

CREATING DIGITAL LIBRARY COLLECTIONS: PROSPECTS AND CHALLENGES FOR LIBRARIES IN MALAWI

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Presented at the 2nd International Conference on African Digital Libraries and Archives (ICADLA-2), University of Witwatersrand, Johannesburg, South Africa, 14th – 18th November, 2011

Abstract

Since 2008 Malawi Libraries have created more than ten digital library collections of local publications such as dissertations, theses, reports, scientific papers, speeches by politicians and newspaper articles on HIV/AIDS and gender issues. Most publications included were not "born digital." This paper views digitization as including the processes of scanning and creation of collections using Open source software such as Greenstone, DSpace, Endnote and Electronic Records and Management System. In Malawi Libraries digitization started after some librarians had attended various training workshops within and outside the country. The projects still face many challenges including: inadequate expertise, use of inadequate equipment, lack of OCR software, unfavourable copyright laws, non-interoperability resulting from use of different content software, thus hampering inter-institutional exchange of records. Some collections are not yet accessible online. It is worth noting however, that constant progress is being made, and some libraries are now acquiring appropriate equipment and software. The Malawi Copyright Act of 1989 is also being revised to accommodate electronic documents. Librarians are gaining expertise mostly through hands-on training.

Introduction

In an effort to increase the visibility of Malawi content online and ensure preservation and conservation of printed local information for posterity, libraries and information centres in Malawi are digitizing their collections to create digital libraries. The work is however dogged by a number of challenges. Some of the challenges are: lack of proper digitization equipment; inadequate expertise; getting copyright permission from creators of works; and delayed online accessibility. This paper reviews the state of digitization in libraries and information centres in Malawi, discusses the challenges faced and suggests some solutions.

Digital library collections

A digital library is an organised and focused collection of digital objects, including text, images, video and audio, along with methods for access, retrieval, and selection, creation, organisation, maintenance and sharing of the collection. Digital libraries enable the creation, organisation,

maintenance, management, access to and sharing and preservation of digital document collections.

Historically, digital libraries have proved to be of benefit to libraries. For instance, digital libraries enable users to access and work directly with electronic documents. This approach offers several significant benefits: access any time and anywhere; improved and wider access; new forms of access; improved resource sharing; and reliable preservation.

Today digital library applications are implemented in many areas, including education, science, culture, development, health and governance. The creation and maintenance of digital libraries share several common functional components: document selection and acquisition; organisation and loading; indexing and storage; a repository; search and retrieval; a digital library website; and network connectivity. Metadata assigned to digital documents is a key component as this enables effective resource discovery. Creating a digital library requires careful planning, followed by the implementation and management of the collection.

Digital library status in Africa

Over the years there has been steady progress in demand for electronic access to electronic information by researchers, academics, scholars and policy makers. Institutions such as Electronic Information for Libraries ([eIFL](#)), International Network for the Availability of Scientific Publications ([INASP](#)), (Food and Agriculture Organization ([FAO](#)), [Research4Life](#), (International Aquatic and Science Libraries and Information Centers([IAMSLIC](#)) and Cornell University with programmes or electronic resources such as [HINARI](#), [AGORA](#), [TEEAL](#), [PERii](#), Aquatic Commons and [OARE](#), have assisted a number of institutions in Africa to easily access electronic information by either making the electronic resources available free of charge or at a heavily subsidized cost. Rosenberg states that:

Enormous progress has been made in the five years to ensure that staff and students in universities in Africa can access the growing quantities of information resource now produced in electronic format. Support has been provided in setting up the necessary networked infrastructure and providing the requisite hardware and software. Negotiation with publishers has resulted in journals and databases made available free or at heavily discounted prices through programmes like AGORA, eIFL, HINARI, and PERI (Rosenberg 2004: 290)

Notable progress has also been registered in increasing African content on the web including preservation and conservation of local materials or cultural heritage through the creation of digital libraries. Institutions in Africa have also taken advantage of the availability of open access software such as Greenstone, DSpace and E-Print to create digital libraries or repositories. Iwhiwhu and Eyekpegaha, writing about digitization of Nigeria university libraries, stated that:

Digital libraries are a way of making educational and research data and information available to faculty, researchers, students and others at the institutions and worldwide. Indeed, the growth of virtual libraries, digital libraries, online databases and library and information networks has transformed the traditional ways of collecting, storing, processing and accessing information'. They continued to write that 'in Nigeria, a number of libraries and information centres, particularly academic are initiating digital library projects including databases and e-journals. There is the need to urgently digitize library resources and cultural heritage of our country to preserve them for posterity. (Iwhiwhu & Eyekpegha 2008: 529)

Similarly, in South Africa the Digital Innovation South Africa (DISA) project has built a continual digital resource through content based on the initiative of local scholars and dovetailing with the discussion of what it means to constitute a serialized archive of the liberation struggle. (Pickover 2011: 192)

Institutions such as eIFL, INASP, ITOCA, the University of Waikato, IFLA and DISA have assisted in introducing free software; training of library staff on the use of the software; training users about e-resources; provision of equipment such as computers and scanners; and provision of Internet connectivity. These efforts have assisted libraries and information services in Africa to increase African content online and its utilization.

The status of Malawi libraries today

Many types of library are found in Malawi. These include academic, school, public and special libraries, mainly as integral parts of institutions such as universities, research stations, government departments, statutory organisations, non-government organisations, and schools (both public and private). Their levels of funding, collections, staffing and numbers of users vary greatly from one library to another. Most libraries are headed by well-trained staff and almost all run automated operations. Malawi libraries have also embraced the use of computers in providing services to their users.

Libraries and information services in Malawi have benefitted from some of the above-mentioned programmes and opportunities. Through the Malawi Library and Information Consortium (MALICO) libraries and information services are able to subscribe to a number of fee-paying e-resources and register for free resources on behalf of their users. Working with some institutions, Malawi libraries and information services have trained some staff in digitization, created some digital libraries and provided connectivity to their users, as in other African countries

Digital library collections in Malawi

Some libraries in Malawi began creating digital library collections following a successful workshop on the use of Greenstone, an open source software suite for building and distributing

digital library collections. The workshop was held at Bunda College of Agriculture Library, just outside Lilongwe, in November 2007. The 23 participants of this workshop came from major libraries and information centres, namely Bunda College of Agriculture, Chancellor College, Kamuzu College of Nursing, College of Medicine, Malawi Polytechnic (all of the University of Malawi), the National Library Services, the National Research Council of Malawi, the National Archives of Malawi, the Reserve Bank of Malawi, and Mzuzu University. Present were also three participants from Mozambique, Zambia and Tanzania. Facilitators were Renate Morgenstern and Patricia Liebetrau from the University of Namibia (UNAM) and DISA, respectively. The workshop introduced participants to digital libraries, the Greenstone software, creating digital libraries, and the enhanced Greenstone users' network. Participants also discussed planning for their institutional digital libraries.

Apart from this workshop, some librarians also attended workshops, within and outside Malawi, on digitization in general and on the use of other related software suites such as DSpace, the Electronic Records and Management System, and Endnote.

The role of the African Digital Library Support Network

Malawi is a member of African Digital Library Support Network (ADLSN) which was formerly Southern African Greenstone Support Network. ADLSN supports Greenstone and other free-open source systems. During 2009-2010 EIFL-FOSS facilitated an ADLSN project, generously supported by the Koha Foundation, which aimed to:

- strengthen the existing national centres and networks in Southern Africa through centre-specific investments and activities;
- start longer term support of other African countries' use of Greenstone through the expertise located in existing national centres through an array of means ranging from remote assistance to on-site visits, as well as facilitating locally organized training;
- extend the network by facilitating candidate national centres in organizing start-up training for their countries along with neighbours, and setting up support;
- actively seek the network's expertise and support to grow the numbers of operational Greenstone digital collections, benefiting both creation of and access to African local content; and
- work towards achieving a self-reliant and self-sufficient network of national centres in a broad landscape of libraries, archives and museums by 2010.

Under ADLSN, some Malawi libraries have enhanced their skills in creation and management of digital libraries through training workshops and sharing of technical information, about Greenstone software in particular and digitization in general. These efforts have resulted in some institutions creating institutional digital library collections, notable amongst which are Bunda College of Agriculture Library, Mzuzu University and the College of Medicine at the University of Malawi.

Bunda College of Agriculture Library has created four collections: the Undergraduate Students (BSc) Degree Projects; the Malawiana Collection; the Past Examination Papers collection; and the Theses and Dissertation Collection (see FIGURE 1).

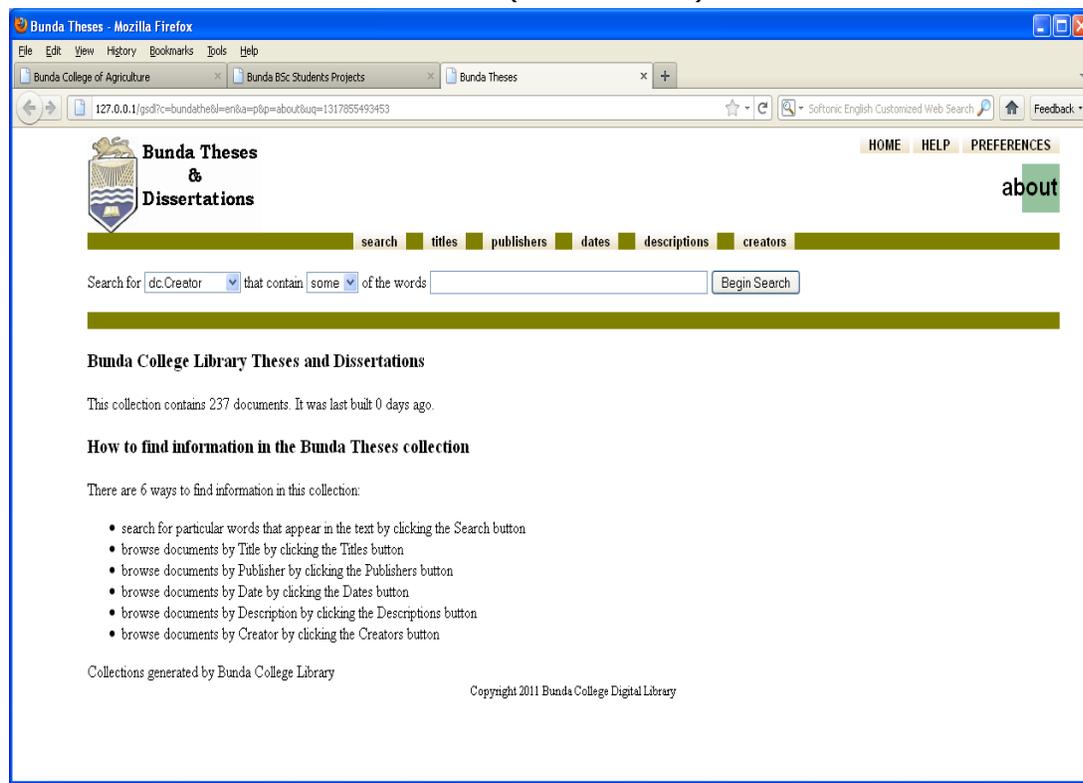


Figure 1: Homepage of Theses and Dissertations collection, Bunda College Library

Mzuzu University (a new university in north-central Malawi, created in 1997/99; Library and Information Science is one of its teaching courses) has developed three digital collections: a theses collection; a student dissertations collection; and local scientific papers. The National Archives of Malawi in Zomba has adopted European Union-recommended software, the Electronic Records and Management System. With this software an interesting collection of Malawi presidential speeches has been created, so far comprising over 3000 pages, to showcase Malawi's political heritage.

The College of Medicine at the University of Malawi has created two digital collections, namely HIV/AIDS, and Reproductive Health, whilst the National Library Services (NLS) has created two collections of scanned articles from local daily newspapers on the subjects of HIV/AIDS and gender issues.

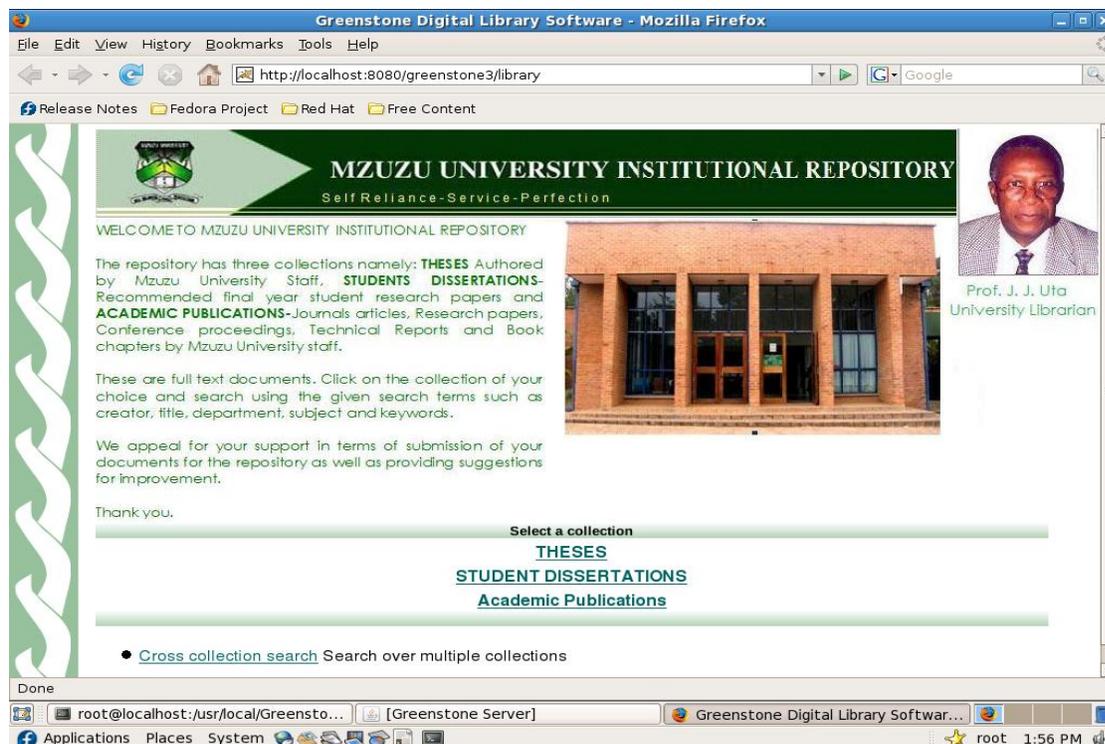


Figure 2: Home Page for Mzuzu University Library Collections

A number of these institutions have used Greenstone in creating most of these collections, although a few organisations have used DSpace, Endnote and the Electronic Records and Management System. Unfortunately all of these collections are currently available only via institutional intranets. It is the intention of the institutions to put the collections online. Bunda College of Agriculture and National Archives of Malawi for instance have just acquired new servers to mount the collections. Other institutions are also making efforts to expose their collections online. It is envisaged that before the end of 2011 most of the collections will be available online

Intended benefits of the collections have been significant. They exist mainly to assist users based in specific libraries and information centres, to access local information in an electronic format. The collections at Bunda College Library have experienced overwhelming usage by staff and students alike.

In a case study of Bunda College of Agriculture Greenstone Digital Library, Majawa (2011) found that 67.5% of undergraduate students, 75% of postgraduate students and 82% of academic staff use or have used the digital library collections. The same study reflected that 45% and 38.5% of undergraduate students find the collections respectively "very useful" and "useful"; 40% and 60% postgraduate students find the collections respectively "very useful" and "useful", and 17.5% and 75% of academic staff responded that the collections were respectively "very useful" and "useful".

The collections have simplified the work of librarians in assisting library users in searching and retrieving local information. The success stories have been the same in the other institutions. Table 1 below is a list of digital library collections created by libraries and information centres in Malawi.

Institution	Collections on	Software used	Accessible on
Bunda College	<ul style="list-style-type: none"> • Students Degree (BSc) Projects (248 documents) • Malawiana Collection (34 documents); • Past Exam Papers (379 documents) • Theses and Dissertation (208 documents) 	Greenstone	Intranet and CD-ROMs
Chancellor College	<ul style="list-style-type: none"> • Theses and Dissertations 	Endnote	Intranet
College of Medicine	<ul style="list-style-type: none"> • Local publications on HIV and AIDS, • Local publications on Reproductive Health, 	Greenstone	Intranet
Mzuzu University	<ul style="list-style-type: none"> • Theses and Dissertation • Student dissertations • Local scientific papers 	Greenstone	Intranet
National Archives	<ul style="list-style-type: none"> • Presidential speeches 	Electronic Records and Management System	Intranet
National Library Services	Scanned articles from local daily newspapers on: <ul style="list-style-type: none"> • HIV/AIDS • Gender issues 	Greenstone	Intranet

Table 1: list of digital library collections created by libraries and information centres in malawi

The process of creating the collections had the support of respective institutional managements. The Bunda College Librarian presented the proposal to a committee of heads and deans before collections were created. The intention was to get the support of the College Management and to allow the Library to digitize the local collections, most of which contain publications created by the College staff, researchers and students. The approach was the same at Mzuzu University

Library when it embarked on the digitization process, and Management endorsed the project. At National Archives, Management is part of the digitization project, which is supported with funding from the European Union

Challenges in the creation of Digital Library collections in Malawi

There are a number of challenges which Libraries and information centres have encountered in the creation and use of digital library collections.

The first challenge is the lack of essential equipment such as scanners and servers with adequate storage capacity. Since most of the documents to be digitized are in printed form, there is great need to have them scanned and saved in electronic format. However, most institutions do not have appropriate scanners or servers. Those institutions that do happen to have scanners use them for office purposes. Among the institutions, only the College of Medicine (COM) has acquired a heavy duty scanner (see Figure 3).

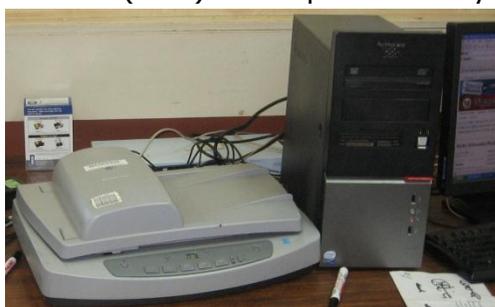


Figure 3:
An office scanner based at Bunda College



Figure 4:
A heavy duty scanner at COM

A scanner and OCR (optical character recognition) software (ABBYY Fine Reader Ver. 9.0 professional edition) were purchased for use by all those institutions that had no scanning equipment. This scanner and OCR software are housed at Bunda College of Agriculture Library. However, the scanner and software are rarely used, perhaps in part because of the distances involved to travel to Bunda from other institutions, and the need to improve coordination and publicity among potential users of the equipment about the benefits of digitization. Alternatively, the scanner could be rotated among the institutions, but there would be a considerable risk of damage through mishandling. In addition, a number of institutions have no servers at all whilst others have servers with inadequate capacity for saving the scanned documents.

A further major challenge is lack of expertise among library staff in the creation of digital library collections. Whilst some librarians have attended workshops on digital library creation, there are still certain areas in which they need to gain some expertise, such as scanning of printed documents into pdf (portable document format). In certain cases the electronic documents are very big, and therefore take up a great deal of server space. Also lacking is expertise for

customization of digital library collections by inserting metadata, applying OCR and loading the collections online.

Lack of ICT skills is not only limited to Malawi. Rosenberg has commented that:

The lack of or retention of trained library was considered by two thirds of the libraries as a challenge equal to that of lack of funding. Although each library had at least one member of staff who had attended an ICT-related workshop, this had not necessarily been relevant to the needs of the library at the time. And overall it was felt that skills in e-resources management, e-services development, full text digitization, and teaching skills were particularly lacking". (Rosenberg 2004: 291)

A rather different problem is the fact that the introduction of different versions of digitization software in Malawi has created challenges, especially in the exchange of documents between institutions. Some librarians in Malawi have been introduced to at least three different software packages and levels of technical expertise vary amongst librarians using different software.

Institutional staff turnover has been a problem. Some librarians who participated in various workshops on digitization have moved on, and are thus no longer working in their previous institutions, leaving digitization activities stalled. Those librarians who have moved on have done so looking for "greener pastures".

The plan was for those who attended the workshops to train others at their respective institutions, but it appears that some workshop participants kept the knowledge and skills gained to themselves; hence the stagnation of digitization projects in some institutions. A solution to the problem could be training of more librarians but a lack of finances for this might be a further problem; earlier training and workshops were funded by international organizations such as eiFL and INASP.

An additional issue is the need to secure copyright permissions. Digitization of some documents may require permission from the creators of these documents, and such procedures may be cumbersome and time-consuming. Yet Malawi's Copyright Act of 1989 is silent on electronic information and librarians are sometimes in a dilemma as to whether or not they should seek permission from authors, editors, illustrators and similarly involved persons before a document is included in a digital library collection. Plans are however underway to review the Malawi Copyright Act and librarians are involved in the revision of the Act. They hope that such revisions will clarify electronic aspects of the law.

Finally, almost all these first generation Malawi digital library collections are currently only accessible on the respective institutional intranets. This means that the collections are not accessible beyond a particular institution, which restricts the advantages to that institution's students and researchers. Some libraries such as Bunda College of Agriculture have however

taken the initiative to also make their collections available on CD-ROMs, which are distributed to other institutions. Plans are underway to have these collections made accessible online.

Conclusions

Despite all these challenges, what is important is that some libraries and information centres in Malawi have been able to create useful digital library collections. For example, the digitization of examination papers will save students much time, whilst online theses will enhance research. Some are on the right path towards the realization of increasing Malawi content online through the creation of digital library collections. These collections have assisted in the preservation and conservation of rare or unique documents for current use by students and academics and also for posterity, and will eventually make Malawi documents visible online. Given the necessary resources, future developments could include broadening the subject scope of content to be digitized and widening access to these significant scholarly collections.

The first step towards broadening the subject scope of content digital library collections and widening their usage in Malawi is to have printed publications scanned and made available online. As already stated above, most Malawi publications are in printed form and scanning these publications requires heavy duty scanners like the one available at the College of Medicine Library. Institutions are supposed to invest more in equipment to be used for the creation of digital collections. Librarians should also write proposals seeking funding for the equipment, which could be shared amongst those without it. Likewise, scanned documents or collections could be shared amongst libraries.

Some libraries are making efforts to widen access to digital library collections. They have acquired new equipment such as servers and scanners and it is likely that before the end of 2011, some collections will be accessible online.

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