

Scholarly Communications across the Globe: Practices and Enrichment of Learning through Electronic Theses & Dissertations

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ABSTRACT: *Electronic Theses & Dissertations are the intellectual content of an organization that remains unpublished and is considered a rich source of information for the academic community. Libraries are putting efforts to digitize the content and make it available and accessible online across the globe. The paper aims to portray the status of ETD, services, and embargo policies followed by the institutions. It also provides a glimpse of the data published in various journals indexed in the Web of Science database.*

Keywords: *Electronic Theses & Dissertation, ETD, NDLTD, Jawaharlal Nehru University (JNU)*

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1. Introduction

Electronic thesis and dissertation (ETD) have been in vogue for decades. India has also used applications in this context. ETD policy and process are in line with the expectations of scholars in higher education. Core practices support the entry of the thesis into the system for quality and supportive research environment. A thesis and dissertation usually mean an unpublished work submitted for a doctoral degree, whereas a dissertation is produced at the bachelor's or master's level. Doctoral dissertations are presented to the primary/central library system when awarded degrees (Copeland, 2008). A searchable thesis usually is another source of information based on the author or title. Browsing through advanced search, content type, publication date, etc., is available. Masters and undergraduate thesis and dissertations are usually not deposited in the library but are available at various school/centers/departmental offices. These theses and dissertations are available through open access. For example, the JNU ETD system (www.jnuetd.ac.in), the White Rose Ethics Online (WREO), and the British Library's Ethos Repository (<https://www.sheffield.ac.uk/library/openaccess/theses>) are such mechanisms for providing open access. The available accessibility of the thesis offers some benefits, such as direct discoverability through search engines, download count, tracking citations, and the possibility of publication. In this context, the platform of OATD.org is considered a resource for open access theses (Joachim Schöpfel, 2013) with a vast collection of 5,939,797 theses. Internationally, the Networked Digital Library of Theses and Dissertations (NDLTD) functions as a consortium of universities.

Electronic theses and dissertations (ETDs) have emerged as a vast open access research thesis segment, contributing significantly to their institution's ranking (NDLTD. <https://guides.library.cmu.edu/c.php?g=215391&p=1421977>). Access to the full text and compliance with the OAI metadata harvesting protocol has been a factor for proliferation. The role of academic libraries reflects a diverse workflow and policies for (ETDs). The libraries have accelerated open scholarship, advocacy, global discoverability, and technical and policy issues for electronic theses and dissertations. To understand the parts, a study identified "trends and will expand the ETD literature by comparing policies, workflows, and practices of ETD metadata" (Flynn and Ahrberg, 2020).

2. Background

In the very past, the Oregon state university libraries started accepting the electronic versions of theses and dissertations through ScholarsArchive@OSU, the library's institutional repository. All OSU graduate students had to submit their research to the Electronic Theses and Dissertations (ETD) Collection in ScholarsArchive@OSU by January 2007. OSU is one of sixteen members of the Networked Digital Library of Theses and Dissertations association to require a deposit of all ETDs (NDLTD). OSU used Dspace software to develop an institutional repository to the interface for submitting theses and dissertations (Boock and Kunda, 2009). University of California, Santa Cruz began accepting Electronic Theses and dissertations in 2012 and are deposited into eScholarship, an institutional repository. An increased number of supplementary files did not reflect RDM best practices.

In Maharashtra, 10 non-agricultural universities have signed MOU with Inflibnet to contribute their theses in Shodhganga. A total of 23523 e-theses were uploaded, and the University of Calcutta submitted more theses in Shodhganga with 11528 records (Chavan and Sawai, 2019). The University of North Carolina at Green-sboro (UNCG) has accepted the electronic submission of theses and dissertations since 2005. The University of Mexico was mandated in 2009 to collect the electronic copy of the theses & dissertations. The records will be archived in the institutional repository created using the Dspace platform.

The benefits of the online theses & dissertations are as below:-

- Enrichment of scholarly material
- E-copies of T/D are considered a rich source of unpublished information, so libraries need to preserve them to build research.
- The academic community can deposit their research in the institutional repository, which will enhance its growth.
- Promotes the visibility of the grey literature at a broader level.
- Academic misconduct and plagiarism will be diminished.

The challenges encountered by the universities in handling the physical copies of the theses and dissertations led to the evolution of ETD. The universities are not equipped with the IT infrastructure required to archival the content. The electronic system is also not free from the challenges dealt with by the universities differently. A policy should be in place for the smooth flow of the system, which is lacking in the organizations. The absence of skilled personnel for handling the procedure. The inhibitions to adopting new technology or designing an interface to organize the collection and archival of the T/D (Ezema and Ugwu, 2012).

3. Certainty of the Futuristic Guidelines

There is a need for guidance in the context of open access to the uplifted exchange of electronic information. To assess the open access related to the exchange of information for ETDs is needed for its suitability for a better digital environment. Such mechanisms are required to improve the cross-platform digital milieu of theses. For example, "EThOS," the E-Theses Online Service, has provided a comprehensive index of the vast availability of theses by UK universities. The uncovering of the latest research can be downloaded from over 300,000 theses. This service is available through EThOS digitization as per demand service. The management of doctoral theses in collaborations with other institutions and universities and the creation and re-use of thesis metadata are also significant.

The collection and re-use of data are interrelated to increase access, which could be possible due to creating a comprehensive index of all available theses and provisions of download options. The thesis records and metadata collection is significant when full theses are ingested into the ETD system. The understanding among the universities and other participating institutions plays a futuristic approach. The data aggregation and guidance for each stakeholder are essential to understanding the mechanisms for easy operations; for example, "EThOS harvests" are functional due to the re-use of data by researchers.

4. Thesis Records and Metadata

Harvesting doctoral thesis metadata and adding it to a central platform will match existing ETD records with additional data to create new records. It is implied here that repositories are harvested regularly by using the OAI-PMH harvesting protocol

standard. Usually, these are consistently represented by using a core set of bibliographic metadata. The explicit representation permits users to search data and the participating organizations to exchange the data. Two kinds of fields, mandatory and optional metadata fields, are clearly defined to share the data. It helps in further re-using data due to the availability of a complete dataset or subsets of metadata, which are ready for download and harvest for discovery services, research purposes, and analysis. The availability of downloading of full-thesis as a digital copy is possible due to the link in the ETD record. The ETD, in this sense, functions as a valuable backup database that is widely accessible for research. The provision of seamless “digitization on demand for print theses” is helpful in the proliferation of ETD services. The ETDs are deposited in the institutional repository of an organization for further use by the academic community. The metadata is created for a particular record and archived in the IR. Further, a handle number is generated and treated as a unique identifier for the record. The handle number will redirect the user to the full text of the content deposited in the IR.

5. Services and Mechanisms related to ETDs

Access at various levels is the ultimate aim of ETDs in the context of a research support system. ETDs offer a one-stop online platform for free access. The digital copies (born-digital) and digitization process help with wide accessibility. Sometimes digitization is available on-demand and payment basis also. The collaborations and service efforts are also augmented with broader coverage of geographical areas, including access to various categories of users. Information access begins with a “point of delivery” for the users in the form of online status and tracking system as readers without a document delivery request in some cases. The institutions are digitizing the content and depositing it in the repository of an organization to provide access to the academic community, or aggregators are involved in harvesting the metadata and providing services to the scholars.

6. Registry of Open Access Repository (ROAR)

The registry of open access repository (ROAR) revealed that various countries across the globe had developed 30 e-theses repositories. The data was sorted and filtered by the high activity. Table 1 displays the top ten repositories selected based on the high activities involved in maintaining and updating the repositories’ records.

S. No	ETD Name	Name of the Country	URL
1.	ETDs@VT: Electronic Theses and Dissertations at Virginia Tech	North America	https://vtechworks.lib.vt.edu/handle/10919/5534
2.	BICTEL/e - ULg - Institutional repository of dissertations and theses (University of Liege, Belgium)	Europe	http://bictel.ulg.ac.be/
3.	Deposito de Dissertacoes e Teses Digitais	Europe	https://dited.bnportugal.gov.pt/
4.	ETD - Electronic Theses & Dissertations	North America	https://ir.vanderbilt.edu/
5.	Georgia Tech ETD	North America	http://etd.gatech.edu/
6.	UBC ETD - Electronic Theses and Dissertation	North America	http://ahousat.library.ubc.ca/
7.	Networked Digital Library of Theses and Dissertations Union Catalog	North America	http://alcme.oclc.org/ndltd/index.html
8.	Biblioteca Digital de Teses e Dissertações	South America	https://teses.usp.br/
9.	ETD Manager at East	Tennessee State University	http://etd-submit.etsu.edu/
10.	ETD-db: University of Pisa	Europe	https://etd.adm.unipi.it/

Table 1. E-theses repository by high activity

Source:- roar.eprints.org

Awareness, Growth, and Proliferation of ETDs and Literature

With the awareness of the ETDs, the growth in the literature is inevitable, but the curve is not inspiring. The data from Web of Science have been collected from 1995-2021 to reveal the growth of literature on ETDs.

Growth of Publication Year-wise

Year	Frequency	%n=341	Year	Frequency	%n=341
2021	39	11.4	2008	8	2.3
2020	39	11.4	2007	4	1.1
2019	43	12.6	2006	6	1.7
2018	27	7.9	2005	2	0.5
2017	20	5.8	2004	8	2.3
2016	27	7.9	2003	6	1.7
2015	21	6.1	2002	1	0.2
2014	13	3.8	2001	4	1.1
2013	23	6.7	2000	1	0.2
2012	17	4.9	1999	2	0.5
2011	14	4.1	1997	1	0.2
2010	6	1.7	1996	1	0.2
2009	7	2.0	1995	1	0.2

Table 2. Year-wise research output

Table 2 displays the research output published on electronic T/D since 1995. A total of 341 research papers were published during the 27 years. From 2011 onwards, there has been a steep rise in publications. In 2019 43 contributions were made, the highest in the last 27 years. In 2020 and 2021, the fall in % of publications is not massive.

Document Types

Type of documents	Frequency	%n=341
Articles	121	35.4
Review articles	212	62.1
Proceeding Papers	8	2.3
	341	

Table 3. Document types

Table 3 represents various documents published during 1995-2021, covering articles, review articles, and papers published in the proceedings. Out of 341, 212 (62.1%) review articles, 121(35.4%) articles, and a few papers with 8 (2.3%) have been published.

Country-wise distribution of publication

Countries	Frequency	%n=341
USA	46	13.4
ENGLAND	45	13.1
AUSTRALIA	37	10.8
CANADA	20	5.8
BRAZIL	15	4.3
PEOPLES R CHINA	13	3.8
SCOTLAND	11	3.2
SINGAPORE	11	3.2
SOUTH AFRICA	10	2.9
IRAN	9	2.6

Table 4. Contribution by the Countries

Table 4 portrays the top ten countries that contributed to publishing research output. The USA contributed the highest with 46 (13.4%), followed by England with 45 (13.1%), Australia with 37 (10.8%), and Canada with 20 (5.8%) publications. Other countries such as China, Scotland, Singapore, South Africa, and Iran have also contributed by publishing literature on ETDs.

7. Few Significant Steps

Universities and other institutions have made provisions on the websites and the concerned sections to remove any confusion or vagueness in submitting the thesis process to the ETD system. The Degree section, Digital Scholarship section, Evaluation branch, etc., are some of the departments involved in assisting and guiding the scholars for the ETD submission. Examples from various scenarios help understand the gradual developments and improvements in this area; “the Graduate School at the University of Kentucky initiated in 2013 the submission of thesis in “UKnowledge” intending to facilitate free access. The availability of Templates for theses and information for thesis preparation is helpful for the submission process. Some of the steps are as follows:

1. Appropriately forwarded the ETD approval form by research supervisor/advisor/higher authorities and uploaded the same in the ETD system.
2. Clear embargo policy and awareness among the students indicate the same on their ETD approval document.
3. Digital copies of the thesis in university prescribed format.

7.1 Understanding Embargo Policy or Access Restrictions

Postponing public access to thesis/dissertation in institutional settings is an embargo. Only the scholar and administrators can view/access the submitted thesis until the blockade ends. The elements of the thesis/dissertation under embargo reflect the author’s name, the title of the thesis/dissertation, year, organizational affiliations, and the expiration of the embargo.

- The application process for a patent on an invention/procedure expressed in the submitted ETD and wish to avoid the content becoming public before the patent application is finalized.

- It contains sensitive and classified information.
- Impact upon an existing or potential publishing agreement.

Usually, depending upon the conditions and needs, the following embargo duration options are chosen by the scholars: 6 months, 1 year, or 2 years. The initiation and cancellation of an embargo is solely the responsibility/right of the scholar being the owner of the thesis as intellectual property. In July 2013, American Historical Association (AHA) issued a policy statement that recommended that institutions with mandatory deposits allow creators to embargo their ETDs for up to six years. The reason given for the policy was that open access might endanger the publication of ETDs as monographs. It was believed that a lengthy embargo period would provide multiple opportunities for scholars to publish their research (Coates, 2016 September). A study conducted at Kerala Agriculture University and the Indian Institute of Spices Research revealed that over 89% of scientists and 81% of students believe that online access to the full text of the theses is more prone to be misused by the scholars. At the same time, 56% of scientists and 43% of students suggested that access restriction or embargo period for 2-3 years would allow the scholar to publish the research findings (Satyanarayana and Ramesh Babu, 2008).

7.3 Collection Diversity and Issues in ETDs

The collection diversity of electronic thesis and dissertation (ETD) repositories is usually based on various factors such as subject classification, regional distribution, language diversity, etc. Specific issues related to the ETD repositories can be categorized as content management, metadata policies, collection management (Swain, 2010; Loan and Shah, 2020), and software application management. The promotions of access, WWW availability, research quality augmentation, etc., are a few of the parameters for ETD management at a greater level. The availability of the full text of theses has invited attention to the identification and steps for good practice and coordination activities across international institutions. Understanding ETD management and coordination at global levels is necessary to avoid duplication of effort. The creation and technological management of ETDs is significant for promoting research data usage. This requires various steps such as training, infrastructure, and technical and intricate administrative solutions.

Jawaharlal Nehru University, New Delhi: A glimpse of practices to support the academic community

Jawaharlal Nehru University, New Delhi, has been following the hybrid mode to collect the research scholars. An online system is functional to submit the research scholars and a physical copy. The authorized personnel from each department contain login credentials and can upload the necessary documents. Last year, due to the pandemic, the policy was re-framed during the university's closure, and the system is functioning online.

The library receives the verification documents; it is forwarded to the evaluation branch. Figure 2 represents the tabs used to upload and download the required documents. The evaluation branch sends theses & dissertations online to the examiners. The status of the submitted content can be checked online by authorized personnel. The university follows the embargo policy of three years with an extension (Sukula et al., 2020).

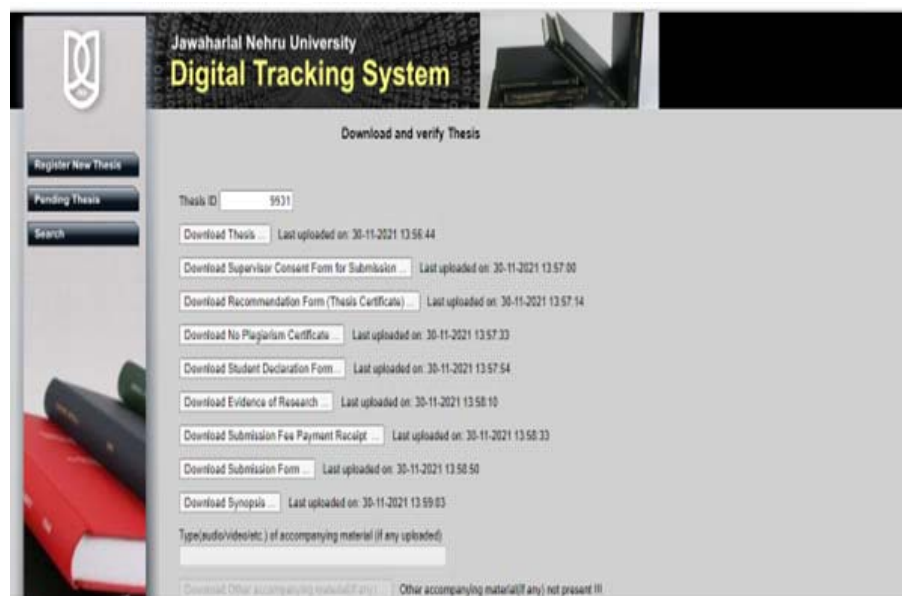


Figure 1. JNU Digital Theses Tracking System

8. Recommendations

The smooth functioning of the system requires the partnership of all the staff involved in the development and maintenance of the system. A few recommendations are mentioned below:

- The Government should support the organizations to set up the ETD labour infrastructure.
- Frequent meetings with staff involved with the system to converse the issues, updates, development process, etc.
- The proper workflow needs to be designed at each level to ensure the timely completion of the process.
- Training sessions need to be organized for the ETD staff.
- Skilled Personnel needs to be deputed to handle the work efficiently.

9. Conclusion

Electronic theses & dissertations are the unpublished content of an organization that needs to be treated with the utmost care due to the rise of plagiarism issues. The universities at a global level have embraced the technological support and administrative mechanisms for ETD. Whereas the greater exposure to digital platforms of research submitted has provided accessibility from anywhere at any time, the features such as simultaneous multiple users and various cost and space savings have solved the problems such as traditional paperbound versions and storage space in libraries.

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