
ELECTRONIC THESES AND DISSERTATIONS: ISSUES AND ITS IMPLEMENTATION

Niraj Barua

Abstract

Information technology (IT) has given us new opportunities to explore with. Scholarly materials like theses and dissertations can now be submitted in electronic form so that they can be distributed to a wider group of users not limited within the library building. This technology however has not gathered the right pace in our part of the world due to various issues. These issues relate to the technology, necessary modification in workflows, hardware and software requirements, copyright, accessibility, security and issues bothering students, reviewers and the faculty members of higher educational institutions and Universities. Hence, this paper discusses these issues with a favourable attitude towards electronic theses and dissertations and a gives a brief account on its implementation.

Keywords: Electronic Theses and dissertations(ETD); Copyright, Information technology and archiving and preservation.

1 Introduction

Theses and dissertations which contain research and scholarship of students doing PHD and Masters Degree in Universities and Higher Academic Institutions are of primary importance to libraries. But managing theses and dissertations in libraries is a difficult job. Each year library receives several of these documents. These documents discuss areas which might be very specific and incomprehensible to library staffs and thus making it difficult to properly classify, catalog and shelve them for reference. Today technology has advanced so fast providing newer and effective solutions to many of our problems. Electronic Theses and Dissertations (ETDs) is one such technology which can enhance the management of theses and dissertations in libraries. This is the right time that higher academic institution gives a good look at this technology which has already proved successful in many countries. This paper gives a brief overview of ETD, its benefits, about issues and its implementation.

2 What is ETD?

According to Seth Katz [1] electronic theses and dissertations can be (1) those that use little or no electronic enhancement and are, effectively, print texts stored electronically; (2) those that incorporate links to material on the World Wide Web or multimedia elements as illustrations, footnotes, or appendices; and (3) those that are full – blown innovative hypermedia documents including text integrated with sounds, movies, or simulations.

According to Matthew G. Kirschenbaum broadly the term "electronic thesis and dissertations" should apply to any thesis or dissertation that is submitted, archived and distributed solely or at least primarily in an electronic format.

Thus ETD can be defined as electronic version of traditional theses and dissertations explaining research and scholarship of students and which is capable of distribution through telecommunication networks to a global user.

3 Why go for ETDs

There are many benefits of ETDs.

From the graduate students point of view preparing his theses and dissertation would become much less costlier. He will not need to invest money in buying papers and printing multiple copies of his work. Instead he will submit his work in CD(s) using softwares and probably hardwares provided by the library or the computer center of the Institute.

From users point of view there are many benefits of ETDs. Most of us are fully aware that the dissertation or theses of many of us have not yet been available in the Library shelves to this day whereas if we had submitted them as ETD possibly they could have been accessible to global audience living far away from here. This will be the main benefit of ETDs - that is its reach. If it can be made available in the Internet then it will be available to a global community and not just within the Institutional campus. Further they will be accessible 24 hours a day and 7 days a week. Unlike one copy one user access for traditional theses and dissertations (TDs), one ETD can be accessed by many at the same time. Also the student will have the ability to incorporate multimedia objects into his work which is not possible in common theses and dissertations.

Another benefit of ETD is that it reduces duplication in research efforts. Useless duplication occurs in research work because of inaccessibility to works previously done. Since ETDs are available globally it becomes easier for students to locate information on their topics of research and thus avoiding duplication.

From libraries point of view ETD provides a solution to address its space requirements. As the collection of theses and dissertations grows libraries will find difficult to get space to shelve them but with ETDs space will not be any concern. Further libraries will not have to concern with the tedious jobs of circulation, shelving, labeling, bar-coding and cataloging of theses and dissertations. Thus ETDs will reduce the time gap from receipt to public access. ETDs can be submitted directly to the library server so that as soon as they are approved, they can become available to users, eliminating the need to move the documents from the departments to the Library. ETD system will also enhance the Library's reputation as a service provider and will also augment the digital library initiatives.

From the Institutional point of view it will not only boost its prestige but will also give it a role to popularize the Open Archive initiatives to universalize knowledge.

On the whole ETD will tremendously benefit the users and since user satisfaction is of primary concern to libraries therefore we should positively consider ETD for libraries.

4 Issues to be resolved before going for ETD

An ETD system if implemented fully will bring about major changes from our traditional method of submitting theses and dissertations in Universities and Institutions. Therefore before implementing an ETD system there should be clear perception about many issues that would be necessitated from such a dramatic shift.

4.1 Administrative and technical workflows

The whole process in ETD system will involve several steps from authoring to the final hosting of the work in the ETD website. These steps can be represented in a Life Cycle and in diagram this will look as Fig.1 below. Therefore the responsibilities, decision making and technical procedures involved in each step must be clearly spelled out. The total process and the administrative controls must be decided through proper discussion involving the graduate students, faculty members, administration and the Library staff. The effects on the present workflows will be different in two different processes.

In one process the student can prepare his work in a purely electronic form only because of incorporating multimedia objects which otherwise could not be represented on papers. In such cases the process of reviewing, checking and depositing will be completely in electronic format. On the other hand a document could be paper based during creation and could be reviewed and checked on paper. After deposit it could be scanned into an electronic format like PDF. Thus the changes will depend on how the work is submitted. This could be worked out through proper discussion among the students, faculty members, administration and the library.

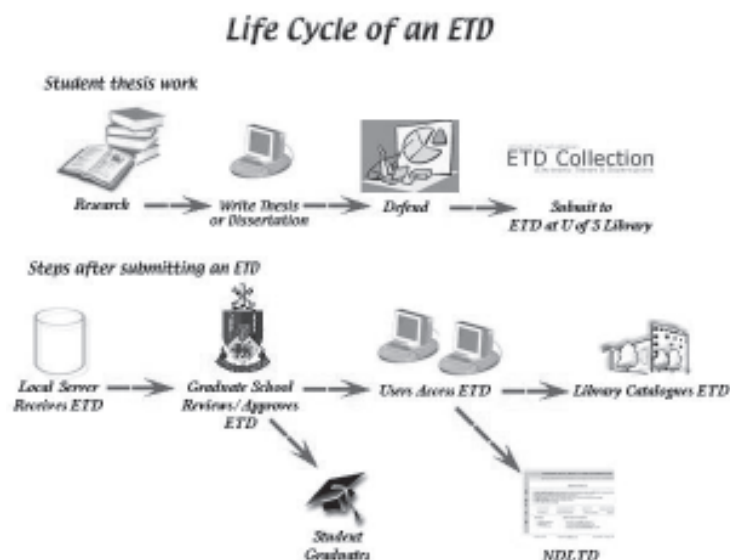


Fig.1 Workflow in the Lifecycle of an ETD (Courtesy- Univ. of San Francisco.)

4.2 Intellectual Property Rights

One of the major issues of concern regarding ETD is that of copyright. Students facing a ETD program frequently ask whether his rights upon his work will exits in case of ETDs. Off course the copyright does remains with the author. However, students assign rights to the University/Institution to publish the electronic version online. This can be assigned in the form of a written declaration by the student as to how his ETD can be used. In fact the student is both a user and also a producer of information. So as a user of information he should take permission from authors whose works he might use in the same as he will give permission to his copyright works as an author. Of course such a process must necessarily be under the copyright law of the states.

4.3 Plagiarism

A common fear is that it increases plagiarism as it will be easier to copy digital objects. But this fear is ill founded. Because in these cases works will be so openly available that it will become easier for us to detect copycats, Now when many theses and dissertations are not easily accessible it becomes very easy to copy others work and pass without detection unless the author of the original work reads the copied version. SO in contrary ETD will help remove plagiarism.

4.4 Security

The ETDs must be properly secured from unwarranted manipulation and duplication. This can be done through restricting user access by means of passwords. Documents can also be encrypted so as to restrict its printing, any change in content or document assembly, content copying or extracting etc. Verifying authenticity of the student who wants to deposit ETD is also a matter of security. This can be verified by means of proper authentication and verification with the respective departments and through notification.

4.5 Accessibility

Accessibility refers to whether ETD will restrict access to certain campus or make it globally accessible. Again there may be restrictions on access to the archived materials due to security and cost considerations. The material that end user views might be in a format different from the archived ones. For example some digital collections display JPEG and PDF versions of objects, but it is likely that the TIFF images from which these files were derived will be the archival objects.

4.6 Archiving and preservation

The major issue concerning libraries will be that of its traditional job of archiving and preservations. An ETD program would involve changes affecting preservation and archiving policy, workflows for processing, cataloguing policy, and access and system hardware to keep access viable in a 24/7 hour basis. The issue that will come in forefront is that of guaranteeing long term preservation of theses and dissertations, the responsibility that the University as a whole shares. The longevity of paper as a medium of preservation has been long tested but in case of electronic devices it is fairly uncertain. Issues that emerge include whether these formats will require reformatting into PDF or other formats, continuous migration, upgrading equipment, hardware and software and checking documents for integrity and migrating them if necessary, durability of storage devices, constant change in technology requiring modification in access, loss and theft issues, quick obsolesce rate of electronic technology.

4.7 Issues for students

An ETD system will require students to have basic computer knowledge at most knowledge of Word processing softwares to write down his theses or dissertations. In case of other aspects such as including multimedia objects using different softwares like Adobe Photoshop and about Adobe Acrobat for PDF conversion, students may be helped by assistants from the Library or Computer Centre. The students need not be a computer savvy to write a thesis unless he wants his thesis to be a hypermedia document which will require in depth knowledge about many software programs. Another issue that might be of concern to the students is regarding Copyrights. But students need fear as he will be the copyright owner of his ETD. However he may have to assign rights to the Institute that will host and distribute his ETD. Students will also have the right as to how his work will be used by the others. Through proper discussions these issues can be resolved between the administration and the students for implementing the ETD system.

4.8 Issues for reviewers, faculty and departments

As already mentioned an ETD system will require some knowledge about computer. So in case of a department that have facilities and access and work experience with computers, the students, faculties and reviewers would not find it difficult to adopt the new system. However it might be an issue for those departments who are not accustomed to working with computers and electronic documents. Training or technology support could address this barrier. The methodology can be devised through proper discussions among faculty members and reviewers with the administration.

5. Implementation

After having the above main issues addressed the library can move forward to the next big issue i.e. addressing the main requirements for implementing a ETD system.

5.1 Hardware requirements

For starting the ETD system the existing hardware if available in library can be used thus reducing the need for buying new ones. In case of nonavailability one or two servers for storing the electronic documents; few dedicated workstations, Magnetic Tape drives for taking backups, CD/DVD Writers for additional storage have to be procured. Few types of equipment for student support can be purchased such as one or two printers: LaserJet and Color Printer, digital camera, VCR, DVD and drawing tables.

5.2 Software requirements

At first users submit their work in any word processor which will be converted to a PDF file. Adobe Acrobat software is suitable because this is easy to use and allows documents to be moved between computer operating systems and platforms while retaining the original authors' formatting style. An emerging alternative to using PDF as the storage format is to present the data in XML (Extensible Markup Language). Because XML was created so that richly structured documents could be used over the Web, it makes an ideal solution for delivery of theses and dissertations information. The softcopies of the theses & dissertations thus received have to be hosted in software which allows the work to be indexed, searched and displayed. There many softwares such as Dspace, Greenstone etc. Dspace [3] has been found suitable in Indian context as it supports multilingual features. Dspace

can capture digital research materials in various formats and directly from creators (e.g. students). It describes a descriptive, technical and rights metadata and can distribute matters. via WWW, with necessary access controls and preserves various levels based on digital file format submitted. Greenstone digital library software [4] is an open source software. It has features like multi-platform compatible, metadata driven and it can support several gigabytes of informations.

5.3 Manpower requirements

As for the manpower requirement there would not be sufficient problem. In the case of Virginia Tech. ETD initiative only one Librarian and one programmer established the ETD website and other related works with it. However it would be necessary to involve those who were already working with the theses and dissertations section because of their familiarity. However the staff will require knowledge to handle electronic documents, maintenance of server, maintenance of the ETD website and taking backups for security. The ETD guide [5] mentions the following manpower to mend an ETD system – one programmer, one student assistant, faculty liaison and two student support staff to train and assist students in using softwares and equipment while he creates his ETD.

5.4 Financial requirements

The cost of the program can be addressed in the form of a cost analysis. Existing infrastructure can be used to start the process. Cost of hardware will include that of procuring servers, tape drives for backups, CD/DVD writers, laser printers, scanners. Most of the softwares needed are available as sharewares. Software to host the ETDs like Greenstone and Dspace are open source softwares and freely available. An estimate of the cost can be found on the ETD guide prepared by NDLTD.

6. Conclusion

Before implementing an ETD system one has to approach carefully. In this matter the best way would be to understand the experiences faced by those who have already initiated such project such as NDLTD [6], Vidyanidhi [7] etc. It is equally important to take decisions after thorough discussion among students, reviewers, faculty members, library personals and others who will be directly affected by ETD. However the primary concern will always be the satisfaction of the users. As discussed ETD will enhance its accessibility and usage. So the concern will be how to provide this enhanced accessibility with satisfaction to students, faculty members, administration and library staff.

References

1. Katz, Seth. (2004) Innovative hypermedia ETDs and employment in the humanities In: Fox, Edward A. ed. ... [et al.] .Electronic Theses and dissertations. New York. Marcel Dekker.pp.9
2. Kirschenbaum , Matthew G.. (2004) From monograph to multigraph: next generation electronic theses and dissertations In: Fox, Edward A. ed. ... [et al.] Electronic Theses and dissertations. New York. Marcel Dekker.pp.21
3. <https://dspace.mit.edu/>
4. <http://www.greenstone.org/>
5. The Guide for Electronic Theses and Dissertations. Available at: <http://etdguide.org/>
6. <http://www.ndltd.org/>
7. <http://www.vidyanidhi.org.in>