Think Big Start Small: Institutional Repositories: policies, strategies, technological options, standards and best practices. The case of the University of Buea

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Abstract

In order to achieve the Millennium Development Goal of reducing by half the number of people living in hunger and poverty and stimulating economic growth to enhance rural household economies, the stakeholders involved need to provide access to resources and technology as well as effective information services. Information and knowledge are fundamental for education and development as well as essential requirements to improve the quality of life for people living in regions where the population has not reached a high level of economic and social development. Libraries play an important role in this educational and research process. For strengthening educational capacity and building up research capacity, access to relevant information is of great importance.

In this paper an initiative at a university in Cameroon is described. The purpose of this paper is to give insight into the challenges most African universities face in developing their institutional repositories. The aim is to investigate how evolving digital technologies could be integrated into the libraries of these African universities.

In the light of existing realities in most African countries, the creation of an enabling institutional environment for information repositories to blossom is of prime importance. Information repositories often stand low on the scale of priorities and this can be attributed to the laxity in national and institutional regulation and policies. How therefore do we get to run an institutional repository when the platform for information resources (the library) is not a priority for policy makers and for the institutions themselves?

Are researchers willing to feed these institutional repositories in the event of their existence? Are the material and human resources required for the use of institutional repositories affordable and available to the final users? It is in the context of these preoccupations and a new government policy to encourage research that the administration of the University of Buea-Cameroon decided to set up a functional institutional repository. This paper describes the challenges faced by the Library of the University of Buea in setting up such an institutional repository, a possible way forward for other African institutions of higher learning.

Institutional repositories in general

Rapidly evolving communication and information technologies are not only dramatically changing the way we collect, manipulate and transmit knowledge but also the way we reproduce, distribute, control and publish information. Knowledge knows no boundaries. It is generated and shared wherever educated people come together. It cannot be exhausted; the more it is used, the more it multiplies. And although there is a continuous flow of new information and knowledge from research, a significant part is not accessible for people who could benefit from these research results. Access to these research results is not always and everywhere available for many different reasons. Access to information is an essential component in strengthening teaching and research capacity in scientific institutions and universities and libraries play an important role as essential components of any strategy aimed at improving information access.

Researchers working on research topics important for Africa (not always taking place in Africa) need access not only to European and American sources, but also to the publication output from African researchers. Traditionally African research relies heavily on information derived from Europe and America which, although important, is not always relevant or appropriate for African research topics. Besides that, the research results from the developed world to which African researchers do have access, are not always up to date.

For African researchers this can be a problem in two ways. It is difficult to raise funds for research because of lack of up-to-date information, and publishing research is very difficult if no good literature review has been carried on the topics concerned. If researchers only have access to outdated research results and cannot carry out a good literature review, it is also possible that research from which results are already available in the literature, is duplicated, which is a waste of money and time.

Almost all universities in Europe and the US have started establishing institutional repositories. An institutional repository is an online locus for collecting, preserving, and disseminating, in digital form, the intellectual output of an institution, particularly a

research institution. [1] A characteristic of a repository is that the information in a repository is freely available for researchers all over the world; an important source of recent information for these researchers.

For a university, this output could include scholarly materials such as published research journal articles, published books, pre-prints, post-prints, conference papers, technical reports, working papers and digital versions of theses and dissertations; it might also include other digital assets generated by normal academic life, such as administrative documents, course notes, learning objects and data sets.

In this paper we talk about a repository with the scientific output of an Institute.
The content of most repositories can be searched by using Google Scholar or other search engines. This is possible because most repositories use international standards: the compliance with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) which makes harvesting of metadata possible so it is easy to set up discipline-oriented portals, for example, so the content of the repository can be shared.

More and more publishers accept that authors enter the final version of their article in an institutional repository of their research institute or university or sponsor. We call this the "Green Road to Open Access" (see below). In addition, more and more scientific authors place their academic output on their personal web pages, and if the publisher allows it, you will find there the official version of the articles. Most researchers and scientists are interested in showing their publications and research results to the outside world, but unfortunately not all scientific authors know about the possibilities of an institutional repository. "Of the authors who have not yet self-archived any articles, 72% remain unaware of the option". (Swan & Brown, 2005)

DRIVER (Digital Repository Infrastructure Vision for European Research) has identified five issues which are essential to the establishment, development and sustainability of a digital repository:

1. The business of digital repositories; the institutional repository must be manageable and it must be able to be realized within the resources of the research organization;
2. How to stimulate the researchers to deposit materials into repositories;
3. Intellectual property rights, which is not addressed here;
4. Data curation; not only articles but also e.g. data sets can be part of the institutional repository and the issue of how to maintain and preserve all these data
5. Long- term preservation, which is related to issue 4 above.

The success of a repository is dependent on adequately addressing these five issues.

[1] From Wikipedia, the free online encyclopedia

Vanessa Proudman, in the DRIVER report, gives guidelines on how to stimulate authors to deliver content to an institutional repository (Weenink, et al., 2008). As we all know this is not always easy and in some cases is even the bottleneck of the system. Willingness to share data and information seems to be a special issue for African researchers and at the e-learning conference last year in Accra this issue was addressed by some African presenters: in general they say that African researchers are not really willing to share data. This is also one of the problems for content building of Aluka, a digital library of scholarly resources form and about Africa.

Advantages of a repository:

- publications in a repository are also accessible for those people who cannot afford to buy expensive licenses (knowledge valorization);
- publications in a repository are more visible and this is important for the individual researcher;
- a publication will have a stable URL and sustainable archiving is managed;
- publications in a repository will be given the correct metadata so they will be indexed by search engines or portals; their visibility is higher;
- a repository can provide many extra services to the scientific author, e.g. discipline-oriented portals

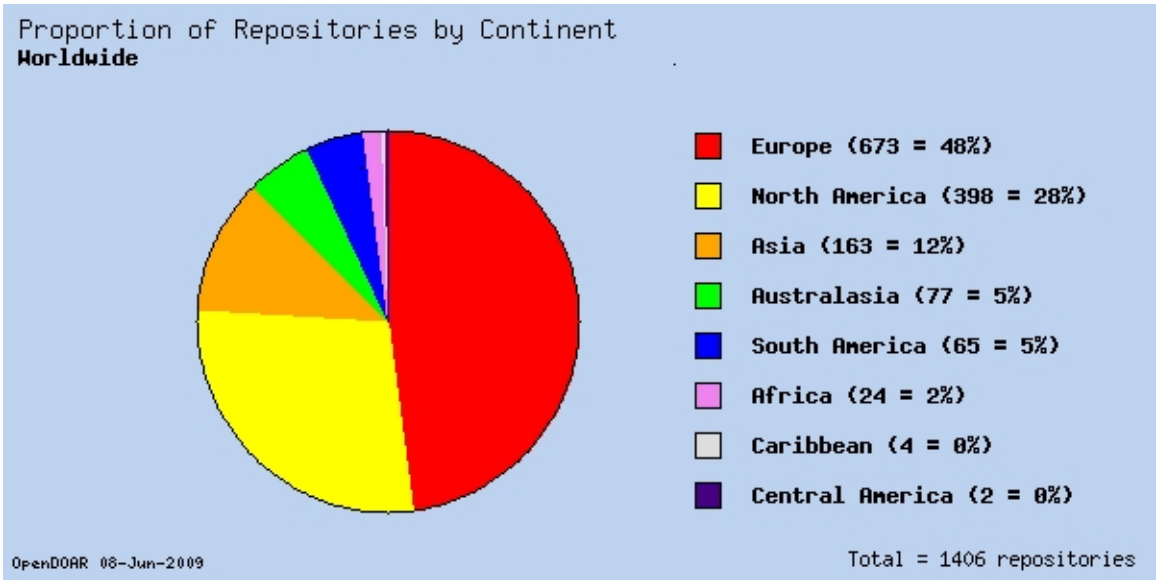
(UKB, 2008)

Universities and academic institutions in Africa should develop policy on repositories in close cooperation with university libraries and create commitment within the organization. The policy should be based on:

- The willingness of a university to provide open access to their research output;
- Guidance from universities for researchers on where to publish, and recommendations concerning this, so that publishers who refuse to make research data accessible in repositories should not be used (Cornwell and Suber, 2008)**.**

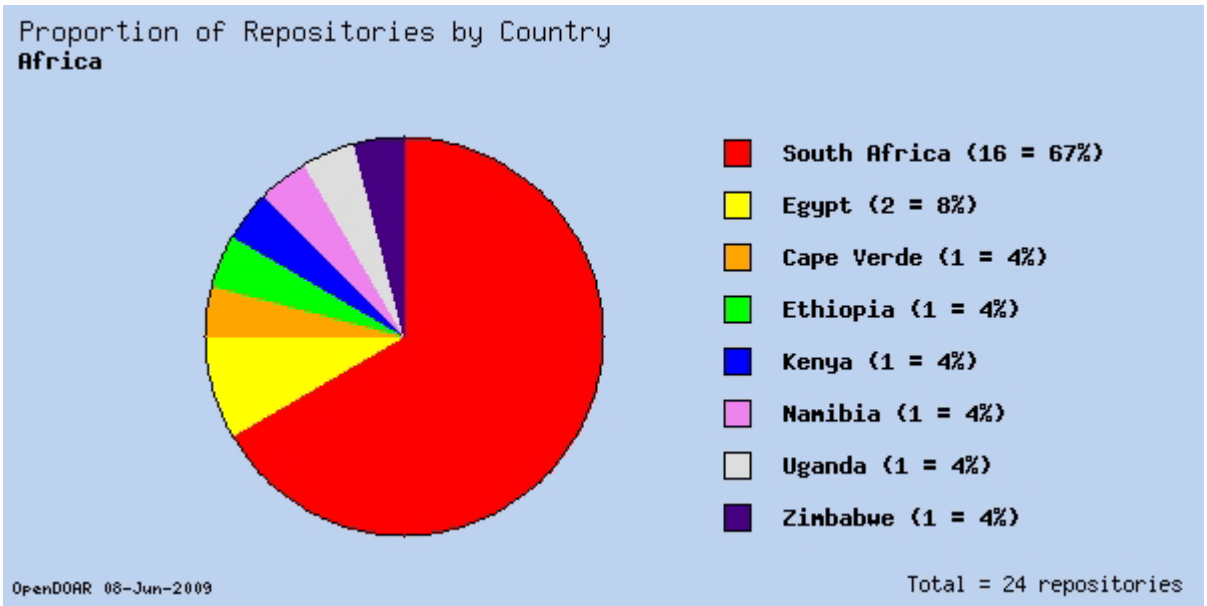
There exists an authorative directory of academic open access repositories that can be searched by subject, by country, by content type and some other criteria. You will find mostly articles and theses in these repositories but there are also datasets and learning objects. Each repository has been checked by project staff; the directory does not rely on automated analysis, so all the repositories have been subject to quality control before being added to the directory. This directory is called *Open*DOAR and is kept by the University of Nottingham, UK. In September 2008, more than 1100 repositories were registered.

A quick overview of the geographical coverage of the repositories gives the following result:



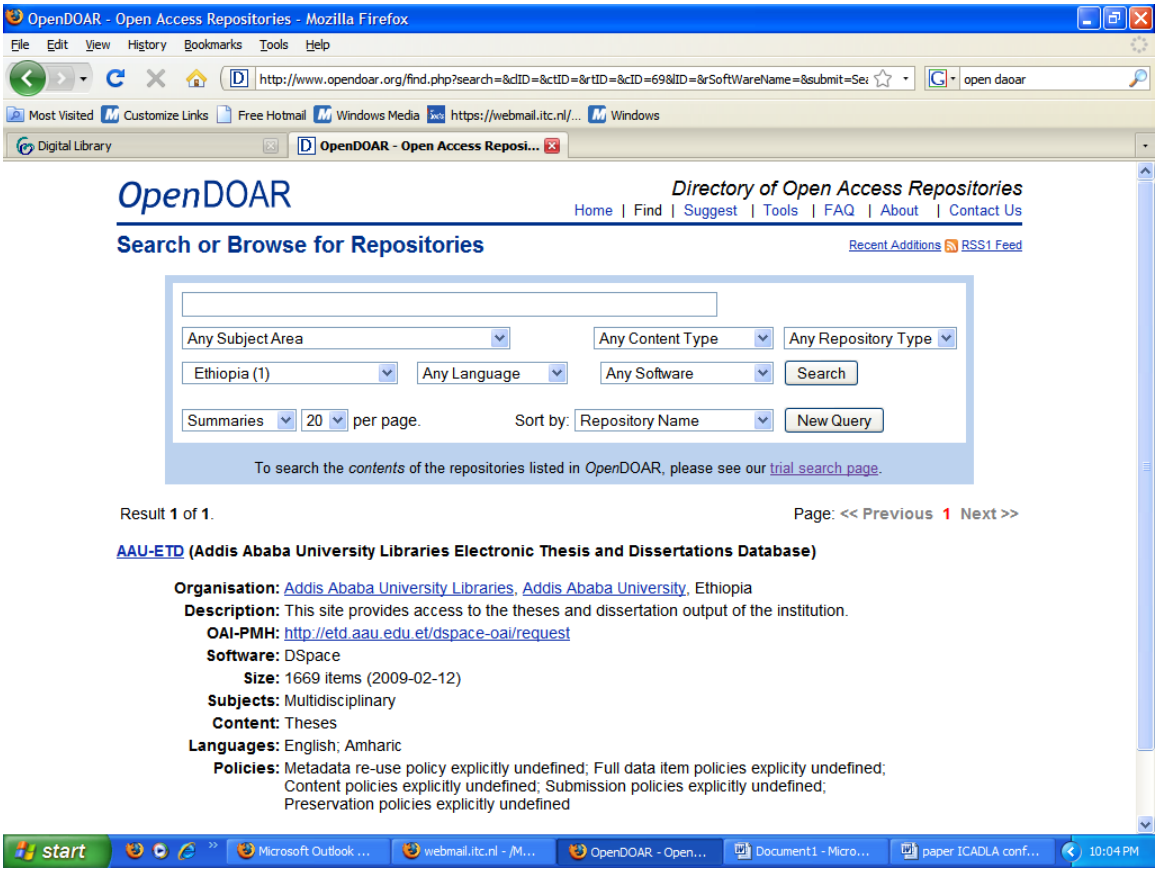
From: www. OpenDOAR.org

If we look for Africa we see the following result:



From: www. OpenDOAR.org

Coverage of Ethiopia:


OpenDOAR - Open Access Repositories - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://www.opendoar.org/find.php?search=&clID=&ctID=&rtID=&cID=69&ID=&rSoftWareName=&submit=Se
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Most Visited Customize Links Free Hotmail Windows Media https://webmail.itc.nl/... Windows
Digital Library
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OpenDOAR
Directory of Open Access Repositories
Home | Find | Suggest | Tools | FAQ | About | Contact Us
Search or Browse for Repositories
Recent Additions RSS1 Feed
Any Subject Area
Any Content Type
Any Repository Type
Ethiopia (1)
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per page.
Sort by:
Repository Name
New Query
To search the contents of the repositories listed in OpenDOAR, please see our trial search page.
Result 1 of 1.
Page: << Previous 1 Next >>
AAU-ETD (Addis Ababa University Libraries Electronic Thesis and Dissertations Database)
Organisation: Addis Ababa University Libraries, Addis Ababa University, Ethiopia
Description: This site provides access to the theses and dissertation output of the institution.
OAI-PMH: http://etd.aau.edu.et/dspace-oai/request
Software: DSpace
Size: 1669 items (2009-02-12)
Subjects: Multidisciplinary
Content: Theses
Languages: English; Amharic
Policies: Metadata re-use policy explicitly undefined; Full data item policies explicitly undefined; Content policies explicitly undefined; Submission policies explicitly undefined; Preservation policies explicitly undefined
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Open access in general

In discussing Open Access two important declarations cannot be denied:

1. Budapest Open Access Initiative, 2002 [2]
2. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, 2003 [3]

"The Budapest Open Access Initiative arises from a small but lively meeting convened in Budapest by the Open Society Institute (OSI) on December 1-2, 2001. The purpose of the meeting was to accelerate progress in the international effort to make research articles in all academic fields freely available on the Internet. The participants represented many points of view, many academic disciplines, and many nations, and had experience with many of the ongoing initiatives that make up the open access movement". [4]

The Berlin declaration is a widely supported call for public availability of publically financed research results. The declaration was made during the Conference on Open Access to Knowledge in the Science and Humanities in Berlin, 20-22 October 2003, and 264 organizations have signed the declaration.

Librarians talk about two roads to Open Access:

- The Green Road to Open Access: Repositories
- The Golden Road to Open Access: Open Access journals

In the Green Road to Open Access scientific authors enter their articles into an electronic archive, the repository, at the university or in a discipline-oriented repository. This is a form of self-archiving but all the articles are freely available worldwide. For the Green Road libraries should offer an infrastructure in which this information can freely flow all over the world.

In the Golden Road an article is published in a peer-reviewed journal which is freely available worldwide. The underlying business models for this choice will not be discussed here but of course publication fees must be paid in another way (e.g. article processing charge). The University of Lund keeps a list of all peer-reviewed Open Access journals, the DOAJ Directory of Open Access Journals. [5] At the time of writing (June 2009) 4221 journals can be found in DOAJ.

[2] http://www.soros.org/openaccess
[3] http://oa.mpg.de/openaccess-berlin/berlindeclaration.html
[4] http://www.soros.org/openaccess/index.shtml)
[5] http://www.doaj.org/

A well known example of an Open Access directory is African Journals Online (AJOL). AJOL is the world's pre-eminent and largest collection of peer-reviewed, African-published scholarly journals.

Number of journals added to DOAJ for sub-Saharan Africa

Country	2002	2003	2004	2005	2006	2007	2008	2009
South Africa	0	3	3	0	1	1	4	2
Kenya	0	0	0	0	1	2	0	0
Tanzania	0	0	0	0	0	2	1	0
Uganda	0	0	0	0	0	3	0	0
Senegal	0	1	0	0	0	0	0	0
Ethiopia	0	0	0	0	0	1	0	0
Netherland	*1*	*5*	*2*	*6*	*5*	*4*	*5*	*6*

From: http://www.doaj.org/doaj?func=byCountry

Total number of journals in DOAJ for sub-Saharan Africa

Country	2002	2003	2004	2005	2006	2007	2008	2009
South Africa	0	3	6	6	7	8	12	14
Kenya	0	0	0	0	1	3	3	3
Tanzania	0	0	0	0	0	2	3	3
Uganda	0	0	0	0	0	3	3	3
Senegal	0	1	1	1	1	1	1	1
Ethiopia	0	0	0	0	0	1	1	1
Netherlands	*1*	*6*	*8*	*14*	*19*	*23*	*28*	*34*

From: http://www.doaj.org/doaj?func=byCountry

Open Access is very popular for two reasons:

1. The high prices of journal subscriptions and the fact that universities pay now three times for their academic output: through peer-review of their researchers, through subscription costs paid by the libraries and by paying faculty salaries;
2. Copyright restrictions for authors and licence restrictions enforced by the big powerful publishers.

In addition there is a more ethical issue: the results of research financed with public funds should be publicly available so everybody can benefit from them, not only those

who can afford the high subscription prices of the journals where the research results are published.

In the Netherlands 2009 is the year of Open Access and internationally there will be an Open Access Week in 2009, in 19th-23rd October. In Europe the European Commission supports access to scientific and scholarly information and encourages all recipients of EU subsidies to make published scientific articles available free to the public. The Seventh Framework Programme for Research and Technological Development, FP7, obliges researchers to make the results of subsidized research available via a digital repository. This is evidence of the European Commission's commitment to making the results of research carried out within FP7 available as widely and effectively as possible, with the aim of achieving optimum impact both inside and outside the world of science and scholarship.

In May 2009 a report was published about the costs and the benefits of research communication, and the Dutch situation was investigated. (Houghton, de Jonge, and Van Oploo, 2009). It was calculated that if all scientific journals (worldwide) were public domain available, it would save Dutch society €133 million per year. At present universities and polytechnics in the Netherlands pay millions for providing access to scientific publications for faculty and staff.

In the May 2009 study three forms of publishing are compared: subscription publishing, open access publishing (Gold Road) and self-archiving (Green Road/repositories). From the information in the report it becomes clear that the costs per article are lowest in Open Access Self-Archiving/ Repositories.

Case study: University of Buea-Cameroon
Background: brief history of the University of Buea Library in the face of training, research and outreach.

By 1977 there existed one university in Cameroon, the University of Yaoundé. This University was in principle bilingual, but predominantly English-speaking students in this institution were increasingly dissatisfied with the gross imbalance in favour of the French system of education, with lectures given mainly in the French language. The same imbalance was reflected in the library information resources and this contributed to mounting tension. In addition, student numbers kept increasing at a tremendous rate, from 7,000 in 1977 to 45,000 by 1991 leading to overcrowding in a facility with a capacity for 10,000 students.

It was in this atmosphere of inadequacies and dissatisfaction that the Cameroon government decided in 1992 to carry out general reforms in higher education through decree No. 92/74 of 13 April 1992. These reforms resulted in the creation of five new

state universities with the University of Buea as one of them, modelled after the English tradition of education. The objectives of these universities as spelt out by the decrees creating them included, among others, the mission to encourage, promote and carry out research in all fields of learning and human endeavour in order to enhance information literacy for lifelong learning.

These reforms, although well received, were soon to have their intended objectives abandoned, because the most acute period of economic depression immediately set in. The new universities and their libraries, which relied and continue to rely on government subventions, found it difficult to live up to standard expectations, leading to considerable staff turnover. Universities and their libraries have continued to exist against the backdrop of these difficulties.

Faced with this situation, university authorities tend to regard faculties as more important than libraries. Consequently, the relationship between the library and the university administration continues to be tense, with information repositories low on the scale of priorities. This is attributed to the laxity in national and institutional regulation and policies. The question with which the University of Buea has been grappling has been that of how to progress with building an institutional repository when the platform for information resources (the library) is not a priority to policy makers or to its mother institution. Are researchers willing to make input into the institutional repository if it does exist? Are the material and human resources required for the use of this repository affordable and available to the final users?

It is with the above preoccupations that the library administration decided to take the bull by the horns, to try to live up to expectations within the new information context, and in the face of a number of challenges. This followed the new university governance focused on reviewing and revising university programmes, research and information literacy for lifelong learning, in the bid to meet some of the Millennium Development Goals (MDGs).

It is important to note that the role of this service is gradually being recognized and accorded its appropriate position, through the University of Buea Library (UBLIB) proactive strategy to raise awareness of the strategic role it plays and continues to play in the teaching, learning (training), research and outreach activities of the university. This is justified in the activities described below with respect to the development of an institutional repository and digital facility as well as the expansion and equipment of the library building.

The need for an Institutional Repository at the University of Buea Library (UBLIB)

In 2005 a small project on a digital component for the library was presented by the UBLIB to the University administration, accompanied by a request for an increase in its budget. This was approved and in 2006 the Internet connection to the Library was extended to the area earmarked for the digital facility, with capacity for 20 network nodes for 20 computers, excluding personal laptops. The completion of the structure was followed by a subscription to 12 databases from EBSCOHOST which the University of Buea community is currently exploiting.

The successful completion of this project was followed in late 2007 by the presentation of a second project on an institutional repository (IR). This received the approval of the University administration and was followed by the creation of an ad hoc committee with representatives from faculties, research and academic services as well as the University IT centre and library members. The ad hoc committee was mandated to come up with a blue print. This committee also had to pay particular attention to issues of intellectual property rights and management software suitable for organizing, managing and, most important, disseminating information. A further important task was to identify qualified staff to manage this particular facility when it goes operational.

The first phase of this project began with the archiving of postgraduate theses produced by the faculties of the University of Buea. With gradual advocacy, it has been easy to get all graduate students and departments to submit soft (electronic) copies of their theses to the Library. Various steps are being taken to come to terms gradually with all authors of various works within the University community, so that they will permit soft copies of their work to be archived for storage and exploitation in the repository. There are great hopes that this will yield fruits. The same steps will be taken regarding works produced in other university institutions in Cameroon as well as from other related organs of society, internally and eventually externally. The idea here is to start small, taking one step at a time and expanding gradually as the funds become available in order to ensure functionality and effectiveness.

Motivation

The following, among other motivating factors, were behind the above projects:

- The recognized, pivotal, role played by Library services in providing support to the functions and intellectual development of the University;
- The need to develop more and more user-centred Library and information services, with the objective of enhancing information literacy for lifelong learning and for problem solving;
- Improvement and efficient provision and utilization of Library services;

- Help in reducing the difficulty, as a result of poverty, in students' inability to procure textbooks and other information resources needed for their academic work;
- Through the provision of electronic resources that can be accessed by many at the same time, reducing the problem of the Library's inability to acquire or subscribe to multiple copies of given core text titles of books and journals respectively;
- Developing the Library as a centre of excellence in the provision of quality information for teaching, learning, research and outreach information needs to the University of Buea, for sustainable national development and in meeting the Millennium Development Goals.

With great advances in Information and Communication Technologies (ICTs), most libraries are considering the feasibility of institutional repositories for their host institutions. Though institutional repositories offer great possibilities, associated technical and policy challenges can be intimidating, especially for institutions with limited resources. Worst still, is the poorly recognized status of the library (host to institutional repositories) in most institutions. This paper draws on the experience of the University of Buea Library in Cameroon and the challenges in the process of setting up and exploiting opportunities offered by institutional repositories.

The bulk of scholarly information and teaching material produced by the University of Buea exists primarily in print format and is limited when compared to the demand from users. Coupled with this is the unending debate amongst libraries, scholars and publishers about intellectual property (IP) rights. Should we bargain the growth of learning and knowledge transfer over IP issues? Many feel that there is more commercial interest exercised in the inappropriate control over published information resources, leading to a complicated argument over intellectual property rights. Should the fear of violating intellectual property rights be a stumbling block in the implementation of an institutional repository in the University of Buea? In addition there are technical and policy issues.

For the past two years, the Library, faculty members and University administrators of the University of Buea have been working on a blueprint proposed by the ad hoc committee set up by the Vice Chancellor. The expertise and experience of the British Council Library in Cameroon was used to carry out the first physical phase of the project. Customized furniture and connection to the University's Internet backbone have been realized and at the time when this paper is being written, a technical committee is receiving computers for the virtual library from a certified University supplier.

Challenges

A number of challenges have been militating against this process, including:

- Availability of adequate trained staff and infrastructure;
- Ensuring that there is continuous training while people are engaged in routine schedules;
- Being able to retain trained staff;
- Funding for training and retraining information and IT professionals, and keeping up with the fast-changing viable IT infrastructure;
- Grappling with issues of intellectual property rights as well as convincing authors to surrender their works for archiving, storage and exploitation in the repository;
- Problems of narrow bandwidth and electricity surges or power fluctuations;
- Lack of dedicated staff in the library sector.

One of the main tasks of the ad hoc committee was to identify the resources, both technical and human, that were necessary to make the repository functional. Given the budgetary constraints faced by similar institutions in this part of the world, it was not an easy task for the committee to come up with a list of resources that could be covered by the available budget. The solution lay in the choice of Open Archive software which included, DSpace and EPrints.

Another critical issue was the problem of broadband Internet. With a bandwidth of 256Kbps/1Mbps (most of which is used by the University IT centre for cyber services), how comfortable will online digital resource-sharing be? The answer to this preoccupation is blowing in the wind as librarians seek other funding solutions to increase the bandwidth. This will slow down communication speed but the IR must nevertheless be up and running.

In relation to the human resource component, the Erasmus Mundus External Cooperation Window, sponsored by the European Union, offered an opportunity to reinforce local capacity in various fields including the management of institutional repositories. Based on the need for human resource skills in managing the repository and coupled with advocacy endeavours embarked upon by the Librarian of the University, a Library IT support staff was sent for a two-months' staff exchange in the Library of the International Institute for Geosciences and Earth Observation (ITC) in the Netherlands. It is expected that knowledge acquired in the ITC by this staff would be shared with other staff as part of the strategy to build and run the University of Buea Institutional Repository (UBIR).

However, a few issues still remain unresolved: where will funding come from to increase the broadband Internet connection which is so essential for such a facility to function? While searching for a funding solution to the on-campus Internet problem, the available e-resources can be accessed off campus from any terminal with an Internet connection by use of a login and password provided by the University of Buea Library. This is

possible because at the moment no proxy authentication is required. This offers the best solution to the problem of poor Internet connectivity on campus in the mean time and it motivates users, since they can get to know more about the importance and use of digital information resources and IRs. The problem of random electricity surges indicates the need for a backup electrical plant; a solution to this problem lies in automatic power backup schemes and the University of Buea has three heavy-duty standby generators which automatically take over power supply in the event of a power surge.

Shall we continue to use open source software, which offers limited functionalities, with the ever-growing underlying technology and increasing needs of users? During the staff exchange period, the UB Library IT support staff acquired experience in the use of the ADLIB integrated library management software. It is worth noting that the experience with ADLIB was very enriching and brought out many practicalities about IRs which will be very useful to the library user in UB.

This leads us to another pressing issue, which has to do with the difficulty in convincing and educating library users about the importance, advantages and use of IRs in particular and digital information resources in general. (Users' access to the Internet in most cases is limited to the use of electronic mail in the form of email and instant message services, IM). In view of this, the University Librarian and the systems service of the Library first embarked on an on-campus sensitization campaign. During this operation, posters informing faculty members and students of the availability of e-resources in the University Library were posted on campus, follow-up memoranda were sent to faculty and academic programme heads and radio announcements were sent to the campus radio. At the Library level, an e-resource request box is available on the information desk for users to post written queries relating to e-resources. Users who come requesting for e-resources are attended to by a member of staff qualified for the purpose. The systems service, with the support and supervision of the University Librarian, has been organizing in-house training to build the capacity of staff in the use of ICTs which has become inevitable in the information dissemination process.

Conclusions

Librarians should be ready to innovate and take initiatives, show policy makers what they can do with the little they have, take the library to the user and the policymakers and always remember to start small and think big. These small initiatives could serve as motivation for sponsors such as the government and local administration. To academic institutions of higher learning and to policymakers, we wish to recommend a different approach to the choice of priorities. Projects with long-term effects and solutions for poverty alleviation should be placed as top priorities. More funds should be provided for the realization of such projects and close supervision should be carried out until a project is completed. Most projects never get to completion, not because of lack of

funds but simply because they lack a supervisory and follow-up component. Libraries occupy a central place in the education process.

Universities should support the idea that providing open access to their research output is important for the university as a whole and for the individual researcher. Researchers must be encouraged to deposit their materials into repositories. At the same time universities in developing countries can make use of the repositories built by universities in many other countries: a recent study has shown that the costs per article are least in Open Access Self Archiving/Repositories. This will force universities to support Institutional Repositories and Open Access.

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