Implementing Electronic Theses & Dissertations Project: University of the West Indies (UWI), Mona Campus

Introduction:

Theses and Dissertations (TDs) constitute the primary research output of any university and they reflect the caliber of academics the institution has and the quality of research it produces. Graduate students undertaking research often select subject areas that are endemic to the region and to the culture of the society. In some cases this information is unique and can make a contribution to the world pool of knowledge. Although this valuable information should be displayed widely, traditionally, it has been restricted to use in institutional libraries. This means users must come to the Library physically to use these documents and they are not allowed to photocopy any part without permission from the author. Such restricted access and use does not encourage utilization of TDs fully.

Globally this pattern is changing and information technologies (IT) are being used for producing, archiving and distributing information. Universities are now producing TDs electronically with better expression using multi-media and making these available on the Internet. This is also encouraged by increasing recognition of information as a 'public good' and should be given 'anytime anywhere access.' Furthermore, universities around the world are required to be competitive to attract funds, students as well as prominent academics and displaying indigenous research globally is found to be a viable opportunity in this competition.

University of the West Indies (UWI)

University of the West Indies (UWI) is a small multi campus regional university that focuses on teaching and research and serves primarily the English Speaking Caribbean. In the recent past, a number of off-shore universities have begun to offer degrees on every subject area threatening the monopoly enjoyed by the UWI for many years. It is also facing financial difficulties as the government funding is reduced forcing the UWI to increase tuition fees to cover the better part of the costs.

UWI's Strategic Plan II 2002-2007, sees the competitive structure of higher education and technological innovation as the most important factors in addressing any change over the next five years. The Plan further stipulates facilitating 'anytime, anywhere access' to the institution's computing and networking services, use of World Wide Web to project the University more effectively, provide support for academic staff to gain competence in the application of new technologies to programme delivery and to take steps to disseminate best practice and insights gained by early adopters of the technology.

The UWI offers graduate studies with strong emphasis on local/regional research needs and now has over 3000 registered graduate students, in Mona Campus and out of this approximately 800 students aim for entirely research based studies. The UWI like many universities, deposit a hard copy of TDs in the Library with restricted access resulting in very little use of the material and remains mostly un-known and therefore little used.

Networked Digital Library of Theses and Dissertations (NDLTD)

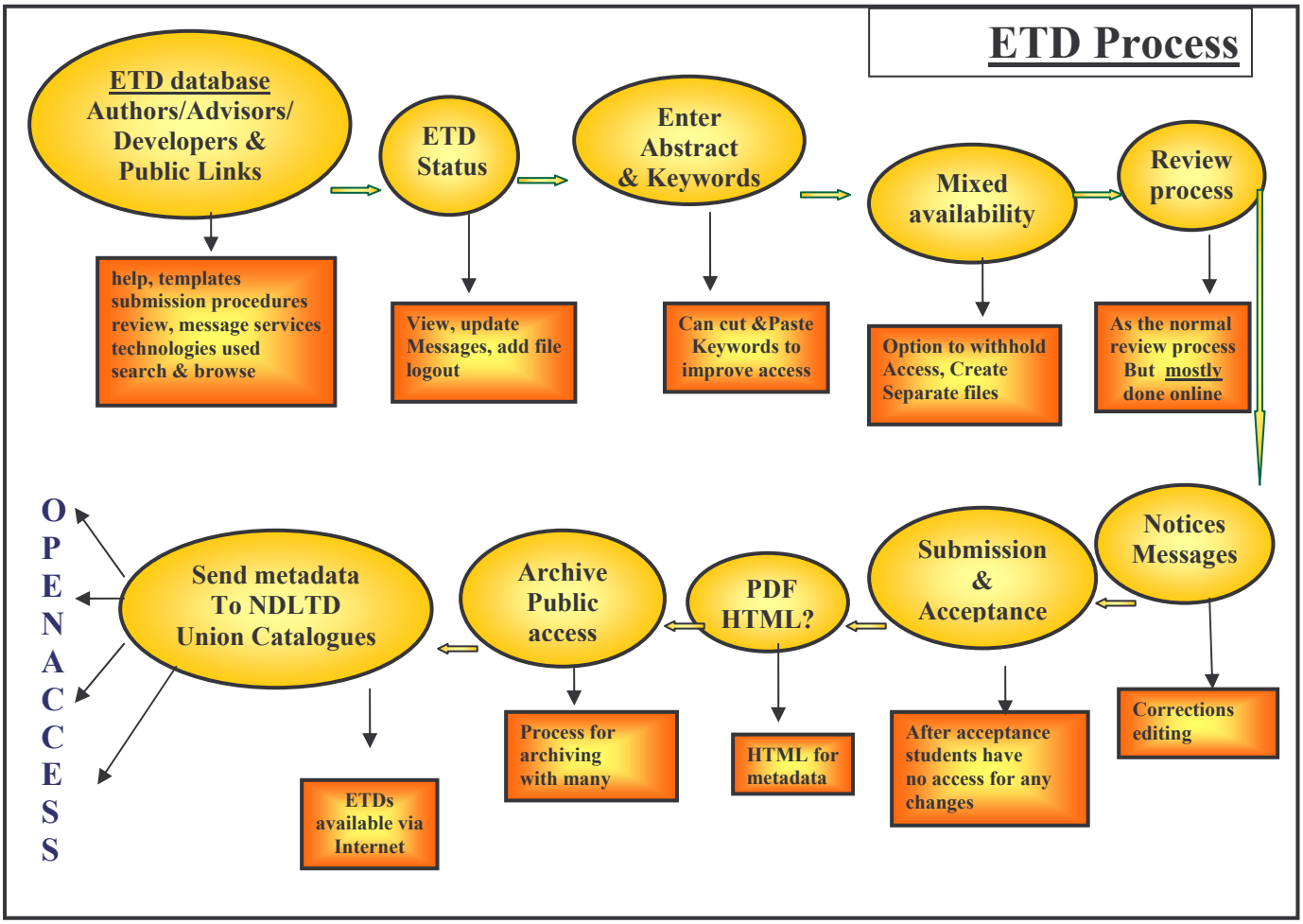
Against this backdrop, when a proposal was made to the School of Graduate Studies and Research Department at the Mona Campus to be part of Networked Digital Library of Dissertations and Theses (NDLTD), it was welcomed with much enthusiasm and immediately approved for implementation.

NDLTD is a network of universities collaborating to make TDs available on the Internet with open access and encouraging others to participate. The concept of electronic theses and dissertations (ETD) was first discussed in 1987 and now has a membership of 217 institutions with national initiatives in Australia, Germany, USA, UK, India and Brazil. It has the support from UNESCO, World Bank, IBM, Microsoft and Adobe. ETDs are accessible and searchable through a Union Catalogue. The membership meets annually to discuss progress, share experience and solve problems. Its objectives are:

- For graduate students to learn about electronic publishing & digital libraries, and use that knowledge as they engage in their research & submit their own ETDs,
- To lower the cost of submitting and handling TDs,
- To empower students to convey a richer message (using multimedia & hypermedia) ,
- For universities to learn about digital libraries, as they collect, catalogue, archive and make ETDs accessible to scholars worldwide,
- For universities to learn how to unlock the potential of their intellectual property
- For graduate education to improve through more effective sharing
- For technology and knowledge sharing to speed up, as graduate research results become more widely and readily available in its entirety

And the membership of the NDLTD benefits from:

- Teaching graduate students to produce electronic documents, use digital libraries & understand electronic publishing issues
- Lower the cost of submitting & handling TDs
- Empower universities to unlock their information resources
- Empower graduates to convey a richer message using multimedia & hyper-media technologies
- Advance digital library technology & build NDLTD
- Increase availability/accessibility of graduate research
- A model for other organizations
- Structured vs. Unstructured text (structured text facilitate retrieval of content (pictures, maps, multimedia material) from individual TDs thus permitting use of otherwise irretrievable data
- Citation tagging creates a tool to measure impact factor for local information resources that are not considered worthwhile by prominent citation indexes (not a requirement of NDLTD but useful to participating institutions)
- While earning their degrees, graduate students become familiar with electronic publication
- ETDs with hypermedia generate electronic portfolios (institutional & personal)
- Dramatic increase in knowledge sharing, literature reviews, bibliographies
- ETDs grant lifelong access via browse, search & citation links



ETD Project at UWI

The ETD Project was introduced to the UWI in September 2002 and immediately got the unanimous approval of Graduate Studies Board, the Academic Board and the Campus Principal. From the initial stages, it was seen as a collaborative project of Graduate Studies Department, Information Services, Computer Science Department, Library and the Graduate Students Association. It was also accepted as a university wide project.

There were a few prerequisites for implementing the Project. These are a sponsor (someone with authority & ability to adopt the Project & commit resources to ensure its progress), a project team (persons with relevant responsibilities & interest in requirements for successful implementation & sustainability), an Online Public Access Catalogue (OPAC) with specific features and these were met. The project team included Graduate Studies/Campus coordinator(s) to urge the UWI in making a policy decision to prepare and implement the initiative, Computer Science Department to provide technical support as needed to customize XML, SGML coding already available within NDLTD Project, Mona Information Technology Services to determine and facilitate systems requirements for Project implementation and to provide technical support, the Library to facilitate cataloguing, METADATA tagging & archiving, Faculty Deans to ensure that ETD initiative is accepted within each faculty & encourage full implementation and post graduate students to prepare ETDs in an accepted format & make them globally available via Internet with restrictions if needed.

The UWI needed to decide transition point from print format of TDs to electronic format. Options were: (a) a policy decision for full submission in electronic format only or simultaneous submission paper & electronic formats of all TDs (b) a pilot study in selected subject areas for simultaneous submission (paper & electronic) of all TDs or simultaneous submission (paper & electronic) for a small number of TDs in all subject areas**,** (c) voluntary submission by graduate students. UWI favoured simultaneous submission paper & electronic formats of all TDs. It was also necessary to address visibility options. These were only to Campus network, to all three campuses, to selected networks, full Internet visibility and expand access points using NDLTD online Catalogues. Based on the objectives of the Project, it is expected that full internet visibility with additional access points is likely to be the choice. Intellectual Property Rights of the authors also have to be protected. While it is desirable to have full text of the TDs, on open access, authors will be given the choice with reasoning to block completes text or sections, additional materials such as images, for a limited period to facilitate publishing in journals or claiming patents. The technology facilitates this option.

In submitting TDs, it was decided that at the initial stage, while primary submission is text, use of images, multimedia and hyperlinks will be encouraged and supported. Content and physical metadata was considered important and a choice of file formats is to be offered for submission, supported by training and help, and templates through the web-site. Adequate computers with required features for graduate students, (depending on multimedia needs & use), a server dedicated to ETD production with 250mb space per submission calculated at least for a year, a server space for storage, and other ETD production equipment such as digital cameras, scanners, filming equipment etc. depending on extent of multimedia use, OPAC capabilities with Z39.50,[1], [2] Adobe Acrobat distiller for creating PDF files, word processing programs as well as access to SGML[3], XML[4], [5] codes available free from NDLTD web-site specially designed for ETDs were requirements for the successful implementation of the Project.

In 2004, when the UWI was ready to test ETD database, using Virginia Tech ETD system [6] that was more popularly used by the NDLTD members, a presentation was made by the University of Edinburgh on 'Theses Alive Plug-in for Institutional Repositories (Tapir) ' [7] on developing e-theses functionality to DSpace technology [8], at the 7th International Symposium on Electronic Theses & Dissertations in 2004.

DSpace [9] is an Open Source for creating an Institutional Repository (IR) that can accommodate not only TDs, but pre-prints, project reports, conference papers, educational material and any other type of material. Since the DSpace has areas to develop and provide flexibility to introduce additional tools that are coordinated by DSpace Federation [10], all users have the opportunity to add tools and share what is already available.

Although some work has been already done on installation of VT-ETD, at UWI, DSpace model was selected as the choice in testing ETD database and this was found to be rewarding. Project Team's reasoning for choosing DSpace over VT-ETD were, VT-ETD-Database specially designed for ETDs, has work space, supervised authoring with relevant metadata sets. It has been used with customizations by most NDLTD member, but very much limited to ETDs. UK universities are adopting DSpace for ETDs, but this is meant for institutional repositories with emphasis on post-submission workflows and potential digital preservation. [11], [12] With emphasized need for recognition for UWI and its research, DSpace was seen as a useful tool that can be used for an institutional repository without having to go through the normal procedure that needed to be followed for implementing a project of this magnitude that is bound to have an impact on how the UWI is presented on the global network. Also a number of publishers including Elsevier Science [13], now permits authors to have pre-prints of their papers on open access. Dspace provides an excellent opportunity to initiate an institutional repository for UWI academics at a time when the recognition is essential for its own existence.

Progress of the Project

A proposal has been submitted and accepted as a UWI Project, while Mona Campus has progressed further by getting the approval for the Project, selecting a Project Team and obtaining a server valued over US$8000.00 from Dell, (UWI's official computer dealer) as a gift. The concept has been presented at Faculty Board Meetings, Academic Board, Graduate Studies Board and to the Graduate Students Association and well received with much support.
The DSpace has been installed with Tapir (**T**heses **A**live **P**lug-in for **I**nstitutional **R**epository) and now is being tested. Presently, the site is only visible from the Mona Campus, but the database will migrate to the permanent server and then it will be available globally. It has in addition to ETDs, papers published in journals (Biomed Central) and conference papers. Already The Tropical Medicine Research Institute of UWI has requested to deposit their publication on DSpace and this includes all their publications over a period of 50 years primarily related to research on nutrition, malnutrition and sickle cell disease as well as TDs that they have supervised. Citations for these items are already in MEDCARIB and the Dspace initiative will facilitate achieving the objectives of Virtual Health Library Project, by providing links to full text articles from MEDCARIB citations. A graduate student in Computer Science Department aims as part of his research to develop tools that will enhance some of the most popular authoring tools in such a way that they will produce well structured documents while requiring minimal changes in the user interface offered to the author. Specifically, he will attempt to develop software that will augment popular authoring tools such as Microsoft Word, OpenOffice, and LaTeX that will enforce the selected data standards within the familiar environments offered by these tools. It is expected that these contributions will enhance DSpace in general and make a contribution to improve global open access process. Training requirements for graduate students has been investigated through a questionnaire and plans are being developed to conduct face to face instructions, help desk and help interface on the DSpace website.

What More is Needed in the Immediate Future?

So far, the progress of DSpace at UWI has been made by the members of the Project Team, in addition to their designated responsibilities. DSpace is installed, but much more work is needed to be done by way of fine tuning to enable submission procedure with minimal intervention. This includes identifying communities, registering authors and authorizers, preparing help modules, in general smooth running of the DSpace. In order to accomplish this, the Team needs the help of a database manager at least for a year.

A policy decision made by the UWI for electronic submission of TDs and submission of all conference papers and preprints of published papers to DSpace is urgently needed and a presentation and discussion forum is scheduled at the beginning of this academic year. Training workshops need to be held on preparing electronic files with metadata, use of tools such as reference manager and use of multi media at a later stage. More publicity and sensitizing of Faculty as well as students also are needed. To this end, presentations and discussions at departmental level are planned for the coming year.

It is also important to encourage and assist the other two campuses to initiate the DSpace, so all three campuses can develop the Institutional Repository as one university rather than three individual campuses.

Problems Encountered

Although, the 'open access' concept has been accepted at the highest level at the UWI, knowledge of this concept among academics and graduate students is limited. There are reservations about having their

research available in an open access forum. While a few academics are well advanced in information and computer technologies, most have very little knowledge about developing an ordinary word file to rich text file. Getting the participation of all academics therefore is expected to be a challenge.

As a result of the lack of knowledge on 'open access' and the positive impact it can bring to the UWI in terms of recognition, the value of this initiative is not recognized as much as it should have been. It is somewhat frustrating for the Team and it is hoped that with time these problems will be resolved.

Although the Project Team at Mona is very much interested in getting the other two campuses involved in the Project, there is no strong positive response. It is important that all three campuses participate in the Project because it will not only provide an Institutional Repository for UWI, but it will also give an opportunity to collaborate between the three campuses for building necessary tools that are required for creating electronic files making the best use of technology. In principle, it is a UWI Project, and we hope that it is matters of time for the other two campuses join Mona Campus on DSpace.

Conclusions

In the present competitive environment, the UWI recognizes that global recognition is needed for its survival. The research capacity and the level of intellectual/research output is the measurement of that recognition. Hence much emphasis is placed on publications with high impact meaning primarily publishing in high impact journals. It is a challenge to sensitize the community that availability of UWI research without any restriction is bound to increase the visibility and the use and thereby provide opportunities for high impact. Now with Scholar Google [14] although several weaknesses are identified [15] tracking citations of online publications, and other webometrics being introduced to measure the world university ranking on the web [16],[17]based on number of hits, unlike impact factor from Citation Index, institutions can control extent of their own visibility just by providing information resources that are useful globally. It is anticipated that the UWI will benefit from this initiative to showcase its strong research areas (i.e. diabetes, sickle cell disease, nutrition), and create electronic portfolios of individuals and departments and may provide a useful tool for obtaining funds for research and offering consultancies in proven areas of strong research and contribute to other societies as well while securing a global position as a high ranking university.

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1 http://www.ariadne.ac.uk/issue21/z3950/intro.html
2 http://www.lub.lu.se/tk/demos/z3950.html
3 http://etext.virginia.edu/bin/tei-tocs?div=DIV1&id=SG
4 http://etext.virginia.edu/bin/tei-tocs?div=DIV1&id=SG
5 http://nwalsh.com/docs/articles/xml/
6 http://etd.vt.edu/
7 http://www.thesesalive.ac.uk/dsp_home.shtml
8 http://dspace.org/technology/index.html
9 http://dspace.org/
10 http://dspace.org/federation/index.html
11 http://www.ariadne.ac.uk/issue38/jones/
12 http://www.ariadne.ac.uk/issue41/jones/
13 http://romeo.eprints.org/publishers.html
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16 http://www.webometrics.info/index.htm
17 http://www.webometrics.info/top2000.asp