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ICT skills for information professionals in developing countries: perspectives from a study of the electronic information environment in Nigeria

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Abstract

Changes in the provision of information brought about through the emergence of electronic information resources have created subsequent changes in the skills needed by information professionals. Information professionals are now expected to be aware of and capable of using emerging information communication technologies, as well as having essential communication skills. Professional bodies, such as CILIP in the UK and the ALA in the US, recognise the importance of continuing professional development in order to keep skills and expertise up-to-date for all aspects of work. The necessity of ICT skills has a clear impact on reference service professionals, with the emergence of digital reference services. A research project carried out at Liverpool John Moores University into the provision of electronic information in Nigeria identified a significant skills gap amongst information professionals. Collaboration and strategic management of resources may be key to alleviating this problem.

Information Communication Technology (ICT) skills in the Information Age

In recent years, work for the information profession has become characterised by fast-paced change and new skills requirements. This transformation has been brought about by the constant emergence of relevant new technologies. Information professionals are increasingly required to adapt their skills and practice in order to gain an awareness of technological advances. As a result, the profession itself exists in a state of flux alongside these emerging technologies, with traditional roles being increasingly subsumed by new skills and working environments, and, therefore, job descriptions (Ashcroft, 2004).

Given this, information professionals are now expected to be aware of and capable of using and demonstrating emerging ICTs (Nwakanma, 2003). There is a need for additional training to augment the traditional skills knowledge base with a competency in ICT use. Information professionals must be flexible, and adapt traditional skills to incorporate the requirements of technological advances (Biddiscombe, 2001; Sharp, 2001). Given the current situation, whereby ICTs are being continuously updated or introduced, and traditional formats are being replaced or supplemented by digital formats (such as ejournals and ebooks), it seems likely that there will continue to be a need for regular training for information professionals.

There is also an increased focus on communication skills, with more players involved in the electronic information environment. Information professionals are being called upon to work closely with ICT users and providers (including IT staff) and to work in collaboration with others in the profession (Wittwer, 2001). Some groups of users lack necessary IT skills to obtain quality information (Stubbings and McNab, 2001) and, therefore, information professionals will be called upon to act as both educators and intermediaries (Sharp, 2001). Given these circumstances, information professionals are required to have increased teaching and communication skills.

Thus, it is vital for those in management positions to recognise the imperative of continuing professional development (CPD) and ensure that staff are proactive in maintaining up-to-date levels of expertise.

The significance of CPD in this climate has been acknowledged by both the United Kingdom's Chartered Institute of Library and Information Professionals (CILIP) and the United States' American Library Association (ALA).

CILIP (2004a) advocate pro-active CPD in order to remain in touch with issues relevant to the information profession, and to allow individuals to take advantage of opportunities that arise. CILIP produce a *Framework for Continuing Professional Development* (CILIP, 2004b) designed to assist in the building of a personal portfolio, assessing competence and recording CPD activities and needs. CILIP also offers a number of facilities to support CPD, including workshops (in, for example, ICT and Internet Skills, and Professional and Technical Skills), conferences, a Chartership scheme, and advice on professional practice.

Education and Continuous Learning is one of five key action areas for the ALA, with lifelong learning seen as being integral to providing high quality information services (ALA, 2004a). In response to this, the ALA holds conferences and events that support CPD (ALA, 2004b). ALA has also held three *Congress for Professional Education* that identify (amongst others) appropriate issues concerning CPD for information professionals, including core competencies.

ICT skills and reference services

The use of ICT skills spills over into all aspects of library work, and the explosion of electronic information delivery has resulted in the need for electronic user support. Over the past few years a number of electronic reference services have developed in response to this need. OCLC's QuestionPoint electronic reference system (http://www.questionpoint.org/) arose out of two projects which had been under development. The Collaborative Digital Reference Service (CDRS) (http://www.loc.gov/rr/digiref/) became a functional service in 2002, having been instigated by the Library of Congress. It aimed to test "the potential for developing collaborative and innovative responses" by using available technologies as a starting point (http://loc.gov/rr/digiref/history.htm). National, public and academic libraries participated in the testing using the Remedy call management system (http://remedy.com/) to provide the basis of the system. Questions were routed between institutions by an automatic algorithm, which used such criteria as subject and time of day to match the question with a suitable institution. A second project investigated the development of services at a regional level. Thus OCLC and the Library of Congress were able to support and promote a product that included a local toolkit for real-time web-based communication, a local interface for managing and answering enquiries and a network for global participation. The system includes a knowledge base with which user enquiries are initially compared. If no answer is found, the question is then routed to an appropriate institution (based on areas of competence, opening hours and similar data). When the question is answered it is added to the base and sent back to the user. Collaboration is at the heart of the system, and the QuestionPoint model requires that libraries use it within local groups or join the global consortium if taking it on an individual basis.

Davis and Scholfield (2204) discuss the development of the digital reference services at the University of Technology Sydney (UTS) and its planned expansion as a part of a global network of digital reference partners. They consider the UTS digital reference partnership with the University of Strathclyde, UK, in the light of possible expansion of the consortium. With each institution's research and teaching profiles being similar, the pilot stage of the collaboration was for the partner libraries to answer enquiries from the other institution during hours when their traditional library services were closed. Davis and Scholfield found that despite the need to service the enquiries of a geographically remote institution, the global real-time consortium approach offers benefits to members, the most obvious benefit being a reduction in costs. They conclude from their experience, that an expanded global reference consortium offers the best path forward, both in terms of value for money and service enhancement.

Twenty-four hour global reference services are now increasing in a variety of library services. The UK's Somerset library service has linked with reference librarians in Richland County public library service in South Carolina, USA and with Brisbane City Council library service in Queensland, Australia. This connection, known as Answers Now (http://www.richland.lib.sc.us/answersnow.htm) allows all three libraries to become global resources in an innovative way. Another scheme called Global Librarian (http://www.globallibrarian.info/about.php) involves Southampton City Library in the UK, linking with Vaughan Public Libraries in Ontario, Canada. Links are being added to British Columbia, Melbourne and Surrey. Each library will be responsible for eight-hour increments, and users access it through the libraries' own websites (24 hour reference, 2002).

Whilst good communication skills have traditionally been at the heart of reference service, these developments indicate the importance of expansion of communication beyond the user focus into wider areas of collaboration. The examples also indicate the increasing importance of ICT skills.

Furthermore, expanded communication skills are also of importance in relation to free digital reference services (DRS). Lochore (2004) reports on an experiment to assess the performance of freely available DRS, with three free DRS selected for the experiment:

- AllExperts (www.allexperts.com), claims to be the oldest and largest free question and answer service on the Internet and is, in effect, a consortium of individual researchers.
- Ask a Librarian (www.ask-a-librarian.org.uk) is a question and answer service provided by a consortium of UK public libraries.
- The University of California, Los Angeles e-mail reference service (www.library.ucla.edu/contact/e-mail.html) is based within an individual academic library.

The findings of this experiment demonstrated that DRS generally deliver accurate information, although the time to do so varies both between services and within a service. Additional information provided with responses is often useful. Lochure concludes that collaboration is likely to continue so as to limit expenses incurred by individual institutions. Lochure also emphasises the librarian's user training role, pointing out that "instructing users on how to find information independently has always been one of the hallmarks of academic library services, and this should be given priority, in a digital environment" (Lochore, 2004, p.28).

The impact of the digital divide on skills development

There has been a great deal of discussion about the impact of digital information resources, particularly around what has been termed the digital divide, or the split between those that have access to digital information resources and those who do not. In general, the digital divide applies internationally. However, Norris (2001) discusses three types of digital divide: social (within countries), global (between countries) and democratic (those unable to use ICTs to take part in public life). The (social) digital divide has an impact upon information professionals in developed environments, with many libraries lacking resources and technical support, and staff needing continuously to acquire appropriate training in order to deliver up-to-date services and troubleshoot equipment (Bill and Melinda Gates Foundation, 2004).

Regarding the *global* digital divide, Lim (1999) suggests that too much emphasis has been placed upon the development of ICT infrastructure in developing countries, and not enough consideration has been given to human resource development. However, in order to understand how ICTs impact upon skills development in developing countries, it is necessary to recognise the situation that currently exists regarding the ICT infrastructure. For example, in Africa, one in a hundred people have access to a PC; the few Internet Service Providers are comparatively expensive; power supplies may be unreliable (even non-existent) and telecommunications are sparse, with the 90% of the population living in rural areas having only 50% of the telephone lines (Jensen, 2002; Magara, 2002).

Steinmueller (2001) suggests that many ICT users are self-taught, and are capable of developing an understanding of ICTs through the experience of utilising them. If this is the case, then countries unable to provide extensive access to ICTs are inevitably marginalised as

they are less likely to produce capable self-taught persons. However, Steinmueller's suggestion does indicate a more optimistic scenario for those developing environments progressively providing access to ICTs, as it suggests that staff may be able to gain at least some degree of expertise through self-learning.

Nigerian research project

A research project based at Liverpool John Moores University (LJMU) investigated the provision of electronic information resources in Nigerian libraries. Focusing on Nigeria as an example of a developing country, the project examined existing electronic information resources, and identified barriers obstructing the effective provision of electronic information. The project commenced with a comprehensive search of secondary data sources to ascertain current thinking in the area and also to identify existing resources available online that address the provision of electronic information in developing countries. Following this, fieldwork was carried out in Nigeria by Dr Samuel Jimba, the Webmaster at the Office of the Governor, whose local knowledge and contacts were crucial to the success of the project. The fieldwork consisted of a questionnaire survey of information professionals in national and academic libraries that are leaders in the provision of electronic information resources and then follow-up interviews with a sample of initial respondents. The questionnaire responses established the nature of digital information within information resources, information providers, awareness and uptake of national and international initiatives, digital resource users, expenditure, collaboration, and barriers to provision of electronic resources. Interviews examined these issues in more depth, as well as looking into strategic approaches, promotion and staff and user training and education.

Results from the project showed that hardly any respondents had formed or joined a consortium for purchasing. A major anticipated benefit of being part of a consortium is rationalisation and cost saving. The consortium culture and strategy for libraries in developed countries is evident, and a consortium can comprise both large and small institutions and both public and academic libraries. For example OhioLink – The Ohio Library and Information Network in the US (http://www.ohiolink.edu/) is a consortium of college and university libraries in Ohio, as well as the State Library. It serves six hundred thousand users over eighty five sites. In the UK, the M25 Consortium of Academic Libraries (http://www.m25lib.ac.uk/) has over fifty member institutions and one hundred and fifty member libraries amongst London-based, higher education (and related) libraries within and around the M25 region. The consortium also has a group, the CPD25 (http://www.cpd25.ac.uk/index.html), which delivers training to all staff in academic libraries in the London area.

Of those university libraries surveyed, only 38.5% were using NUNet, which is a project to connect all the Nigerian Universities on a wide area network and to the Internet. NUNet already provides dial-up email services to 27 universities and interuniversity centres across the country. Take up of NUNet is likely to improve as the programme continues to develop.

The collaborative approach is identified as important for digital reference services. The development of NUNet could encourage collaboration between university libraries in Nigeria, which could eventually work towards collaborative digital reference services. Good communication skills are vital in any collaborative or consortium situation in order to ensure that the arrangement work for all involved.

However, the research findings demonstrated other issues that impinge on such developments. Most responding libraries (university and national) ranked a lack of strategic approach nationally as either significant or highly significant, and all national libraries stated that a lack of strategic approach within the organisation was significant. In this context it is relevant that policy-making staff formed a low group of users of e-resources for university libraries and policy-making staff were not using e-resources in all the national libraries surveyed (46.2% in total). Thus it seems that the development of communication skills could also be used to effect with policy makers.

Furthermore, most of the responding libraries voiced concern about a lack of ICT skills. This lack permeates all levels. Comments included
- "those at policy level do not have computer literacy"
- policy making staff have a "serious lack of awareness of computer capabilities and computer skills are low"
- "unfortunately this institution does not offer official training – staff are however encouraged to undertake training on their own"
- "in this institution staff are encouraged to train themselves".

Other areas included the shortage of technology literate staff in libraries, the lack of skilled human resources to install and manage technology and networks – and poor funding to attract such staff or to develop such skills in existing staff. Responses to questions about the measures required to support future use of e-resources demonstrated an overwhelming need for training/education/skills. Frequently occurring comments stressed the need for "increased ICT literacy", "training and retraining of staff", etc.

In line with Steinmueller's (2001) suggestion that many ICT users are self taught, it would seem that, whilst free trials of e-resources (available from various suppliers) could facilitate self-teaching, so too could the free digital reference services. Experimentation and competence in using such free services could inform strategic proposals for future development of services, and could also inform user awareness and user education.

In Nigeria, user education in universities has been summarized as uncoordinated, purely introductory and non examinable. This scenario is replicated in most universities and other education institutions across Africa. Consequently the meager information resources that one finds in libraries are grossly under-utilized (Mutula, 2004). A study at the University of Zambia to determine usage of the campus intranet and the Internet among academic staff revealed that those who were not using the facility cited, among other reasons, lack of guidance on how to use the intranet and lack of technical know-how (Chifwepa, 2003). The research found that implications for users were also recognised, as skills to raise the awareness of users were identified as an important impact factor, and in terms such as "technical know-how of staff to stimulate the interest of users". This demonstrates the need for development of communication skills in terms of raising awareness and user education. These skills need to be expanded towards collaborative ventures and communicating with management and policy makers.

However, a major problem needs consideration. The research project found that when questioning barriers to the provision of e-resources, all responding libraries stated accessibility problems as either significant or highly significant in terms of bandwidth and power. There is no easy solution to this problem, but a recent report commissioned by the International Network for the Availability of Scientific Publications (INASP, 2003) has sought to address this difficulty. One solution might be to press for less costly access through

pressure on governments to open telecommunications markets, partnerships across academic institutions to negotiate best connectivity arrangements, and promoting take-up of Open Source opportunities. Yet the report also suggests a further approach, whereby bandwidth is carefully managed, protected and shared, both by users and by staff with appropriate technical expertise and understanding of user and institutional needs. It goes on to outline the benefits of enhanced training for users and measures to control undesirable usage. Librarians are encouraged to use training to encourage appropriate behaviour. This approach shifts emphasis away from managing costs to managing the consumption of the service itself, so as to maximise its current benefit to users. Furthermore, the INASP report looks at the questions librarians need to ask of ICT and management in order to ensure their goals are met.

There are also opportunities to support training and skills needs outside developing environments. In Australia, there is a program at the University of Queensland Library designed to meet the skills needs of information professionals in developing countries. Jordan (2003) suggests that barriers to adequate ICT skills training in developing countries arise from both lack of IT literacy and the fact that many local library schools fail to integrate ICTs into their curricula. Goulding (2000) asserts that teaching departments have a responsibility to support the development of appropriate skills to deliver modern information services, by incorporating new skills requirements into syllabi. One solution is to encourage information professionals from developing countries to spend time learning in libraries in developed countries:

> "They can engage in update courses, undertake targeted work experience placements, 'shadow' library staff who are practitioners of the skills they need to acquire, participate in management strategy meetings, observe and teach information skills for users – in short, observe, learn about, and practice any or all of the skills they need to acquire, in the environment of a fully functioning library/information resource centre." (Jordan, 2003)

The University of Queensland runs such a program, calling it the Cybrary (www.cybrary.uq.edu.au), with course and activities customised to meet specific user needs. For example, client libraries may send staff for placement experience for up to three months, during which time they acquire designated, tangible skills. Training consists of both a set of generic modules, as well as hands-on practical experience. "Train the trainer" course assist participants increase their confidence so they can pass on skills they have learned to colleagues. Jordan stresses the importance of allowing adequate time for participants to learn and practice new skills, and follow-up training (perhaps by email). It is also imperative that participants can communicate their own needs and goals, and are able quickly to implement aspects of their training on their return home.

Conclusions

The research identified many free electronic resources made available through international initiatives. For example, INASP has library support programmes including policy development, experience sharing and a travelling workshop for university librarians (providing training on using e-resources). Yet 77% of respondents were not using these resources and only one respondent was using INASP to support services. It was suggested that this was because of lack of awareness
- 'until recently most institutions and libraries were not aware of these services'
- 'initially management was not interested, probably due to lack of knowledge'.

However, developments of initiatives such as NUNet should help raise awareness about free resources. Greater take up of free resources would allow for experimentation and self teaching of ICT skills, which, together with expanded communication and collaborative skills, may be cascaded to users.

References

24 hour reference. (2002) *Library + Information Update* 1 (7), 10

ALA (2004a) *American Library Association: Continuing Education*. Available online at http://www.ala.org/ala/education/educationcareers.htm. Accessed 5 May 2004.

ALA (2004b) *American Library Association: Continuing Education*. Document available online at http://www.ala.org/Template.cfm?Section=home&template=/ContentManagement/ContentDisplay.cfm&ContentID=6490. Accessed 5 May 2004.

Ashcroft, L. (2004) Developing competencies, critical analysis and personal transferable skills in future information professionals. *Library Review*, 53 (2), 82-88

Biddiscombe, R. (2001) The development of information professionals' needs for Internet and IT skills: experiences at the University of Birmingham. *Program*, 35 (2), Apr, 157-66.

Bill and Melinda Gates Foundation (2004) *Towards equality of access: the role of public libraries in addressing the digital divide*. Document available online at: http://www.gatesfoundation.org/nr/Downloads/libraries/uslibraries/reports/TowardEqualityofAccess.pdf. Accessed 6 May 2004.

Chifwepa, V. (2003), The use of the intranet and internet by teaching staff of the University of Zambia, *African Journal of Library, Archives and Information Science*, 13 (2), 119-132.

CILIP (2004a) *Chartered Institute of Library and Information Professionals: Continuing Professional Development*. Available online at http://www.cilip.org.uk/qualifications/cpd.html. Accessed 5 May 2004.

CILIP (2004b) *Chartered Institute of Library and Information Professionals: Continuing Professional Development*. Document available online at http://www.cilip.org.uk/qualifications/Framework1.doc. Accessed 5 May 2004.

Davis, Keith and Sally Scholfield (2004) "Beyond the virtual shore": an Australian digital reference service with a global dimension. *Library Review* 53 (1), 61-65

Goulding, A. (2001) Never the twain shall meet - Changing syllabi of LIS schools, or, From cat and class to intranet construction and does it matter? *Impact, the Journal of the Career Development Group*, 4 (4), Jul/Aug, 65-6.

INASP (2003) *Optimising Internet Bandwidth in Developing Country Higher Education.* Available online at http://www.inasp.info/pubs/bandwidth/. Accessed 13 May 2004.

Jensen, M. (2002) *African Internet Status: a report*. Document available online at: http://www3.sn.apc.org/africa/afstat.htm. Accessed 6 May 2004.

Jordan, E. (2003) Cybrary skills in the tertiary environment: in-service education for librarians from developing countries. *Australian Library Journal*, 52 (1). Available online at: http://www.alia.org.au/publishing/alj/52.1/full.text/cybrary.skills.html. Accessed 7 May 2004.

Lim, E. (1999) Human resource development for the information society. *Asian Libraries*, 8 (5), 82-100.

Lochore, Stephen (2004) How good are the free digital reference services? A comparison of library-based and expert services. *Library Review* 53 (1), 24-29

Magara, E. (2002) Applications of digital libraries and electronic technologies in developing countries: practical experiences in Uganda. *Library Review*, 51 (5), 241-255.

Mutula, Stephen (2004) IT Diffusion in Sub-Saharan Africa: Implications for Developing and Managing Digital Libraries. *New Library World* 105 (7/8) [in publication]

Norris, P. (2001) *Digital divide: civic engagement, information poverty and the internet worldwide*. Cambridge University Press, Cambridge, England.

Nwakanma, C.D. (2003) Information technology competencies: identifying knowledge depths for library and information science education. *Canadian Journal of Information and Library Science*, 27 (4), 75-6.

Sharp, K. (2001) Internet librarianship: traditional roles in a new environment. *IFLA Journal*, 27 (2), 78-81.

Steinmueller, W.E. (2001) ICTs and the possibilities for leapfrogging by developing countries. *International Labour Review*, 140 (2), 193-210.

Stubbings, R. and A. McNab. (2001) 'Why doesn't it work?': managing user expectation in an electronic environment. *In* Graham, C., ed. *Online Information 2001 Proceedings*. Oxford: Learned Information, 129-133.

Wittwer, R. (2001) Special libraries - how to survive the twenty-first century. *The Electronic Library*, 19 (4), 221-225.