of the competencies expected of library and information professional in the information/digital age include:

i. Expertise in knowledge management;
ii. Mastery of ICT/multi-media applications in data/information management, transfer and delivery;
iii. Good knowledge of management theories and practices;
iv. Information brokerage, and advocacy etc.

According to Zakari (2008) these professional competencies point to the need for LIS schools to continue reviewing their LIS curriculum to fit the contemporary age expectations. This should be in addition to the upgrading of their teaching, learning and research resources/facilities to enhance the theoretical and practical competence of their products.

The preceding discussions described the present situation in Nigerian LIS schools and their curriculum. It is clear that most of the courses offered in LIS schools in Nigeria place high emphasis on print-orientation, print-media with very little on post-industrial information and communication technologies (ICTs) (computers, automated systems, internet connectivity, online services, micro-media, etc.). Even where such non-print courses exist in the curricula, they only constitute a marginal component, with little or no practical cultural value. If effectively used, modern technologies (ICTs) can mobilize, sensitize and transform a non-literate society. However, the failure of the LIS educators to develop the conceptual framework, courses and techniques to actualize that, demonstrates the conditions of their existence (Diso and Njoku 2007).

As observed by Ocholla (2003) that the job markets requires additional and new competencies such as computer literacy, word processing, spreadsheets, database construction and management, and in fact general ICTs competencies. This clearly indicated that LIS schools in Nigeria should have an ICT competency framework that will serve as a guideline for faculty staff to get acquainted with and to also use it in training the students who are the practitioners of tomorrow.

The need for ICT competency framework for LIS schools in Nigeria

As the wind of change blown to our direction, change has become inevitable; with ICTs development it has become necessary for LIS schools in Nigeria to integrate these technologies in their course curricula and made it necessary for the faculty staff, practitioners and students to have certain competencies in the use of such technologies. Though, LIS schools in Nigeria are from different institutional backgrounds some from universities and others from colleges of education, polytechnics and other institutions of high learning as such each offer a wide variety of ICT courses within their curriculum. However, the curricular are not harmonised – neither across the institutional background nor even within individual departments. Thus, within the universities, it is not unusual to find great diversity of offerings among the LIS schools. Each school attempts to offer what they believe to be key competencies for their graduates.

This problem has been every where in the African countries; some countries have made greater strides than others. For instance, Minishi-Manjaja (2007) stated that in South Africa government recognises that ICT human resource capacity building is the key to the accomplishment of the ideals of the information age. To ensure that the country is well positioned for this society, not only the infrastructure that is continually under scrutiny, but higher education is expected to increase enrolments in the ICT fields of study (Ministry of Education, 2001). Another example is Uganda's liberalised telecommunications policy of 1996, which paved the way for private sector investment into, and hence greater and faster ICT penetration (Ikoja-Odongo, 2006). The significance of governmental intervention is exhibited in the growth of the ICT infrastructure, which provides a platform for institutions and LIS departments to increase their ICT diffusion (Minishi-Manjaja, 2007). But this is not applicable to all African countries. Poor economies, political instability, large populations, bad leadership/governance and a myriad of other problems have not made it possible for many African countries to adequately address the subject of ICT infrastructure and education.

Minishi-Manjaja (2007) further mentioned that the success of LIS schools in such universities depends on the viability of LIS programmes – often defined in terms of a greater number of students requiring minimum investment. This definitely compromises the level of ICT education to be provided. Apart from financial dynamics,

institutional human capacity plays a big role in the ICT modules offered. With the general ICT human resources scarcity (due to brain drain and better financial rewards elsewhere), LIS schools often lack academics that can champion and dynamically develop ICT programmes, subjects or even modules.

According to Minishi-Majanja and Ocholla (2004), the modules that generally top the list are of fundamental relevance to LIS practice. These include Operating Systems, Applications software, Hardware and Software selection, LANs and Intranets, Internet Facilities and Internet Tools. However, as mentioned before, what is taught in the above modules does not always translate into comparable knowledge and competencies. There is no uniform approach to what is taught, let alone how it is taught (Ngulube, 2006). Additionally, even though sub-Saharan Africa LIS schools collectively offer what seems to be an adequately wide variety of ICT modules, research on ICT curricula reveals a preponderance of difficulties in the absence of African benchmarks and models (Ngulube, 2006).

Only few LIS schools offer what may be deemed as the full range of ICT competencies. In some of the individual institutions, the range of modules offered cannot even be deemed to be enough. For instance, Manda (2006) observes that the integration of ICT into paraprofessional training in Tanzania is limited in both modules and course content. He further observes that “as an independent subject, ICT is offered only as an optional course” in the MA Information studies curriculum at the University of Dar-es- Salaam (Manda, 2006). However, to emphasize the disparities among universities even within one country, Manda further observes that the BA-LIS programme at Tumaini University in Tanzania offers more ICT modules and content than the University of Dar-es-Salaam’s MA programme, the basic deciding factor being resources (ICT and human).

The following list also covers most of what Smith (2002) and Massis (2003) observe as the knowledge and skills for operating in a virtual library setup, which LIS staff currently need to be equipped with include competencies in:

i. The latest search engines.
ii. Fluent Internet searching.
iii. Designing and maintaining websites.
iii. Electronic information sources/materials and their location.
iv. Ability and capacity, including patience, to work with patrons, some of who know "too much" and some "too little" of the electronic information world.
v. Terminology, delivery modes and legalities of electronic information access.

Looking at the above scenarios it is worthy of mention to conclude that most of the ICT competencies require continuous updating because of the rapid rate of technological development. This makes it necessary for LIS schools to regularly review their curricula and up-date the content. While appreciating the challenges of curriculum review processes such as institutional bureaucracy, funding, time and lack of usable models, the need for dynamic and rapid transformation in LIS education in Nigeria cannot be ignored and should involve continuous integration and infusion of ICT content into the programmes as a means of transforming LIS education (Manmart, 2001; Ocholla, 2003, Minishi-Manjaja, 2004).

Otherwise LIS education in Nigeria will be found wanting by students, faculty staff and employers. Therefore, these competencies cannot be learned once only, that is, in LIS School. Hence, LIS schools in Nigeria should have the task of equipping LIS graduates, not only with current competencies, but also a firm but flexible base for learning/acquiring newer competencies as the need arises in their working environments (Minishi-Manjaja, 2004). As Massis (2003) proposes that LIS schools can best do this by offering many management courses including courses that deal with current issues. These courses should be designed and taught in such a way that they prepare the graduate to readily respond, adapt to and/or adopt changes in the work place. In addition to ICT content, LIS instruction can also greatly benefit from diversified education delivery opportunities, mainly over the Internet (Manmart, 2001).

Considering the above potential benefits of ICTs, this paper set out to provide the ICT competency framework that will help the faculty staff, practitioners and students in LIS education in Nigeria and poised to take full advantage of the opportunities that ICTs offer. Therefore, the following is the ICT competency framework that should served as guiding principles for LIS schools In Nigeria. However, it was thus envisaged that, a general audit of the current ICT contents in the curriculum of LIS schools and resources would be one way of determining the extent to which LIS education in Nigeria can meet the challenges.

ICT COMPETENCY FRAMEWORK

The idea for the development of an ICT Competency Framework is only one of a number of significant national and local initiatives related to developing and supporting effective ICT use in LIS Schools and managing library and information resources and services. In this regards there is the need to better exploit competent practitioners who will manage the information resources, to do so the teaching and learning the potential of ICT most be widely accepted and supported. However, to date, this potential

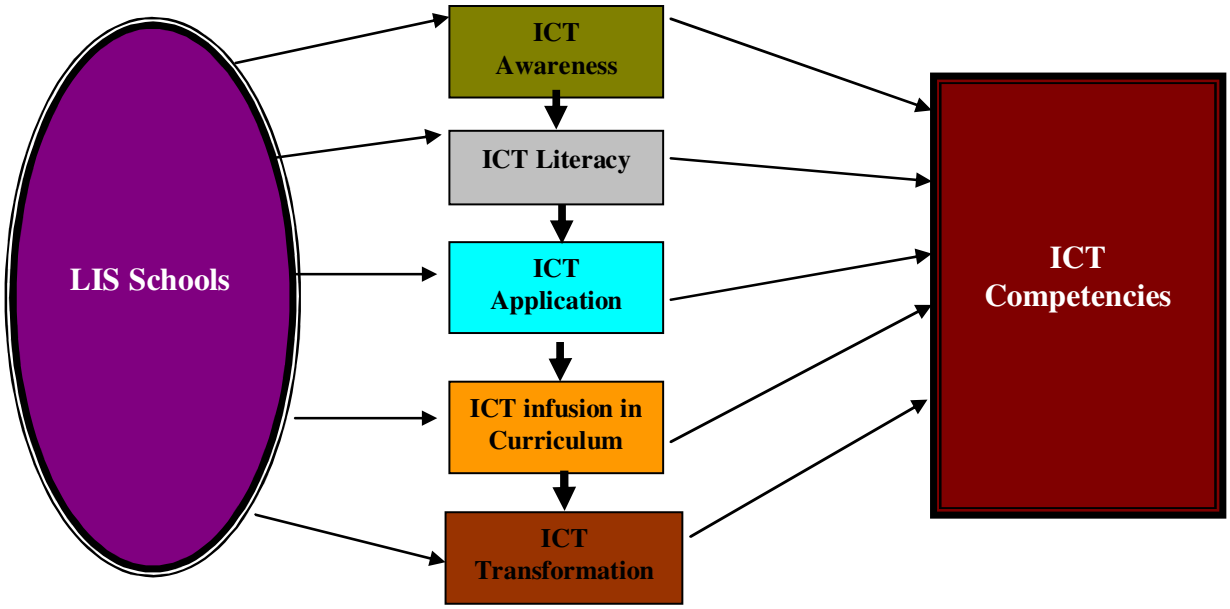

Figure 1. ICT competency framework.

has not been realised in any significant way, particularly the potential to transform how, what, where and why students learn what they do.

Thus, the ICTs competency framework is intended to provide guidance for any future in the use of ICTs in library and information services. For example, it is assumed that an ICT competency framework will:

i. Acknowledge the notion that students and practitioners need time and support to develop the competence in the ICT use;
ii. Assist faculty staff to uncover their personal beliefs about teaching and learning;
iii. Encourage faculty staff and practitioners to describe their experiences with ICTs and the assumptions they have about ICTs benefit in information provision;
iv. Assist LIS schools to make the necessary curriculum links to effectively integrate ICT use in the practice of librarianship;
v. Enable faculty staff, students and practitioners to assess their level of ICT competence and develop pathways to improve that competence;
vi. Address social justice issues such as access to professional development, access to appropriate resources, geographic isolation and ethnicity;

In Figure 1, it can be seen that a framework proves useful in developing a curriculum structure for LIS schools; the framework is similarly useful in planning for the professional development of faculty staff and practitioners, which is so essential in their professional life when they begin to use ICT. The framework depicted in Figure 1 identifies approaches to ICT development which helps to provide a model for professional development of faculty staff, practitioners and students in LIS schools. The explanation of the framework in details is as follows;

ICT Awareness

Library and information science schools are held responsible to raise the faculty staff, practitioners and student's awareness of the need to become ICT literate, most countries expend considerable effort in public relations around ICT, describing good or emergent practices, organizing discussion sessions, conferences, seminars, workshops, developing informative websites, and so on. In the awareness approach, the focus is on the importance and uses of ICT, and on the need for some knowledge of the impact of ICT as a whole. This approach often involves faculty staff own awareness and that of his students on the use of ICT, such as, familiarity with word processing to prepare worksheets, locating learning resources on CD-ROMs or on the Internet, and communicating with friends and family by email. In this initial phase, administrators and faculty staff are just starting to explore the possibilities and consequences of adding ICT for LIS school management and the curriculum. A curriculum that focuses on basic skills and

an awareness of the uses of ICT assists movement to the next approach.

ICT Literacy

ICT literacy means having the required knowledge to use the ICT in the professional life of faculty staff, practitioners, the students and users of library services. This approach in the framework covers the use of ICT as encountered in the daily activities of their professional life. Specific areas/units to become literate include basic concepts of ICT, using computers and managing files, word processing, spreadsheets, databases, creating presentations, finding information and communicating with computers, social and ethical issues, and jobs using ICT. Here, faculty staff and practitioners are developing their ICT literacy and learning how to apply ICT to a range of personal and professional tasks. The emphasis is on training in a range of tools and applications, and increasing faculty staffs', practitioners and students' awareness of the opportunities for applying ICT to their teaching, learning and professional life in the future.

Application of ICT in subject areas

This approach in the framework covers the application of ICT tools for working within specific subject areas such as circulation, references services, acquisition, resources sharing/ interlibrary cooperation, specials section, information retrieval and organisation etc. Specific units include measurement, modelling and simulation, robots and feedback devices, statistics, creating graphics, spreadsheet design, internet applications, browsing and database design. In this stage the ICT application approach is linked with LIS schools in which a new understanding of the contribution of ICT to learning and professional activities has developed. In this phase, administrators and faculty staff use ICT for tasks already carried out in the library management and in the curriculum. Faculty staff still largely dominates the learning process.

For example, instruction may be supplemented with ICT such as power point slide presentations and word-processed handouts. Students receive instruction and add notes to their prepared course contents. They use ICT tools to complete required task and are assessed on prescribed content. LIS school organization provides discrete time periods for each subject with some flexibility to combine subjects and time periods. Student's access to ICT is through one or two classroom computers and computer labs. Until now, ICT has been taught as a separate subject area. To move to the next phase, the LIS Schools chooses to implement an ICT-based curriculum that increases ICT across various subject areas with the use of specific tools and software.

In addition to this, faculty staff and practitioners use ICT for professional purposes, focusing on improving their subject teaching and library management in order to enrich how they teach with a range of ICT applications. This approach often involves integrating ICT to teach specific subject skills and knowledge; beginning to change their methodology in the classroom; and using ICT to support their training and professional development. Faculty staff gains confidence in a number of generic and specialized ICT tools that can be applied to the teaching of their subject area. The opportunity to apply ICT in all their teaching is often limited only by a lack of ready access to ICT facilities and resources, which is why it is not fully integrated into all lessons for all students.

Infusing ICT across the curriculum

Examples of projects included in this area of the curriculum demonstrate the use of ICT across subject areas to work on real-world projects and to solve real problems. Some examples show how, within a particular course, ICT can help students integrate several subject areas, such as library practice, classification and circulation etc. Other examples show larger projects that cut across several subject areas or illustrate how a number of schools can integrate ICT in their curriculum or global projects. In the infusing approach to ICT development, ICT infuses all aspects of teachers' professional lives in such ways as to improve student learning and the management of learning processes. The approach supports active and creative faculty staff and practitioners who are able to stimulate and manage the learning of students, integrating a range of preferred learning styles and uses of ICT in achieving their goals.

The infusing approach often involves faculty staff and practitioners easily integrating different knowledge and skills from other subjects into project-based curricula. In this approach, faculty staff fully integrates ICT in all aspects of their professional lives to improve their own learning and the learning of their students. They use ICT to manage not only the learning of their students but also their own learning. They use ICT to assist all students to assess their own learning in achieving specific personal projects. In this approach, it becomes quite natural to collaborate with other faculty staff in solving common problems and to share their teaching experiences with others.

The infusing approach is linked with schools that now have a range of computer-based technologies in laboratories, classrooms and administrative areas.

Faculty staffs explore new ways in which ICT changes their personal productivity and professional practice. The curriculum begins to merge subject areas to reflect real-world applications. For example, content is provided from multiple sources, including community and global resources through the World Wide Web. Students' access to technology enables them to choose projects and ICT tools that stimulate learning and demonstrate their knowledge across subject areas.

ICT is taught to selected students as a subject area at the professional level. In the infusing approach, faculty staffs infuse ICT in all aspects of their professional life to improve student learning and the management of learning processes. ICT enables faculty staff to become active and creative, able to stimulate and manage the learning of students, as they infuse a range of preferred learning styles and uses of ICT in achieving their educational goals. The infusing approach often involves faculty staff integrating different knowledge and skills from other subjects into project-based curricula. They use multimedia themselves, or make it available to their students to present what they have learned. Faculty staff may choose to belong to web-based professional development groups to improve their practice or to experiment with different methodologies in order to maximize the impact of ICT on student learning and the management of learning.

ICT transforming through teaching

In the transforming approach to ICT development, faculty staff and other library staff should regard ICT to be as natural and be part of the everyday life of LIS schools and library operations as they begin to look at the process of teaching and learning in new ways. The emphasis changes from teacher-centred to learning-centred. Faculty staff together with their students, expects a continuously changing teaching methodology designed to meet individual learning objectives.

This approach is linked with LIS schools that are using ICT creatively to rethink and renew the library operations and curriculum. ICT becomes an integral though invisible part of the daily personal productivity and professional practice. The focus of the curriculum is now much more learner-centred and integrates subject areas in real-world applications. For example, students may work with community leaders to solve local problems by accessing, analyzing, reporting and presenting information with ICT tools. Learners' access to technology is broad and unrestricted. They take even more responsibility for their own learning and assessment. ICT is taught as a subject area at an applied level and is incorporated into all related areas. The LIS School should become a centre of learning and training for the community.

Faculty staff, practitioners and students need to be convinced of the value of ICT personally and professionally. Although the approaches above are not a necessary hierarchy, they are intended to illustrate the steps towards growing ICT confidence and competence that many faculty staff, practitioners go through, before they begin to transform their teaching practice and the learning of their students and users. As the infusing approach leads to the transforming approach, faculty staff and students will expect a continuously changing methodology to meet their personal learning objectives. At the same time, faculty staff will also expect to be supported as they develop new teaching methodologies. Faculty staff will no longer be anxious about using ICT, but be concerned about understanding learning processes.

DEVELOPING ICT SKILLS AND KNOWLEDGE

Continuing education and professional development are essential for the success of an ICT curriculum in LIS schools. A few additional points to consider are the following:

i. At the very initial stage, psychological or affective factors are critically important. One of the main goals is to decrease faculty staff' fears of computers, and to show new learners that they are able to use a computer. Confidence is as important as competence.
ii. Most of the professional life of faculty staff today is spent at home. Many of the basic ICT skills relevant at this initial stage are of value in their personal lives. Confidence and competence can be acquired through autonomous work, using carefully prepared learning materials and, where possible, some distance interactions through appropriate communication tools.
iii, Faculty staffs, like all learners, need to be provided with opportunities to make mistakes. Such opportunities are often best provided in arranging professional development programmes for small groups of faculty staff with similar needs.
iv. At the initial stage of ICT development, many faculty staffs are affected by serious motor-skill difficulties. The most basic motor skills (e.g. pointing, clicking and dragging with a mouse) need to be mastered before developing skills to use ICT tools: mastery is about confidence and self-esteem.
v. Beginners have not only to be able to use ICT tools and environments, but to understand basic principles about architecture, file managing, and email transmission. Hence, it is important to provide accurate representations of the computing systems and ICT tools they are expected to use in their schools, not the theory of what may happen.

General ICT competency to be acquired

After faculty staff and practitioners have acquired basic ICT skills and knowledge, they feel confident in using a number of generic and specialized ICT tools that can be applied to the teaching of their subject areas and practice in the library. The opportunity to apply ICT in all of their teaching is often limited by a lack of ready access to ICT facilities and resources especially in Nigeria, and hence is not fully integrated into all lessons for all students. There are general ICT competencies, common to all uses, regardless of the subject area. Training and professional development will need to focus upon these competencies as faculty staff ' technical confidence and competence grows and as they seek ways to improve their teaching. Examples of general ICT competencies include the following:

a) Ability to decide why, when, where, and how ICT tools will contribute to teaching and library use objectives, and how to choose from among a range of ICT tools those that are most appropriate to stimulate students' learning and library users application that is:

i. Choose ICT tools and pedagogy from those recommended for specific subjects;
ii. Explain the reasons for choosing particular ICT tools and pedagogy;
iii. Emphasize the content of students' and users productions;
iv. Plan a whole lesson sequence, deciding in advance when and how ICT will best be used.

b) Ability to manage application of ICT in libraries and class-based learning environment using team work to achieve teaching and library objectives, that is:

i. Be able to describe difficulties in using ICT to achieve planned lesson and utilization objectives;
ii. Understand differences between students and users according to their competencies in using ICT;
iii. Have available strategies to manage such differences in the course of teaching and usage.

c) Ability to assist students and users to find, compare, and analyze information from the varied sources of ICT e.g. The Internet, and from other sources specific to a subject area, that is:

i. Teach students and users to construct simple searches;
ii. Help students and users, to criticize, to synthesize and to present information using ICT tools.

d) Ability to select and use appropriate ICT tools to communicate, according to faculty staff and practitioners own objectives, with colleagues or with fellow students and users, that is:

i. Assess communication tools to use in teaching and library operation to facilitate collaboration.

e) Ability to use ICT more efficiently, choosing training sessions and participating in new developments in order to enhance professional development, that is:

i. participate and be active in groups working on the use of ICT;
ii. Use ICT tools (forums, conferencing, bulletin boards, email) to collaborate in the improvement of teaching and learning and in the management of learning and library operation.

The ability to use ICT in teaching and library operations and be competent in the areas noted above in a given application or operations requires more adapted training. The way this training is conducted depends very much on the learning style of the faculty staff and practitioners involved, as well as on the specific subject and application. Training courses, seminars and workshops on specific applications used in any given subject area. It is sometimes recommended to include these ICT workshops in accepted conferences within the specific subject in order to increase the opportunities for participation.

However, it is good to note that there is better agreement regarding the basic competencies that LIS graduate needs. Some of the notable ones include an understanding of basic computer-information science convergence; understanding information network and connectivity; knowing the Internet; installing, configuring and using a browser; evaluating networks, software and hardware; etc (Fourie and Bothma 2006). Current LIS graduates should also be capable of efficiently handling a myriad of ICT-based processes such as creating charts, importing graphics, establishing FAQs, conducting chat reference sessions, participate in collaborative reference work, creating databases, etc.

THE NEW APPROACH FOR A MODEL CURRICULUM

The issue of the relationship between theory and practice in the field of library and information science need to be properly addressed in the curriculum of LIS schools in Nigeria. However, the changing scenario of the 21st centaury and the influence of other disciplines on Library and Information Science education have not only enhanced the professional status but also increased the employment opportunities for library science professionals in public, academic and special libraries in

the country. The influence of these factors is also reflected in the curriculum of Library and information Science education and subsequently led to change in the course content and nomenclature.

As stated earlier that the developments that were experiencing in the 21st centaury have provide changes and shifts that define the changing landscape and competencies expected of the Library and Information professionals of the future. In view of the emerging network environment, the fundamental shift in the goals of the library, and the changes in information storage and delivery mechanisms, the educational programmes should cater to the needs of these changed settings by including in their course contents the knowledge and skills required to function effectively in such an environment. Even within the traditional library the nature of operations and activities will be significantly different from what they were (University Grants Commission 2001; Karisiddappa, 2004).

In Nigeria, researchers has shown that the adoption of technology in LIS schools and libraries is very slow until today, personal computers which became cheaper and more affordable are still inadequate in most of the library operations (Manir, 2007). It is well known fact that the distribution of information involves collection, processing, storage and dissemination of information. These functions are normally in the realm of library and information work. For a sustainable development of Nigeria, the effective utilization of information is essential and the effective use of information communication technologies is also desirable.

Today despite, the availability of desirable and international level of expertise in the information and communication technologies adaptable to library and information work, there still exists a gap in its adoption in many countries including Nigeria, due to the suitability of the curriculum. There is a need for its remodelling akin to the conditions and situations prevailing in the country, where it can be easily adopted commensurate to their infrastructure and the situational factors. Such a course content should have affordability, adoptability and flexibility for sustainable growth and development of the profession and the professionals (Pawinun, 2003).

In Nigeria, there is the need to articulate the knowledge (theory, skills, and practicals), which could be packed in the Library and Information Science Education and Training Curriculum with the help of experts. The well defined curriculum be prepared by the expert committee (subject panel and Curriculum Development Committee) and to be presented before the forum of the departmental and faculty Board in LIS schools across different universities. This will facilitated the debate and enabled them to develop a viable curriculum finding a balance between the traditional and modern practices, skills and techniques.

It is also seen that during the challenge of managing the complex and diverse new environment, some of the LIS schools in the other part of the world have been merged with different disciplines like information management and technology, information studies and mass communications. Given the pace of change in the nature of library and information services today, there is a need to instil not only in building library professionals but also in established practitioners, a commitment to life long learning because the circumstances are demanding greater professional and technical awareness. As professional obsolescence becomes a real and ever present danger, only a systematic continuing education provides a method of combating such obsolescence (Karisiddappa, 2004).

In the developed countries many LIS schools have made a thorough revision and development of course programmes and also introduced new courses to meet the needs of employers in industries, and the public and private sectors. The introduction of new programmes should therefore be seen to some extent as reflecting the 'Pull-Push Effect' of recognizing the increasing need for the professional workforce to match the growth and significance of information industry and the expanding higher education system to provide the appropriate workforce (Karisiddappa, 2004). To this extent, it is seen that a wide range of courses are beginning to map on broad paradigms into the LIS curriculum. Several LIS schools in other part of the world that is, Asia, Europe, America and some African countries have begun to diversify their portfolio of courses with programmes intended to serve the needs of the publishing and communication industries. While other LIS schools have established programmes focused on the operation and management of telecommunications and computer networks.

The above preceding paragraphs and discussion has clearly explain changes that have occurred in the 21st centaury and the challenges it paused for LIS schools, faculty staff and practitioners. The aftermath of these changes brings the need for a proposal that will blend the traditional activities with the new roles in the technological environment. It is very obvious and clear that the scenario of Library and Information centres and the services provided is undergoing a transformation primarily due to emergence of new media and technology. Therefore, there is high tendency that the information needs of the user communities is also changing due to the overall changes that have taken place with the need for IT based adoption, and the work in the libraries have also necessitated the making of appropriate changes in the Library and Information Science curriculum for various levels of courses. These factors invite serious attention of LIS Departments which produce manpower for managing Library and Information

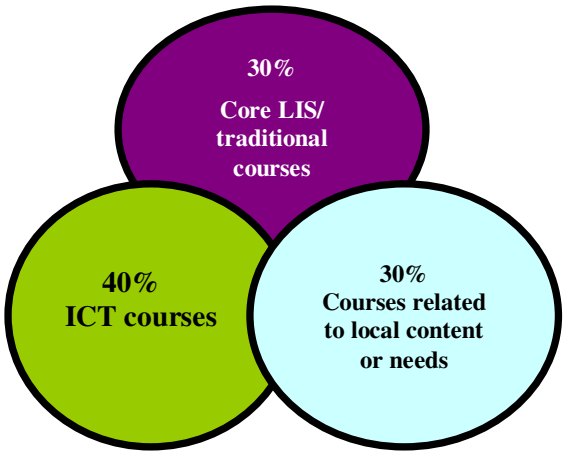

Figure 2. Framework for model curriculum.

Centres. It is a common feeling that the departments of LIS have continued to lay more emphasis on the teaching of traditional subjects, philosophical aspects and historical topics to their students, and that teaching focussed on information technology and the practical aspects of library automation has been receiving meagre share in the curriculum. This situation has caught the attention of Library and Information Scientists and has generated discussion on the need for a change in the LIS curriculum (Ocholla, 2003, Karisiddappa, 2004, Diso, 2007).

The framework for a model curriculum

In the final analysis, it is clearly seen that the background knowledge presented in the earlier sections of this paper provides a clear picture and understanding of the total transformation occurring in the LIS profession. It may also seem to be unpredictable what course of future developments or direction in which the Library and Information Science profession is going to take. In light of these developments it is necessary to examine the adequacy and appropriateness of the present curricula. In the first place, it is necessary to restructure and remodel the curricula to suit the present times.

After going through several process of deliberation on the LIS subjects in the conferences, seminars, workshops observations were made on the needs for the LIS departments to restructure their curriculum and incorporate changes taking place in information environment. The task of structuring the curriculum should suit the adoption pattern by different departments of LIS with varying levels of infrastructure facilities prevailing in the country. Hence there is the need to consider devising a new approach that would help the LIS schools in Nigeria to adopt the IT contents in the curriculum suitably. The crux of this paper revolves round on providing an ICT competency framework for library and information science schools in Nigeria which led to need for a model curriculum for LIS schools.

Accordingly in this paper a proposal of a new approach of a model curriculum is made for LIS schools in Nigeria to adopt, (Figure 2). From the framework is the notion that the model curriculum to be adopted by LIS schools in Nigeria should contained at least 30% of core/traditional LIS courses, while ICTs courses should be 40% and courses related local content and needs should occupy the remaining 30%. Achieving the above framework will lead to LIS schools in Nigeria to produce library professional with basic ICT competencies. For each of the courses the following concepts can also be added to enhance the effectiveness, thorough teaching, practice and evaluation, that is, Course objectives, Unit course content, special note on practical component and learning outcome of each of the courses. It is implied that this courses might be adapted to any one of the LIS programme patterns; viz., Two years integrated Diploma in library and information management or science (DLIM), four year integrated degree or Bachelor of library and information science (B.Sc. LIS, or BA LIS), two year MLIS programme and three year integrated Ph D. programme. (Table 1. the new model curriculum)

CONCLUSION

Relevant and modern competencies on ICT have been infused in most of the curriculum of LIS schools globally; therefore, curriculum of LIS schools in Nigeria should not be excluded as such necessary restructuring of the curriculum should be evident in LIS schools of Nigeria.

Table 1. The new model curriculum.

Core /Traditional courses	IT related courses	Local content/ need courses
Change management	Introduction to information technology	Libraries and community
Information Resources Management	Introduction to computer applications	Local information environment
Public relation in information work	Management of Library automation	Information services to rural communities
Education and Information services	Information Systems Analysis and Design,	Information repackaging services
Learning and communication skills	Information systems development and evaluation	Publication design and production
Reference and information services	Data Processing and Communication	Preservation and conservation of information resources /Digitisation of cultural heritage
Information resources /collection Development	Library Software Development and Packages	Oral Literature/tradition
Information organisation (classification)	Information Network and Networking	Information services for young people
Information retrieval (cataloguing	Multimedia and media Technologies	Government and official publications
Indexing and abstracting /metadata	Databases management and on-line systems and services	Marketing of information products and services
Serial management	Artificial intelligence and classified information	Information Policy and policy Implementation
Resource sharing /and corporation	Information networking	Knowledge Management
Bibliography and citation techniques	Management of Information Systems and Services	Information seeking behaviour
Reference and information resources	Management Sciences and Marketing	Information literacy
Foundation of library and information work	Electronic record management	Information sources and resources
Management of Library and Information Centres/Institutions	Electronic information resources management	Information products and services
Principles of library management	development of information infrastructure	Legal Issues for Information Professionals
Book trade and publishing	Website development and Internet Technology	information and society / information in social context
Research Method and statistics	Media technology practice	information services / information service & dissemination
Foundation of information science	Electronic publishing	communication and marketing in information services
information storage and retrieval	Electronic /Digital library services	Information resources analysis/information analysis

However, there is still a lot of room for improvement. The ICT infrastructural development in Nigeria is still at infantry stage, but not yet good, both at institutional and national levels. For instance, since one of the real differences that can be made is in the empowerment of practitioners and students, it is then of crucial importance to improve students' physical access, application and utilisation of ICTs in library operations. Concerted efforts need to be made by every LIS schools and departments to acquire adequate quantities of computers so that physical access by students is maximised. Collaborative research activities, tele-conferencing and electronic publishing of academic research results should be encouraged among LIS academics. In addition to this, LIS schools in Nigeria should fill their curriculum by exploiting the opportunities provided by ICTs and checkmate the digital gap and challenges posed by development in the 21st centaury.

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