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The Modern Digital Library: Information literacy and institutional repositories



Promoting Information Literacy: The role of the librarian

By Perpetua Dadzie

One of the big challenges in the 21st century has been the unprecedented rate at which information is being churned out. This has been attributed in part to the phenomenal advances in ICT and the proliferation of electronic resources. Because of the escalating complexity of this information explosion environment, individuals are faced with diverse information choices to make in their academic studies, workplace and personal lives. They may be exposed to both evaluated and unevaluated information from a variety of sources. This situation creates a new challenge for information professionals and librarians, who must now play a lead role in directing individuals to high-quality print and electronic sources, educate them on the need to evaluate web resources and how to identify and use information effectively.



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INASP works with a variety of stakeholders to ensure that the quality and quantity of research communication from developing and emerging countries continues to increase. INASP's aim is to:

- Enhance the capacities of researchers to access, use and communicate research;
- Enhance the capacities of editors and publishers to disseminate national research;
- Enhance the capacities of librarians and ICT professionals to facilitate access to and use of electronic research content;
- Increase the availability of information and knowledge required to enable high quality research.

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Higher education institutions in advanced countries are developing a whole-person education by equipping their students with the necessary foundation for lifelong learning in order to meet the challenges of the twenty-first century. A vital component of lifelong learning is information literacy (IL) skills.

In spite of the numerous debates regarding the definition of IL (Owusu-Ansah, 2004; Mani, 2004) and the plethora of terms that have been used to describe the concept, the most widely accepted and cited definition is that provided by the American Library Association (1989) which defines IL as a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information."

Alternative definitions which are very similar to the ALA's have been offered by reputable organizations/institutions such as the Council of Australian University Librarians (CAUL, 2001) and SCONUL(1999). Indeed, all three bodies have developed IL competency standards which provide guidelines for IL courses to be developed. (ACRL, 2000; Bundy, 2004; SCONUL 1999).

Judging from the substantial body of research on information literacy coming from developed countries, there exists a gap in the literature which needs to be filled from developing countries. Recent efforts by IFLA/ALP (2007) have highlighted the need to develop policies and programmes in Africa in order to promote IL and lifelong learning, because they are essential for social inclusion, economic development and quality of life in the information society. Six major domains of life in Africa were recognized as needing IL abilities and these were exemplified as IL (composed of ICT and media literacy, as well as lifelong learning specialists, librarians, archivists, museum curators), Economic Development, Education and Learning, Governance and Citizenship, Health and Human Services, and Agriculture.

Having considered the various definitions given to IL from the literature, I would summarize it to mean having the necessary skills to identify, select and evaluate information obtained from a variety of sources for the purposes of facilitating the development of critical thinking and problem-solving skills and motivating the individual to learn throughout life.

The librarian's role

Librarians have a responsibility to teach their patrons to acquire transferable skills for lifelong learning and to help produce information literate persons. The origins of IL have been traced to the library-based instructions given to patrons over the years (Salony, 1995; Herring 1996). However, these instructions have been inadequate to address the complex issues embedded in IL which focuses on skills to identify, evaluate, and use information responsibly across a range of disciplines within the total educational process.

Librarians also have the responsibility to lead the IL drive since they have custodial duties of collecting, organizing and providing access to the multiple forms and sources of information in a timely manner so that the information is used appropriately. IL, though an issue for librarians, is not a library affair and requires partnership with faculty (in schools, colleges and universities) and senior university managers to integrate IL into the curriculum. Partnership strategies include teaching IL in a disciplinary context such as delivering courses on locating, evaluating, and using information in the context of a particular subject.

With the increasing student enrolment in tertiary institutions and the choice of many to study via distance learning programmes, there is the need for librarians to develop web-based tutorials that would complement face-to-face instructions given to students. Web-based tutorials are less time-bound, more flexible, and more accessible for off-campus students or those who prefer to learn IL skills at their own pace and convenience. It also allows the librarians to focus more on providing hands-on, or



practical sessions where in-depth training is required.

The successful development of web-based tutorials presupposes that the librarian should be computer or information technology (IT) literate and should also be ready to offer IT literacy to users. In this regard, the librarian would need to impart IT literacy to clients.

Information technology and information literacy are two distinct but inter-related concepts. While IT skills enable students to use computers, software applications and databases, IL seeks to provide an intellectual framework for “understanding, finding, evaluating and using information – activities which may be accomplished in part, by fluency with IT, and in part by sound investigating methods, but more important, through critical discernment and reasoning” (Association of College and Research Libraries, 2005). Both IT and IL are essential for students to function and succeed in the digital age.

IL courses which have been developed over the years have taken a variety of forms such as stand-alone courses, web-based tutorials, course-related instruction or course-integrated instruction. (Parker, 2003, Johnston & Webber, 2003; Lindsay, 2004; Parker 2005). In my view, delivering IL in the context of a particular subject discipline enhances students’ learning. It would therefore be appropriate for subject librarians to take on discipline specific IL instruction. Nevertheless, whichever format it takes, it is important for the students to build on the foundation of IL skills and abilities and be able to transfer their learning from course to course. It is also important for IL competencies to be included as a graduation requirement as it not only fosters collaboration between faculty and librarians but also makes the student take the courses seriously.

An example of the role of librarians is seen in two universities in Ghana, where efforts continue to be made to integrate IL into the university curriculum. The University of Cape Coast and the University for Development Studies have a one

credit bearing Information Retrieval (IR) course delivered to all freshmen of the university.

The purpose of the IR course at the University of Cape Coast is to equip students with skills that will enable them to access and retrieve information in the traditional, hybrid and digital libraries.

The specific objectives of the course are:

- to get students to appreciate the role of the library in the academic community – how the library supports teaching, learning, research and extension activities in the university
- to teach students, who lack basic knowledge of computers, to understand the essentials of the computer
- to make students aware of the resources and search tools of the library (the traditional and digital) and teach them how to use these
- to teach students how to access, retrieve and evaluate information from the Internet for their academic work, later working life and personal development, and
- to equip students with skills that will enable them to manage and use online journals and other electronic resources.

The course content includes types of libraries, library resources and their uses, the role the library plays in the academic community, and an introduction to computers, the Internet, Internet search tools, web search strategies, bibliographic and full-text databases.

With regard to the objectives of the IR course at the University for Development Studies, the University librarian indicated that they were to train students in the use of information and in research and report writing.

The course content includes:

- Libraries, information and the society
- Types of library materials, books and non-book materials
- Methods of acquiring library materials
- Information organization, cataloguing and classification

- Information retrieval, importance of catalogues, indexes and abstracts
- Using library resources such as circulation, reservation, reserve system reference, etc.
- Types and uses of reference materials
- Copyright, photocopying
- Information systems and automation
- Research methods – literature searches, bibliographic citation and report writing
- Internet – electronic information resources such as online resources and CD-ROM databases.

The IR courses at both universities have been evaluated by Afful-Yeboah (1993) and Bello & Ibrahim (2004) respectively.

An informal chat with the University librarians at both universities revealed that face-to-face instruction is the mode of transmission of the course. At the University of Cape Coast, four professional librarians are involved in the delivery of the course to 4,000 students. There are theoretical sessions delivered through the use of PowerPoint presentation, handouts and tutorials. Practical sessions include hands-on exposure in a computer laboratory which can take 150 students at a time. These sessions are supervised by the librarians.

The IR course at the University for Development Studies is made up of two components: an English Language Communication Skills and an IR aspect. The former is handled by the faculty at the Department of African and General Studies, while the latter is handled by two professional librarians. Owing to challenges with technological infrastructure, students at this university do not have the opportunity of having hands-on sessions with computers.

Another challenge which was mentioned by both University librarians is the large number of students involved in the course. Even though they are grouped into smaller sessions, the facilitators are compelled to hold several sessions a week to meet all of them. The development



of a web-based tutorial by the librarians would have been ideal in this case to complement the face-to-face instructions given to students.

The various levels of computer literacy of students were mentioned as a challenge by the University librarian at the University of Cape Coast. The course was offered to all irrespective of the previous knowledge especially in IT literacy and this has been frustrating for both beginners and advanced students. This underscores the need for librarians to take on the responsibility of training in IT literacy to be able to meet the needs of advanced students. In addition, beginners have complained of inadequate time for hands-on sessions.

Even though IR courses in both institutions happen to be standalone or generic focusing mainly on locating and using library and electronic resources, students have found it very useful. This view was expressed by the University librarian at the University of Cape Coast who usually encounters students requesting refresher courses especially in their final years when they have to write their dissertations. In my opinion, standalone courses are ideal for a start for librarians in developing countries, but they should realize the need to be more proactive in rolling out a course-integrated or course-related programme in the shortest possible time.

There has not been any controversy over the ability of librarians in Ghana to teach at the academic level. This is because some librarians have Master's degrees and teaching qualifications. They also have academic status and are promoted on the basis of their publications just like the academic faculty. Librarians involved in the IR courses at the University of Cape Coast and the University for Development Studies are well-qualified and have handled the teaching of IL very well.

It can be concluded that the phenomenal information explosion has created the need for IL to be promoted by librarians. They need to play an active role in teaching/

instructing and initiating partnership with faculty. They also need to be IT literate to be able to impart computer literacy and also be involved in the creation of web-based tutorials. Librarians would also have a firm control of affairs if they are well qualified in their field as well as possessing some teaching skills. With the rapid development in the 21st Century, it is prudent for librarians to take advantage of continued professional development activities such as conferences, workshops and seminars where their knowledge is constantly updated and skills sharpened.

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University of Chicago Press

From July 2008 an increasing number of researchers in developing countries can benefit from the INASP and University of Chicago Press agreement. University of Chicago Press has extended the offer of free journals available through INASP to those network countries which appointed country coordinators during the first six months of 2008. This is in addition to the partner and network countries included in the agreement from January 2008. Their broad subject scope mirrors the areas of collection development many country coordinators have been asking for, including Humanities, Economics, Social Sciences, Life Sciences, Medical Sciences, and Education.

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Bridging the Digital Divide in Malawi: Is information literacy part of the equation?

By Sydney Ngwira

The term digital divide refers to the gap between those people with effective access to digital and information technology and those without access to it. It is the unequal access by some members of a society to information and communications technology (ICT), and the unequal acquisition of related skills.

The digital divide can be global, i.e. between countries with access to ICT and those countries without it. It can also be geographical, i.e. between urban areas with access to ICT and rural areas without access to such technologies. Malawi is affected by both the global digital divide and the geographical digital divide.

In an effort to bridge the digital divide, Malawi has so far come up with two main policy documents: the Communications Sector Policy (CSP) (1996) and the Information and Communication Technology for Development document (ICT4D) (2006). The issue of information and communications technology is also a number one priority in the Malawi Growth and Development Strategy (MGDS) (2006).

What do these documents say and what strategies are laid out to bring Malawi into the Knowledge economy or the so-called information age? Both the CSP and the MGDS mainly focus on the development of the physical information infrastructure and technology. They do not focus much on the development of information literacy (IL) amongst the Malawi populace.

In theme four sub theme two the MGDS seeks to ensure universal access and connectivity and provide affordable information and communication technology to all citizens.

On the other hand, the CSP's (1996) main focus was to develop the telecommunications infrastructure in

the country and create a regulatory body which would have oversight and regulatory power over the telecommunications industry. This policy led to the creation of the Malawi Communications Regulatory Authority (MACRA), and the proliferation of a number of broadcasting houses and Internet Service Providers. It also led to the partial commercialization of the sole telecommunications provider, Malawi Telecommunications Limited.

The only policy document which has at least a bit of emphasis on IL is the ICT4D. This puts emphasis on eight themes which are: Strategic ICT Leadership, Human Capital, Governance, ICT Industry, ICT Infrastructure, Growth Sectors, Community and the Legal and Regulatory Framework. Under the theme Human Capital and sub-theme Education the policy came up with a number of strategies to improve ICT skills training in the educational system.

First and foremost one needs to understand that infrastructure development and IL are two sides of the same coin when it comes to bridging the digital divide.

ICT infrastructure development

ICT infrastructure and equipment mainly encompasses the following areas: electricity, fibre optic network, VSATs, internet connectivity and other related technologies. In Malawi there is a sole electricity supplier: a parastatal called Electricity Supply Cooperation of Malawi. Its electricity infrastructure is still underdeveloped. It also does not cover all areas of the country. Even in areas where there is electricity it is very erratic and there are a lot of blackouts.

What is the government doing? Apart from providing a conducive environment for the development of ICT infrastructure, the government

has embarked on the development of telecentres in most rural areas of Malawi which will help the people in these areas to have access to communication facilities. At the moment this programme is still in its infancy. Only two areas have been developed so far (pilot projects). These are Neno and Nthalire Telecentres. This has been done with the assistance of the International Telecommunications Union.

The government, through Electricity Supply Cooperation of Malawi, is also developing a fibre optic cable network countrywide (in areas where there is electricity) which in turn will be connected to the East African Submarine Cable System (EaSSy).

Another organization which is at the forefront in developing fibre optic connection countrywide is the Malawi Telecommunications Limited. It has embarked on a programme which will connect all the districts in the country to its network which in turn will be connected to the East African Submarine Cable System by the end of 2009. It has subcontracted a Chinese organization, ZTE Corporation to implement this programme.

So far work on infrastructure development is progressing very well and is actually promising but what is happening to information skills acquisition?

The need for IL in Malawi

The term IL is relatively new in the world. Prior to the information age librarians used terms like user education or bibliographic instruction. However IL is broader than those two older terms.

The American Library Association (ALA) Presidential Committee on Information Literacy, Final Report (1989) states that "To be information literate, a person must be able to recognize when information is



needed and have the ability to locate, evaluate, and use effectively the needed information”.

In their article, *Information Literacy as a Liberal Art*, Jeremy Shapiro and Shelley Hughes (1996) define IL as “A new liberal art that extends from knowing how to use computers and access information to critical reflection on the nature of information itself its technical infrastructure and its social, cultural, and philosophical context and impact.”

IL as described above is non-existent in Malawi. Actually all the policy documents which are supposed to advance the development of ICTs in Malawi are silent on the issue of information literacy. One document, the ICT4D, just mentions ICT skills training. Already most institutions have a component of ICT training which can be likened to End User Computing. The main components are word processing, spreadsheets and the internet. Actually these three components are just a small part of IL. Information professionals say that an information literate person is one who

- Recognizes that accurate and complete information is the basis for intelligent decision making.
- Recognizes the need for information.
- Knows how to locate needed information.
- Formulates questions based on information needs.
- Identifies potential sources of information.
- Develops successful search strategies.
- Accesses sources of information including computer-based and other technologies.
- Evaluates information no matter what the source.
- Organizes information for practical application.
- Integrates new information into an existing body of knowledge.
- Uses information in critical thinking and problem solving.
- Uses information ethically and legally.

From the above points one can conclude that there is more to IL than just the acquisition of ICT skills. Take the eighth point for example. In today’s society anyone can publish information on the Internet whether they are experts in their field or not. Clearly there is an imperative to evaluate such information before consuming it. Many people today through the use of weblogs, wikis and websites are able to broadcast their own opinions on the internet and people who are not information literate may regard this information as gospel truth. So it is up to us librarians to be in the forefront in advocating for IL in all national programmes if Malawi is to bridge the digital divide.

The other impediment to the development of IL in Malawi is the negative view that people have of librarians in particular and libraries in general. This problem has been exacerbated by a lack of a reading culture in Malawi. In most such fora where policies are made it is very rare for the powers that be to recognize that librarians’ contributions are pertinent to the development of an informed society. And they rarely consult librarians on such matters as ICT skills training or IL.

The other problem is that Malawian librarians are not visible. They are not proactive and that is why people are not able to recognize their contributions to this important national agenda. And since charity begins at home it is pertinent that librarians should include IL in their work. Most academic libraries in the country have not yet included IL as part and parcel of their library work. Most libraries still concentrate on user education where they take the patrons for a library tour, introduce e-journals and databases they have in the library and show the patrons how to access information in their respective libraries.

Organizations like the Malawi Library Association (MALA) and the Malawi Library and Information Consortium (MALICO) should be at the forefront in promoting IL.

Country Coordination Meeting

Country coordinators (CCs) from 17 of INASP’s partner countries attended a three day meeting in Oxford in the middle of May. This meeting enabled real collaborative planning to take place around the second phase of INASP’s Programme for the Enhancement of Research Information – PERii. As well as providing the opportunity for working together, the meeting provided a valuable face-to-face opportunity to strengthen relationships among INASP and the CCs, as well as between the CCs themselves.

MALICO is doing a good job in the area of internet connectivity but in addition to that it should also include IL in its agenda. Universities in the country should also include IL programmes in their curricula. Mzuzu University, Faculty of Information Science and Communications has such a programme for undergraduate students. It also has a similar package for community outreach purposes. However this programme should be extended to other programmes in the university.

Given the appropriate information technology infrastructure and skills in all sectors of the economy Malawi will be able to compete effectively in the global economy.

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Digital Repository at Bunda College Library

By Geoffrey F. Salanje



Participants to the Malawi Greenstone Workshop on the opening day

Introduction

Bunda College Library embarked on a 12 month project on creating a digital repository for its Malawiana collection. Malawiana is any publication/information on Malawi or by Malawians. The project is jointly funded by INASP and Electronic Information for Libraries (eIFL) with funding from Koha Foundation of USA. Specific objectives of the project are to:

- develop and make available free of charge to the public a Malawiana Greenstone application of digitized documents on Malawi and by Malawians;

- conduct a workshop for participants from Malawi, Zambia, Mozambique and Tanzania on the creation of a digital repository using Greenstone software;

- encourage the participants in the workshop to complete the pilot project's user survey of digital library (DL) capacities and needs, to contribute to the user discussion group and the project website at UNAM, and to develop their own DL applications;

- provide via the Internet technical and organizational advice on DL development to libraries, educational, scientific and cultural institutions in Malawi and the three neighbouring countries during the period of validity of the contract, facilitating their access to the support activities of UNAM and the Greenstone team at the University of Waikato (New Zealand);

- set up and host a website for the Malawi national Greenstone network.

The Malawi Greenstone Workshop

The Malawi Greenstone workshop was held at Bunda College, University of Malawi from 26–28 November 2007. The workshop

attracted 18 participants from various institutions in Malawi and three from Mozambique, Tanzania and Zambia. Renate Morgenstern from the University of Namibia and Patricia Liebetrau from Digital Innovation South Africa (DISA) facilitated the workshop. They were assisted by Geoffrey Salanje of Bunda College, University of Malawi and Misheck Nyaluso of College of Medicine, University of Malawi. The workshop which was officially opened by Prof. George Kanyama-Phiri, Principal of Bunda College was closed by Renate.

Some of the topics covered during the workshop are:

- Objectives for the pilot project of a Greenstone Users and Support Group for Southern Africa.
- How to install Greenstone software.
- Updating a Greenstone installation
- Scanning documents
- Building collections
- DL and metadata
- IMARK CD-ROM – Digitization and Digital Libraries Module.

Project progress

The library has started building the collection with dissertations and theses. So far there are 133 records in the collection and the target is to have at least 1000 records by the end of October this year. The collection is not yet online but by the end of July this year it will be accessed online. However, almost all the publications are in printed form and are being scanned slowly. Through the project a computer and a scanner have been acquired to assist in the creation of the DL.

The collection would, among other benefits, increase Malawi content online and also assist in preserving the Malawiana for posterity.

The work has been slower than expected because the sizes of the scanned documents were big, which would have affected the size of the collection.

Other institutions who attended the national Greenstone workshop last November developed their own institutional plans, and some are already implementing their plans.

Challenges

Bunda Library is meeting some challenges in the creation of a digital library. As mentioned above, our major challenge is that almost all the documents are all in printed form. It is taking us time to scan the documents. Coupled with this challenge is the size of the scanned documents – they were too big. We are finding ways of reducing the sizes of the scanned documents thereby reducing the collection size.

The other challenge is that there is little or no progress in other institutions that attended the Malawi Greenstone Workshop. Efforts are being made for staff from Bunda Library to visit the institutions and encourage them to forge ahead.

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AuthorAID

The AuthorAID website (www.authoraid.info) has had over 1000 visits from 65 countries. There are now 19 matched mentoring pairs and two learning agreements have been received.

BRAC University Digital Institutional Repository: Some experiences

Hasina Afroz

A university-based digital repository is a service that fosters teaching and research by giving academics and researchers access to relevant materials, a higher profile to university research and providing public access to work carried out at the university. In Bangladesh every year 29 public and 51 private universities provide university degrees to a very large number of students. The students and teachers are greatly dependent on the printed materials although some universities have started to use electronic resources for teaching, learning and research purposes. BRAC University is one of the pioneering private universities in Bangladesh. BRAC University is determined to create an integrated and digital library system in order to support and enrich the academic and research activities of the university. As part of this goal the library has recently established an institutional digital repository (IR) having substantial funds from INASP. The objectives of the one-year digital repository project were to:

1. Collect and preserve various teaching and learning materials, research outputs, etc. generated by BRACU teachers, researchers and students in order to make them accessible to the interested users.
2. Make the library capable for providing e-library services with the e-resources of the library and ensure access to these e-resources for the teachers, students, and researchers of BRAC University.
3. Make a bridge between users and electronic resources through web based technology.
4. Develop human resources of the library in order to provide better library services.
5. Help other universities and research libraries in establishing an IR by sharing experience, ideas and expertise.

Use of DSpace

There are a number of software options available for setting up an IR. Different institutions have chosen different options in relation to the function that IR will perform. At BRAC University we were looking for an open source solution and Dspace, an open source repository software developed by MIT and Hewlett-Packard (<http://dspace.org>), was chosen as DSpace has good web interface and ability to manage various file formats.

Having chosen to work with DSpace, this was downloaded and installed on the repository server. It has proved to be an excellent choice in terms of the flexibility and functionality it offers, while maintaining the software has required minimal staff time over the course of the year. The DSpace team have successfully installed the Dspace server using OS: Fedora Core 6, Apache ant: 1.6.5, Apache tomcat: 6.0.13, Dspace: 1.4.2, Java Development Kit: 1.5.0.12 and Postgresql: 8.1 & 8.2. We have been able to customise the software by adding different features such as RSS Feeds, Statistics etc.

The Head of library along with another staff member were trained in India for developing skills to be able to establish and run the repository. A steering committee and a project team provided advisory

support, and reviewed and monitored the progress of the entire work.

Contents of the repository

Initially, the IR team was not able to decide on the kinds of content to be included in the repository. However, after a lot of discussion in committee meetings, a decision was made to focus on archiving the following items.

- Theses and dissertations
- Journal articles
- Conference papers
- Conference proceedings
- Research reports
- Annual reports
- Departmental technical reports and working papers
- Past exam papers

A policy guideline for content submission was developed. In the first instance, the content collection and submission was done by the library but in future we would prefer individual submission. Options will be introduced and there will be guidelines for submissions. Each contributor will complete a copyright declaration form before final submission.

Marketing

The IR working team realized from the start that it needed the support of academic staff and key administrators to make the project a success.



The idea was to market the project to the faculty members, directors of institutes and leading members of the faculty. The librarian has given several presentations to individual groups. In fact, the reactions have varied greatly within the departments too. Most of them were very enthusiastic to learn and others showed very positive attitudes towards the initiative. At present, we are not asking academics to self-archive and all the work is being carried out within the library. It was expected that this approach would encourage them to participate more freely and it seems to have been effective in many cases. Some departments were facing uncertainty about managing their publications, and offering them the repository as a solution has been met with enthusiasm. We have worked closely with different departments, listening to what they want from the service and developed their collections in relation to this. Over the course of the year, we have gathered about 450 items.

Various promotional materials have been developed to promote awareness of the resources, including a brochure, poster and logo. These have been distributed throughout the campuses and also other organizations. On completion of the project a workshop

was organized for other university library professionals and library science teachers.

Lessons Learned

The most complex part of the IR project was getting the contents from the departments and also getting users to participate with its ongoing development. At the beginning there were concerns amongst academics about the issue of copyright and whether their publishers would allow their articles to be deposited in the repository. The problem was addressed using the SHERPA (www.sherpa.ac.uk/romeo.php?all=yes) by connecting publishers directly with a standard email.

Most of the contents offered by the departments and academic staffs were in print format, and a lot of time was spent on digitizing the materials. An unexpected problem arose with the release of the Junior Librarian (IT) who worked as the IT Manager for this project. He left two months before the completion of the project. Another staff member was appointed in his place and trained up, which was time consuming.

There was no clearly stated theses submission policy, as every

department seemed to follow different rules and some theses had no abstracts.

While developing the communities (departments and faculties) to organize the contents we considered Theses and Dissertations as a separate community but when we discussed this issue with the faculty members, they preferred to see theses and dissertations done at their department under their community.

Impact for Other Universities

The positive impact of BRACU digital repository will encourage other universities in Bangladesh to establish their own repositories since this university is the first in setting up such a repository in Bangladesh. This idea will hopefully lead to the establishment of a network of repositories in Bangladesh.

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Philippine Journals Online

23 journals are now available on the new Philippine Journals Online (PhilJOL) website, www.philjol.info, following the PhilJOL Publishing Quality and Online Strategy Workshop which was held at Ateneo de Manila University, Manila, the Philippines on May 21–23 2008.

Towards a National Network of Institutional Repositories of Science & Technology Information: Sri Lankan experience

By Sunethra Perera

Background

The National Science Foundation (NSF) is the apex scientific body in Sri Lanka and is mandated to maintain the National repository of Science & Technology (S & T) literature. The repository was initiated in the 1970s as a collection of printed documents covering published and unpublished scientific works of local scientists. Research and technical reports, periodical articles (both in local and

foreign periodicals), conference and seminar papers, theses etc. make up the collection.

In view of the concept that scientific knowledge is the key resource for the development of a nation, the collection since its inception was well organized and accompanied with search tools to keep the local scientific counterparts aware of the past and present research conducted

in the country. 1997 was a landmark year where a major step was taken to disseminate the information to a wider spectrum of users through the best platform – the Internet. However, later it was realized that this too was not up to the expectation of the users. It covered only metadata and the local scholars were still deprived of viewing the full text on their desk top.



An issue that had not been given due consideration until recently was that the collection of the National S & T Repository was limited to the material generated between early 1970s up to the present. The need to bring the great wealth of information accommodated in other scientific and academic Institutions (established during early periods) covering ancient scientific writings, historical scientific documents and early scientific research outputs had to be seriously considered. Before the advent of digital technologies bringing all this literature under the National Repository at the NSF was not practical. However, Digital Library Technology was now offering an enormous potential to bring all such resources into the main national stream.

Project: National Network of Institutional Repositories

The need of the hour was to give fillip to the development of a federated collection of digital repositories within a national framework under the leadership of the NSF. Quickly a goal and objectives for a digital library project was formulated: to build up a reliable and comprehensive collection of important rich scholarly scientific communications and scientific heritage created by the local scientific and academic community for ready on-line access by a wide spectrum of users. The project further aimed at supporting preservation of the material.

Feasibility of the project – SWOT analysis

However, it was doubtful whether a digital library project would be a priority in a country where many priorities exist in the fields of health, education, national defence etc. However, the urgency of a digital library project could not be underestimated or ignored. A quick SWOT analysis was conducted to find out the feasibility of initiating a country wide national digital repository project.

Results revealed that threats and weaknesses weighed very high against the few existing strengths and opportunities.

The following weaknesses were identified.

- Unavailability of a definite and continuous funding source for an island-wide project.
- The staff had not undergone any in-depth detailed skill development training on digital repository management.
- Sufficient IT expertise was not available within the institutions to support the project.
- Non-availability of state of the art digital library software.
- The prevailing poor ICT infrastructure within and among S & T related institutions in the country coupled with low internet bandwidth
- High internet charges

However, even under such weaknesses, the situation was not too bad. It was possible to find either alternatives or look positively towards the future for better situations.

- The strong willpower of the NSF staff and their very positive attitude towards building up a digital repository was the greatest strength.
- The innovation skills, commitment and the team spirit of the NSF staff.
- The great flexibility of the currently used CDS/ISIS software and its potential capability to link a range of file types to the metadata records offered an acceptable solution in the absence of state of the art digital library software.
- The well organized and indexed computer meta data database of the national collection provided the basic structure for the project.
- The encouragement and the support of the NSF Top management.
- In spite of the unavailability of a definite financial source there was still hope that the new policy of the government to allocate more funds for the development of S & T sector would bring sufficient funds to digitize the NSF National Repository over a period of several years.
- ICT infrastructure of the country was developing very fast, leaving

room to assume that S & T institutions would gradually upgrade their ICT facilities and go for higher bandwidth.

Taking up the challenge of building up the digital repository under such limited resources itself was the best opportunity identified in the SWOT analysis.

Implementation of the project

Although an island-wide network of digital repositories was not immediately feasible, a four phase project was drawn up to start with a very narrow scope leaving room to be gradually evolved into a federated collection of distributed institutional repositories.

Phase I – National Repository Collection – NSF copyright material (excluding multimedia material).

Phase II – National Repository Collection – Periodicals of other S & T Institutions + Technical & Research reports (excluding multimedia material).

Phase III – multimedia material of NSF and other Institutions.

Phase IV – Institutional Repositories.

Implementation of phase I

In June 2006 phase I of the project commenced. Under the prevailing financial situation outsourcing digitization of the material to be carried out under close supervision of the NSF staff seemed to be the best option. Purchase of sophisticated equipment and devoting a large amount of staff time was not affordable. All background work relating to tagging of each article/chapter with appropriate file names, checking the accuracy and quality of each page digitized and keeping the file size at a minimum was the responsibility of the NSF staff.

The major and critical part of the project was the uploading of digital files into the server for on-line remote access for resource discovery through a user friendly interface. In the absence of state of the art digital library software this was a great challenge. The extreme flexibility of current software in use – WINISIS – provided enormous potential to restructure the existing database as appropriate. The team spirit and the innovative capability of the staff played a large role here in



building up their dream digital repository very successfully.

Implementation of phase II

Having successfully completed phase I, the project is now progressing in stage two. The plan is to cover contents of all locally published journal titles and research/technical reports. The main issue encountered in this phase is obtaining copyright permission. Permission has been obtained for a number of titles. It is hoped that almost all publishers being either research or academic institutions or professional associations, would fully support this national endeavour.

Implementation of Phase III

It was decided to start on phase IV, skipping phase III.

Implementation of Phase IV

The final target of the project would be to establish institutional e-repositories in all academic and research institutions in the country. It would be an attempt to facilitate a reliable mechanism for authors of scholarly works to deposit copies of their research publications in a central repository in their parent institutions. It is an effort made to bring all hidden scientific literature in all research and academic institutions in the country into one national stream virtually integrated thereby exposed to a wider spectrum of users.

Phase four is the test bed for the final target of the project and is considered a major turning point in the proposed National Framework of Institutional Repositories. Phase IV operates as a pilot project covering the NSF and five other key research institutions in the country which gives a high annual research output. The Industrial Technology Institute (ITI), National Engineering Research & Development Centre (NERD Centre), Arthur C Clarke Centre for Modern Technologies (ACCIMT), Coconut Research Institute (CRI) and the Rubber Research Institute (RRI) were selected to be included in the pilot project.

Need for new digital library software – Dspace

Due to certain limitations identified in the WINISIS software currently

being used at the NSF, Dspace – a state of the art digital library software – was identified to be used in phase IV. Dspace is completely a new software to Sri Lanka. Its installation procedure is quite complicated due to the many sophisticated features and facilities it offers. Local expertise could not be found to support the project and therefore services of an Indian expert was obtained. In March 2008 the institutional repositories were established. The repositories are now operated within each institution on experimental basis.

The benefit of using Dspace is two-fold. It offers a convenient and reliable mechanism for scientists to deposit copies of their works in a central repository (institutional or national) straight from their desktop. Institutional repositories offer a reliable mechanism to overcome any problems that restrict an author from making copies of his works freely available in an open archive due to copyright agreements made with publishers. Such agreements cannot stop an author depositing his work in his parent institution where the work was carried out. Therefore the comprehensiveness of the institutional repository is ensured.

Dspace further offers an ideal solution to the problem the NSF is facing at present in trying to ensure the comprehensiveness of its national S & T repository. Many works of local authors published in foreign journals escape entering the NSF National repository. Dspace offers a mechanism for scientific counterparts to directly deposit copies in the NSF repository from their desktops (complying to any copyright agreements). Where this is suppressed by copyright, the NSF still has the facility to harvest the metadata of such works from the respective institutional repositories to be subsequently integrated to the central Sri Lanka Science Index database. The Central database will provide a link from the metadata record to the corresponding repository for downloading the full text. Dspace equally offers administrators of institutional/national repositories a mechanism to control the input of documents into the repository through a panel of reviewers.

Nature Publishing Group (NPG) is making its biomedical collection of journals available to over 20 INASP partner countries in Africa, Asia and Latin America through INASP's Programme for the Enhancement of Research Information (PERI). The high impact journals in this collection include NPG's flagship journal Nature, the Nature Clinical Practice series, the Nature research journals and Nature Reviews journals in the life sciences and medicine and more than 40 journals published by NPG on behalf of societies. You can find out if your country is eligible to register with Nature by using the following URL: <http://peri.inasp.info/peri/peri.pl?pid=70>

Performance and constraints experienced in phase IV

At present all repositories in the pilot project are operating satisfactorily within their institutions. However, a main constraint so far identified for successful operation is the insufficient IT expertise within institutions to support trouble shooting. Dspace being a complex system special training is required in this respect. Of course this problem was foreseen at the planning stage and an agreement was made with the Indian experts to rectify any problem from their end in India as and when they arise. This too does not seem to be helpful in certain institutions due to the extremely low internet bandwidth at their ends. The bandwidth ranges from 64kb up to 512kb (at the NSF). All repositories are operated under minimal hardware facilities.

Conclusion

Although implemented in an environment where resources have been extremely limited, the project has been a great success. The most critical factor that contributed towards the success of the project was the very positive attitude and the commitment of the NSF staff. There is high potential for a very successful island-wide network provided sufficient funds are provided for the required hardware, human resource development and upgrading of the internet bandwidth. Funds are also required for digitization of the large volume of past rich literature accommodated in academic and research institutions not indexed or properly preserved.

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Welcome!



Liam Finnis joined INASP in March as the Communications and Administrative Assistant and has since become INASP's Communication Coordinator. Liam studied Mass Communications at Carleton University in Ottawa, Canada. Liam has worked in a variety of areas, including both the education and charitable sectors, and has experience in journalism, television production and event management.

Sian Hodges joined INASP in June as the Subscriptions and Finance Officer, a role that requires her to work closely with both the Finance Manager and the Information Delivery Team. In addition to working with INASP, Sian is currently running her own business as a driving instructor and works part time in a family business, doing the bookkeeping and various office administration tasks. She has an International degree in English and Education which she undertook at the University of Wolverhampton and The Hogeschool in The Netherlands.



Open Training Platform

The United Nations University (UNU) is the ninth UN agency to join the Open Training Platform (OTP): <http://opentraining.unesco-ci.org/cgi-bin/page.cgi?d=1>. This UNESCO-powered hub offers free training resources on 21 development topics, fostering cooperation to provide free and open content for development.

INASP Directory of Resources

The INASP maintained Directory of Resources continues to grow – this contains information and links to complementary programmes to PERI, e-resources that are open access so available to all researchers, and to e-resources that are freely available to researchers in qualifying developing and emerging countries. As new resources are being added to this all the time, please make sure you take a look for updates by using the following URL:

<http://www.inasp.info/file/732/inasp-directory-of-resources.html>

To find out what online resources are available in your country, please go to www.inasp.info and select your country using the country finder on the home page.

For further information about online resource access, please contact Lucy Browse, Head of Information and Delivery email: lbrowse@inasp.info

African Studies Centre Leiden takes over AfricaBib

As of 2 June 2008, the African Studies Centre (ASC) in Leiden, the Netherlands, has taken over the bibliographic database AfricaBib (<http://www.africabib.org>). AfricaBib consists of more than 100,000 items, mainly titles of journal articles about Africa and publications about women in Africa.

AfricaBib is currently being updated by the African Studies Centre in Leiden but later this year sources will be used from other libraries and publishers as well. Access will be provided to full text information via links, such as the link resolver in the ASC catalogue. <http://www.africabib.org> will remain a valuable tool for researchers and others interested in Africa.

Optical Society of America (OSA)

Researchers in optics and photonics, scientists, engineers, educators and technicians in this field will be able to access OSA online journals through PERI. Journals available will include Optics Express and Optics Letters, the top two optics journals in ISI's Journal Citation Reports 2006 journal rankings by impact factor, at no. 1 and no. 2, respectively. Journal of Lightwave Technology is also ranked among the top ten at no. 6. You can find out if your country is eligible to register with OSA by using the following URL:

<http://peri.inasp.info/peri/peri.pl?pid=75>

About Connecting-Africa

<http://www.connecting-africa.net>

Connecting-Africa is a service that provides access to African research information and materials produced in the Netherlands and elsewhere.

The service provides:

- titles of published research on Africa in the Netherlands and elsewhere;
- digital resources on Africa (full-text of publications, images and sound) in about 55 institutional repositories.

Connecting-Africa provides access to these digital resources by "harvesting" their descriptive metadata (records) using OAI-PMH (the Open Archives Initiative Protocol for Metadata Harvesting) and by filtering the metadata using its Post Harvest Analyzer.