

AFRICAN INSTITUTIONAL REPOSITORIES AS CONTRIBUTORS TO GLOBAL INFORMATION: A SOUTH AFRICAN CASE STUDY

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1. Introduction

Though relatively recent developments in the Information Science world, Open Access institutional repositories in the developed world have already become an entrenched part of available information sources in an academic library. The situation in the developing world, and specifically Africa is, however, far from ideal, and very few academic institutions have so far taken up the challenge of making available their internally stored research output to the global market. Other than challenges such as lack of ICT infrastructure, paucity of funds, lack of human capacity and skills to establish and maintain the repositories, African researchers by nature are not too keen to share their research with foreigners for fear that the information will be “stolen” and used by outside sources (Ford 2005). This negatively impacts on self-archiving by researchers which is the ultimate aim of institutional repositories.

South Africa is the leading country in Africa in terms of established repositories. Currently 22 of the 54 African repositories are operational in established in South Africa. Some of these repositories have been able to overcome many of the challenges mentioned and are very successful in making available research output to the world. However, some of the smaller universities have to deal with huge challenges to stay operational.

The aim of the paper is to present a case study of one such university, the University of Zululand, which is a relatively small rural university situated in the north east coastal region of South Africa. Despite many challenges the repository has been established and global access is provided by way of harvesters such as openDOAR. Currently the content consists mainly of ETDs, but future developments include digitization of test and exam papers, reports and also to promote self-archiving among academic staff.

Since the establishment of this repository user statistics there has been a dramatic increase in utilization of the information sources and sources have been accessed from as far afield as Russia and China.

2. Institutional Repositories in South Africa

South African University Libraries are currently the leader among African Universities in terms of the development of Institutional Repositories growing from a total of 14 registered and active repositories (Smith 2009¹) to the current 23 repositories. The Council for Scientific Research and Industrial Research (CSIR), though not a university, but a major research institute with a wealth of research documentation available, are also forms part of the development of South African institutional repositories.

The first steps towards electronic submission, storage and dissemination of theses and dissertations in the country date back to the early 1990's (Lor 2005). In 2002 the South African government published a national research and development strategy for South Africa, inviting input from all stakeholders concerned with the challenges posed by increasing economic growth and the improvement of the quality of life for all South Africans. This resulted in the establishment of the South African Research Information Services (SARIS) Project with as its aim of providing a framework for e-research services to all South African researchers (van Deventer and Pienaar 2008). The initial proposal was for a nationally co-ordinated system funded initially by joint funding from all

¹ Smith, I. E-mail communication 20 March 2009

participating institutions, but eventually funded by money generated from those who used the system. This, however, soon proved to be an ideal in the distant future and this formed the impetus for the development of individual repositories. In this regard eIFL (electronic Information for Libraries) and the Mellon Foundation proved of valuable assistance. Despite the fact that the initial drives were executed in isolation the scene changed in 2007 when a mailing list connecting all the existing African and South African repositories, were initiated, whereby common interests could be shared (Van Deventer and Pienaar 2008). The first repository, that of the University of Pretoria, was established in 2000, concentrating mainly on theses and dissertations. In 2006 they expanded their sources to include all publication output from the university as well as digitized historical and archival materials donated to the university. The other universities followed their example and in most cases firstly digitized theses and dissertations before progressing to other information sources available (Van Deventer and Pienaar 2008; Nkosi 2008; Van der Merwe & Knoetze 2008; Olivier 2007).

The development of the University of Zululand library repository is one of the latest additions to the growing list of repositories and its development will be discussed in detail in the following sections.

Although this project is still in the early stages of implementation, valuable lessons were learnt that should be shared with Universities to assist with the unique challenges of the rural university environment.

3. The University of Zululand

The University of Zululand is a rural based university on the east coast of the KwaZulu/Natal province. With the nearest other university 160 kilometers away this institution caters mainly for rural school leavers from the whole of the northern part of KwaZuluNatal, as well as from neighbouring countries such as Swaziland, Lesotho and Botswana. It also attracts a relatively large number of students and researchers from other African countries. Its isolated geographical position, poses its own unique challenges in terms of information access and dissemination of own published content to a wider clientele.

As its mission the university strives to generate knowledge through research, provide relevant education in order to produce knowledgeable graduates. As mentioned earlier the remoteness of the university location creates its own challenges to students, academics and researchers alike as physical access to information sources are not always as readily available as in metropolitan areas. Though the University provides unrestricted access to the Internet to all researchers and academics, and restricted access to students, and have a well-equipped library on campus, these sources are not always able to provide in the quest for materials of a local nature that can be used to address problems and issues inherent to the area. A major problem in this regard is the constraint of an ineffectual Internet bandwidth, prohibiting efficient access to web sources such as databases.

The mission of the library on campus is to be an integral part of teaching, learning and research support by offering quality information services and resources to students, academics and staff members. To attain this mission the library promotes access to information, provide information literacy training and collect and maintain a relevant and balanced stock of information resources. A major part of the existing collection consists of the Unizulu collection which is a special collection of information resources with local content and consists among others of a total of 3300 bound copies of thesis and dissertation of Masters and Doctoral research done at the University. A significant percentage of research done at the university inherently reflects information and knowledge of Zululand as research topics concentrating on issues and subject fields from the area. The collection also houses several policy documents, minutes of meetings and historical Zululand documents.

Prior to the development of the IR the collection was only available in hard copy, which was used extensively by students and researchers alike. Though research output at the University of Zululand is not that high in relation to other South African universities the available records have been well used locally. However, the collection shared the same fate as those of other African University research collections in that as (Anbu 2006), aptly states: "Apart from the research, the

visibility of the African scholarship is also kept to the minimum, mainly because of access and publishing inabilities”.

4. The Unizulu Institutional Repository Project

The decision to develop an institutional repository on campus was taken in 2007. In October 2008 a steering committee to plan and implement the project was established. The initial committee consisted of the Deputy Director of the Library who is also the chair person, two representatives of the Department of Library Science, the ICT Department, a senior information librarian, a library assistant and a technician. The importance of having a representative of the Research committee on the committee was soon realised and a member of this committee was co-opted.

To reach the aim of the repository to make available existing and future research with local content information to as broad as possible user base, a three phased project plan with flexible time lines stretching over three years was drafted. (see fig. 1). Phase one, in accordance with the development of all IRs globally, concentrated on the technical setup of the system. The scanning of all existing hard copy theses and dissertation was also implemented. Phase two, which is currently in operation, concentrates on recently completed Masters and Doctoral theses, as well as examination papers, with their accompanying metadata records. This is to be linked to the OPAC catalogue through metadata editing. In the last phase the Unizulu Art Collection, the Indigenous Knowledge Resources, as well as all research articles published by staff and researchers affiliated to the campus, will be added. Both phases two and three will be ongoing processes to accommodate for future deposits.

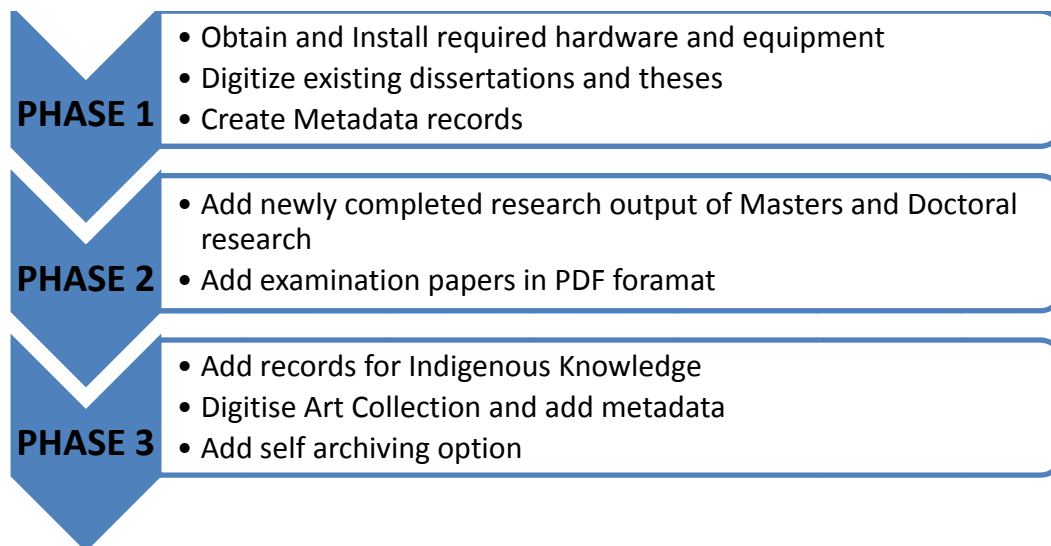


Fig.1: Phased approach of the Unizulu IR project

During phase one decisions as to the most appropriate hardware and software were taken. In terms of hardware an IBM 3400, with 8 Mg storage space and a scanner with optical recognition capabilities were acquired. Since most of the initial content to be digitized was mainly text based, a decision was taken to require that all the files be stored in PDF format so as to prevent alterations to the original content. For the implementation of phase three which contains content which is mainly image based, a decision is still pending as to the preferred file format. The current restriction to a very specific format is contrary to many other repositories which provides scope for a wider selection of formats that can be used to deposit content (Digital preservation through using DSpace open source software: a case study n.d.; Tjek 2005). The Draft policy document, however, states that other formats will also be used should content other than print be introduced.

To achieve the aim of providing access to local content sources, both to local and global users the decision right from the onset was to follow the open access route. Other than being the most affordable option, a major contributing factor supporting this choice was the fact that local universities which have already implemented open access institutional repositories was extremely supportive in providing guidance and practical support. DSpace was the logical choice in terms

of software as it was already used by most of the South African institutional repositories, which found its functionality adequate to support storing, retrieval and access provision. Maintenance of the system is currently supported through a systems technician supporting the esAL (Eastern Seaboard) Consortium, consisting of Unizulu, Mangosuthu Technikon (Durban) and DUT (Durban University of Technology).

The decision not to act as an institutional archive implies that policy documents and other administrative documents will be excluded. Currently the emphasis is on making available research results based on local research activities to the university community and the broader research community. The primary objective is to share the value of local research and local content with researchers, and not to be an administrative tool for archiving. Though the current Unizulu collection houses several administrative documents it will, therefore, be excluded from the digitization project.

According to the draft policy developed by the library governing the establishment, governance and maintenance of the IR, meta-data editors will be responsible for adding and describing the meta-data according to international standards. Meta data cataloguing proved a challenge, as this is a new field of expertise required from staff members who are not in possession of the required skills or resources to adequately and correctly describe the materials for easy retrieval. The situation was addressed by dedicating a specific staff member to the position as metadata cataloguer and intensive training was done. Quality control checks are still being done on a regular basis to ensure quality control and reliable retrieval. To ease the workload until more staff can be dedicated to the unit the emphasis is currently only on adding new research documents, while retrospective digitization will be resumed as soon as the situation has stabilized.

The Draft policy document does not state explicit preservation measures, other than indicating that “the university may transfer the information to another medium for access and preservation” In terms of the permanence of records kept in the database material will be kept permanently and only be deleted once the information content is found to be inaccurate. This, however, will not be done

without prior consultation and approval by the steering committee and the researcher concerned.

An interesting dilemma presented itself in that some departments expressed severe reservation about the quality of some of the research reports currently housed in the Uzulu collection and requested that a moratorium on its digitization and open access be put in place. A solution to this problem of content quality control has not yet been found but the documents in questions are currently not made available on the open access system until such time as a solution can be found.

To overcome the reluctance of researchers to entrust their research results to the library and allow publication of their work on the system, the system was demonstrated to members of the local community, as well as the management and Senate members to gain their support. Several marketing initiatives were launched such as addressing the academics during lunch hour research meetings, invitations to attend user training in the library, and sensitizing staff via e-mails concerning the existence of the repository and the advantages that it can have in terms of exposure to the wider research community and the provision of a solution to preserving materials for posterity. Unfortunately, the uptake concerning self-archiving activities has not been very positive.

In order to avoid all the pitfalls of copyright, the project is currently only concentrating on the areas where copy right is not in dispute i.e. that of thesis and dissertations as it belongs to the university. At this stage the project has 260 dissertations and theses digitized and accessible online. The access and usage statistics show huge interest and is a promising indicator for the future relevance and growth of the repository.

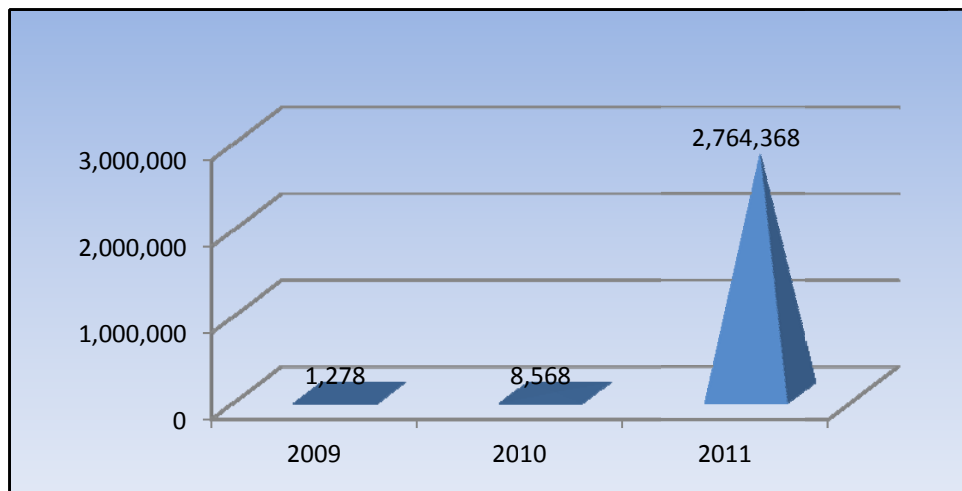


Fig. 2 Comparative per annum usage statistics 2009-2011

5. The Unizulu IR future: Short and medium term planning.

The first phase of implementation of the Unizulu IR was a success. The completion of the second phase, rolling out of the third phase and further developments will be crucial for the long term effectiveness of the repository.

The short term needs of the IR users will have to be weighed against long term preservation plans. Sustainability in the long term is currently a mayor issue. Although the Unizulu IR project initially benefited from the Andrew Mellon Foundation for startup funding, the long term strategy will have to depend on operational funds for contingency.

In order to plan for the future the initial usage statistics provided important information and indicators. Usage statistics on the Unizulu IR database when compared to the statistics of manual use shows an increase of 110%. The Unizulu repository is registered with the aggregator OpenDoar, and overseas usage of the database makes up for 5% of overall use of the database. This is a clear indication that digitized IR repositories do indeed enhance access to the global research community. Researchers from UK have for example on 3 separate occasions requested contact details of local researchers for further discussions.

Apart from formal research documents, other resources with local content such as exam papers, local news and copies of seminar presentations are future information objects that will be digitized and added in the later phases of the project.

Unizulu has a rare indigenous art collection which is housed off campus in a climate controlled storage facility. The unfavorable environmental factors at Unizulu, such as high humidity and heat, make housing these types of arte facts not feasible. DSpace software offers the ideal opportunity to avail the collection electronically to the Zululand community as well as sharing it with the global information society, and this collection has been earmarked for digitizing in the very near future.

All universities in South Africa are compelled to be involved in their immediate communities. This brings the indigenous knowledge systems (IKS), of the area to the fore. (Mutula 2008), views IKS as part of local content along with community information. The IR environment leans itself very well towards accommodating both formal research and IKS data. DSpace software offers the ideal opportunity to avail the collection electronically to the Zululand community as well as sharing with the global information society, and this collection has also been earmarked for digitization in the very near future.

As the project develops, needs of the users are re-addressed. It is envisaged to expand and give access to research articles, conference proceedings, presentations, and to form links with parallel projects such as that initiated by the Indigenous Knowledge Centre at Unizulu.

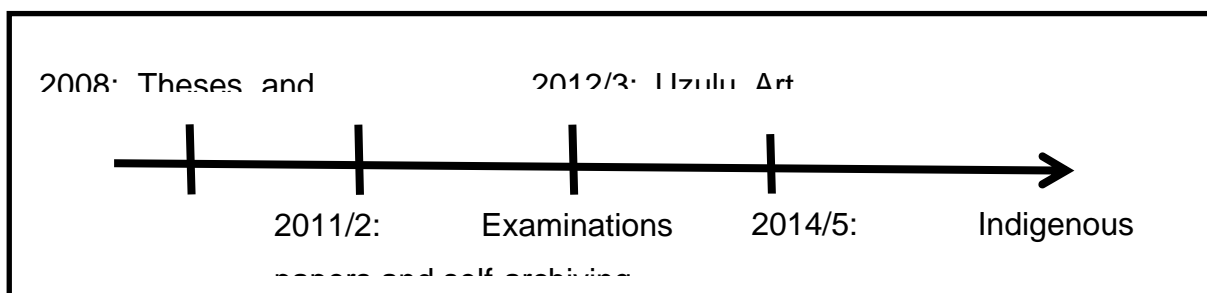


Fig. 3: Timeline for Uzulu IR development

Administration and procedures need to be refined to accommodate quality control measures, active participation by Departments and copy right issues. Many of these developments involve cooperation and development in neighboring departments such as quality control and legal services.

6. Challenges impacting on the success of the IR

The challenges that impact on the longer term success of the IR in the case of the Unizulu UZSpace project can be grouped into three distinct groupings namely institutional challenges, user group challenges and lastly IR system's challenges. Here institutional challenges refer to those challenges that are related to the university's policies and procedures outside of the library control, but having an impact or intersecting with the library and then more specifically the IR project's functioning and implementation. User group challenges are those challenges that the committee identified with users and potential users which in this case include the researchers, students as well as external users. The challenges faced on a systems or project management level are those typically explained in literature by information- and information system's management processes.

Examples that the IR project faced in terms of these groupings are:

Institutional Challenges

- The absence of a dedicated copyright officer in both the library as well as the university at large;
- Changing university policies and procedures to ensure that the library gets a copy in the correct format of the research;
- Corporate/institutional culture resistance to change;
- Lack of institutional knowledge management strategies;
- Poor departmental procedural alignment;
- Working in silo's and lack of aligning peripheral projects such as RIMS;
- Lack of contingency and support when decision makers change office

User Group Challenges

- Reluctance of researchers to share research or entrust the library with their research;
- Plagiarism problems and quality questions;
- Involvement of academic departments in processing information;
- Resistance to self-archive;
- Addressing concerns of departments regarding quality and integrity of research results

IR System and project management challenges

- General skills - and staff shortages/contingencies among the library staff;
- Funding contingencies for phase two and further phases;
- The impending disbanding of the esAL Consortium and thereby the loss of a systems administrator;
- Identifying preferred cataloguing formats of digitized research documents;
- The need for a separate server as well as an additional backup server;
- Specifications in terms of size of a server and PC;
- What additional equipment in terms of printers and scanners are needed;
- How to establish open access in the UniZulu IT environment;
- The need to learn basic HTML commands for DSpace community descriptions;
- Accomplishing open access and not compromising security;
- The implication of too much customization of DSpace.

7. Current status of the project

Keeping the constraints in mind a decision was taken to proceed with the project none the less, and to utilize only the resources currently available. The Library is responsible for the implementation and maintenance of the project. A skeleton

staff component consisting of the Deputy Librarian, a technical assistant, a senior information librarian, and a library assistant has been assigned to develop and transform the current collection. The technical assistant is the only new position instituted, while the rest of the affected staff members are taking on the additional responsibilities as part of their job description.

All equipment such as PC hardware, scanners and servers have been purchased and installed. A separate server, funded by the Melon Foundation, and needed for back up purposes was installed, and according to recovery principles are housed in a separate location. The services of a company who could assist with the initial scanning of retrospective resources were obtained to enhance progress.

To avoid all the pitfalls of copyright, the project is currently only concentrating on the areas where copy right is not in dispute i.e. that of theses and dissertations as it belongs to the university.

The implementation of the project includes an awareness and voluntary training program to get buy in from researchers and ensure usage. So far the project concept is surprisingly well received by faculties and administrators. Usage statistics is however closely monitored to see trends emerging.

8. Insights gained from the implementation process

It was soon realized that the project plan had to be flexible as new insights were obtained as the project progressed. One of the most significant changes was the realization that the project will not progress if the emphasis is placed on retrospective digitization only. The amount of work that had to be done on the cataloguing of the metadata was more than the current work force could handle.

Another innovation was the decision to make use of the champion principle to get the project buy-in. This entailed that a selected department was to act as a change agent to mobilize support for the project. New research of the Department of Library and Information Science was targeted as the first phase starting point. The positive results of this project will be used to market the value of the research

through the collegial college approach. The assumption is that a practical demonstration of the importance and benefits of this project will win support and contributions from all other departments.

The planning and initial implementation of the project was indeed a journey through valleys and hills, and although the challenges can't be disregarded, the value of the finished project, and its contribution towards the strengthening of local content should not be underestimated. Critical to its success would be to capitalize on the strengths of the project. Some of the strengths that could be harnessed are:

- The content of the existing UZULU collection and the value of the UNIZULU research;
- A great deal of support from, and networking with other libraries, who launched similar projects, in terms of sharing of knowledge and experience;
- The easy availability of open software;
- The shared expertise of a knowledgeable system manager in esAL;
- Having a flexible plan which can be adapted as the need arise.

9. Future plans

Apart from formal research other resources with local content such as electronic exam papers local news, copies of seminar presentations are considerations for information is to be added and included at later phases of the project.

All universities in South Africa are compelled to be involved in their immediate communities. This brings the indigenous knowledge systems (IKS), of the area to the fore. (Mutula 2008), views IKS as part of local content along with community information. The IR environment leans itself very well towards accommodating both formal research and IKS data, such as the mentioned art collection. DSpace software offers the ideal opportunity to avail the collection electronically to the Zululand community as well as sharing with the global information society, and this collection has been earmarked for digitizing in the very near future.

References

Anbu, J.P. 2006. Institutional Repositories: time for African universities to consolidate the digital divide. [Online]: <http://www.acu.ac.uk/lowcostjournals>. Accessed 14 March 2012.

Digital preservation through using DSpace open source institutional repository software: a case study. (n.d.). [Online]: http://www.ais.up.ac.za/digi/docs/smith_paper.pdf. Accessed 25 January 2012

Ford, H. (2005). *Why the lack of open content in Africa?*[Online]: http://www.culturalivre.org.br/english/index.php?option=com_content&task=view&id=30&Itemid=47. Accessed 30 April 2009.

Lor, P. 2005. Preserving African digital resources: is there a role for repository libraries? *Library Management*, 26 (1/2):63-72.

Mutula, S. 2008. Local content development projects in Africa. *South African Journal of Library and Information Science*, 74(2): 105 -115.

Nkosi, D.S. 2008. Establishing an Institutional Repository: a UNISA case study. [Online]: [http:// www.codesria.org/Links/conferences/el_publ08_eng/nkosi.pdf](http://www.codesria.org/Links/conferences/el_publ08_eng/nkosi.pdf). Accessed 12 April 2011.

Olivier, E. 2007. The efficacy of institutional repositories: Reflections on the development of a personalised collection on UPspace. *Perspectives in Education*, 25(1): 123 – 128.

Smith, M., et.al. 2003. DSpace: an open source dynamic digital repository. *D-Lib Magazine*, 9(1).

Van der Merwe, A & Kroeze, J.H. 2008. Development and implementing of an Institutional Repository within Science, Engineering and Technology (SET) environment. [Online]:

http://researchspace.csir.co.za/dspace/bitstream/10204/2500/1/van%20der%20Merwe1_2008.pdf Accessed 12 May 2009.

Van Deventer, M en Pienaar, H. 2008. South African repositories: bridging the divide. [Online]: <http://www.ariadne.ac.uk/issue55/vandeventer-pienaar/>. Accessed 26 March 2012.

Van der Merwe, A & Kroeze, J.H. 2008. Development and implementing of an Institutional Repository within Science, Engineering and Technology (SET) environment. [Online]: http://researchspace.csir.co.za/dspace/bitstream/10204/2500/1/van%20der%20Merwe1_2008.pdf Accessed 12 May 2011.

Tjek, L.T. 2005. Desa Informasi: Local content global research. [Online]: http://docs.google.com/viewer?a=v&q=cache%3A0mxIYyT0-q8J%3Aarchives.msu.edu%2Ficasuv%2Fpapers%2FDesaInformasi.pdf+Desa+Informasi%3A+Local+global+content+reach&hl=en&gl=za&sig=AHIEtbQ1yPkf_NJMgKZZrqIhEtvEUHW6Uw. Accessed 25 January 2012.