Electronic theses and dissertations: a review of this valuable resource for nurse scholars worldwide

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Overview: A worldwide repository of electronic theses and dissertations (ETDs) could provide worldwide access to the most up-to-date research generated by masters and doctoral students. Until that international repository is established, it is possible to access some of these valuable knowledge resources.

Background: ETDs provide a technologically advanced medium with endless multimedia capabilities that far exceed the print and bound copies of theses and dissertations housed traditionally in individual university libraries.

Current use: A growing trend exists for universities worldwide to require graduate students to submit theses or dissertations as electronic documents. However, nurse scholars underutilize ETDs, as evidenced by perusing bibliographic citation lists in many of the research journals.

Sources: ETDs can be searched for and retrieved through several digital resources such as the Networked Digital Library of Theses and Dissertations (http://www.ndltd.org), ProQuest Dissertations and Theses (http://www.umi.com), the Australasian Digital Theses Program (http://adt.caul.edu.au/) and through individual university web sites and online catalogues.

Benefits: An international repository of ETDs benefits the community of nurse scholars in many ways. The ability to access recent graduate students' research electronically from anywhere in the world is advantageous. For scholars residing in developing countries, access to these ETDs may prove to be even more valuable.

Limitations: In some cases, ETDs are not available for worldwide access and can only be accessed through the university library from which the student graduated. Public access to university library ETD collections is not always permitted.

Conclusions: Nurse scholars from both developing and developed countries could benefit from ETDs.

Keywords: Digital Libraries, Electronic Theses and Dissertations (ETDs), Institutional Repositories, Open Access, Review

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Introduction

There is a growing trend for universities worldwide to require their masters and doctoral students to submit their theses or dissertations as electronic documents. Little information is found in the nursing literature, however, about electronic theses

and dissertations (ETDs) and the digital libraries from which ETDs are accessed. This is unfortunate as ETDs can be a valuable resource for nurses at all levels of education. Both new and seasoned nurse scholars could find ETDs particularly useful. The purpose of this article is to provide information to the international community of nurse scholars about ETDs and the digital libraries that provide access to these ETDs. Ways to search and retrieve ETDs through digital libraries are described and the benefits and limitation of each are discussed.

Background

An ETD refers to a master's thesis or a doctoral dissertation that is archived and circulated electronically rather than archived and circulated in the traditional print and bound format. The terms 'thesis' and 'dissertation' are often used interchangeably. For the purpose of this paper, the term 'thesis' refers to original scholarly work performed by a student in pursuit of a master's degree and the term 'dissertation' refers to original scholarly work required by a student seeking a doctorate or PhD (Merriam-Webster's Collegiate Dictionary 1993). ETDs are created using standard word processor software. Once completed, the thesis or dissertation is converted to portable document format, ensuring that the data contained are independent of the platform on which created. It is then submitted electronically to a specific web page on the university's server and subsequently to an information resource for storage and distribution.

Electronic theses and dissertations are underutilized sources of information. Traditionally, theses or dissertations have been produced in very limited print quantities. And, although dissertations from graduate students of Carnegie research universities have been available from the University Microfilm Inc. (UMI) since 1938 (ProQuest Dissertations and Theses 2008), usually copies of masters' theses have only been available as print copies from the graduate students' university library. These print copies are rarely requested from the universities for several reasons: lack of knowledge that the thesis exits, lack of information about its contents, lack of availability, cost of ordering and shipping, and also the time it takes to receive an ordered copy. One option is to order a thesis or dissertation via interlibrary loan. However, not all universities are willing to lend a copy and the process can be very slow. In some case, the theses or dissertation is only available in microfilm.

Electronic theses and dissertations submitted from graduate nursing students look basically the same as the traditional print and bound versions. However, ETDs may be very different because they provide a technologically advanced medium with a variety of potential ways to present data that are well beyond simple print (Moxley 2001). Importantly, ETDs can contain non-text elements that cannot be inserted into traditional print and bound copies of theses and dissertations. In addition, the multimedia capabilities are endless (Beaven 2004). Multimedia, sound, video and hypertext links can be included to expand and deepen the expression of ideas and enhance the research presentation. Excel tables and other visuals can be easily inserted into electronic theses and dissertations.

Graduate students from schools external to nursing have included hypertext links, interactive and multimedia elements to create theses or dissertations that are richer, more appealing (Moxley 2001) and less monotonous than traditional print formats (Goodfellow 2004). In time, graduate nursing students may utilize similar technology to present their research in different, creative ways with scenarios, visual images and sound (Goodfellow 2004).

The thesis or dissertation abstract could be available for worldwide access at the time an ETD is submitted to either the information source's web page or the university's server. And although several alternatives exist, universities that require submission of ETDs may allow their graduate students after clarification of the copyright issues to choose whether they want to: (1) make the full-text ETD available with unlimited worldwide access, (2) make the full-text ETD available for their university only, or (3) make the full-text ETD available with unlimited access after 1–2 years. Access to specific sections, an entire chapter or even a diagram can also be limited for a set period of time if necessary (Goodfellow 2004).

Universities in the USA have been slower to embrace the global ETD initiative when compared with Australia, Canada, England, France, India, Germany, the Organization of American States and the UN. Australia, Canada, France, Germany and India are implementing policies at the national level to guide and standardize the development of local ETD initiatives (Edminster & Moxley 2002). Worldwide, academic communities have recognized the value of immediate access to theses or dissertations and are committed to the increased sharing of global knowledge through ETD digital libraries.

Current use of ETDs

According to Moxley (2001), ETDs are 100 times more likely to be circulated than traditional print and bound copies of theses or dissertations. However, this statistic is not specific to nursing. It is not known how frequently ETDs from graduates of schools of nursing are searched, retrieved and then utilized by nurse scholars or others. In fact, little information about ETDs can be found in the nursing literature. This may be because most nurses are not familiar with ETDs unless they specifically work with masters or doctoral students from universities requiring ETDs. This is unfortunate, because nurses from all countries and across all educational levels could benefit from ETDs. Those familiar

with ETDs have used them to supplement other resources, view large reference lists, review comprehensive literature reviews and to examine in-depth discussions of research methods that are usually found in theses or dissertations. Some nurse educators have used ETDs for class discussion and to illustrate a conceptual framework or some aspect of the methods section. They have also referred their students to ETD collections for specific class assignments. Graduate nursing students and nurse researchers have used ETDs to search for recent findings on a particular subject to plan future studies, fine-tune conceptual frameworks or build upon what is already known on a specific subject in nursing. Electronic access to theses and dissertations can provide nurses, students, faculty and researchers opportunities to examine documents that might otherwise never be seen.

Sources

Information survives when new generations of scholars can access and incorporate the work of others into their own, continue to reproduce and also, develop new ideas. Access to an international network of ETDs could contribute to the dissemination and preservation of knowledge by facilitating its current and expansive use (Edminster & Moxley 2002). There are several digital libraries whereby ETDs can be searched for and retrieved. This section will provide the reader with a brief description of the most common sources for ETDs: Networked Digital Library of Theses and Dissertations (NDLTD) (http://www.ndltd.org), ProQuest Dissertations and Theses (http://www.umi.com), Australasian Digital Theses Program (ADT) (http://adt.caul.edu.au/) and those found at university web sites. Ways to search for and retrieve ETDs through these digital libraries are described and the benefits and limitations of each are discussed.

The networked digital library of theses and dissertations

The NDLTD (http://www.ndltd.org or http://www.theses.org) is a digital library created to provide worldwide electronic access to theses and dissertations. It is an ongoing project that emerged as a result of a collaborative effort of universities around the world and the support of government agencies, private companies and other organizations formed to promote the ETD initiative. All agree on the same objectives including but not limited to: (1) improving graduate education through ETDs and digital libraries, (2) increasing the availability of student research for scholars, (3) reducing the cost of submitting and handling theses and dissertations, and (4) advancing digital library technology (Suleman et al. 2001). Since 1997, over 170 institutions, libraries and organizations have joined the NDLTD including 147 universities from around the world. Its international appeal is evident from the numbers of countries in Africa, Asia, Central and South America, and Europe that are represented. A complete list of members can be found on the NDLTD web site at http://www.ndltd.org/membership/dir.html.

The NDLTD ETD collection includes ETDs from students graduating from any university that belongs to the NDLTD. There are over 10 000 ETDs in the collection and this number is rapidly increasing as more universities join the NDLTD and require their students to submit an ETD to graduate rather than the traditional print and bound version. Anyone can search the NDLTD ETD collection. However, to retrieve and download a full thesis or dissertation, one must belong to a university or organization that is a member of the NDLTD or be an individual member. A graduated fee is required for membership by universities and other organizations. Since January 2006, individuals are charged a membership fee of US$25. To access the NDLTD ETD collection (http://www.ndltd.org or http://www.theses.org), individuals will need to complete a brief profile, create a password and log on. ETDs are indexed by the following: author's name, title, field of study, subject, specific keywords or the university from which the student graduated.

In concept, the NDLTD ETD collection is quite good. However, there are limitations. The major limitation is in retrieving the full-text thesis or dissertation from the NDLTD digital library if it was not made available immediately after graduation. If the full-text ETD cannot be retrieved from the NDLTD site, then the interested party is directed to the university's library from which the student graduated. In some cases, access is further denied if the university does not allow the public to access their ETD collection. It is the goal of the NDLTD to combine the various member sites into a single collection for students and researchers to easily search for and retrieve ETDs. This goal has not yet been achieved.

Indexing is another limitation to the NDLTD site because the NDLTD does not provide oversight of indexing. Instead, the institutions or the authors of the theses or dissertations supply index terms. Consequently, there are many inconsistencies with the use of terms to describe the same concepts and those searching on the NDLTD site must state the concept in multiple ways (e.g. cancer OR tumor OR tumor OR neoplasm, etc.) to find everything that is available on the subject. More effective indexing of topics is needed so that information searches can be targeted to specific topics rather than just fields of study. The power of the system used by the NDLTD for searching is the ability to search the titles, abstracts, author/institution, supplied index terms and full text in many cases.

ProQuest Dissertations and Theses

The ProQuest (2008) (http://www.umi.com) offers web access to more than 2.4 million entries (ProQuest Dissertations and Theses 2008). Formerly known as UMI, ProQuest has been the

central repository and disseminator for North American printed theses and dissertations for over 50 years. Since 1996, UMI has scanned and converted all printed theses and dissertations to electronic versions. Over one million electronic full-text dissertations and theses are available through ProQuest Dissertations and Theses – full-text database. More than 60 000 new full-text dissertations and theses are added to the database each year (ProQuest Dissertations and Theses 2008).

Only institutional subscribers for example, libraries of universities and their clients, have access to the entire database and can retrieve and download an entire thesis or dissertation. Thus, any individual that can access a university library that subscribes to ProQuest Dissertation and Theses-A&I (http://www.proquest.com/products_pq/descriptions/pqdt.shtml) can download an abstract or full-text thesis or dissertation free of charge.

In addition, any individual regardless of whether or not he/she is associated with a subscribing university can search for citations and abstracts from ProQuest Dissertation and Theses-A&I database (http://www.proquest.com/products_umi/dissertations/individuals.shtml). Since 1996, the first 24 pages of any thesis or dissertation published can be retrieved by anyone free of charge through another ProQuest product, Dissertation Express. However, a credit card number must be entered prior to accessing the database because ProQuest anticipates that a copy of the entire dissertation or thesis will be ordered. If a full copy of the dissertation or thesis is required, an electronic (if available) copy can be ordered online. A fee of US$37 is attached for this service. Printed copies can also be ordered for a fee ranging from US$29 to $101 depending on whether the copy is unbound or bound in a soft or hard shell and whether the copy is shipped within the USA or internationally. Costs include shipping and handling. Specific pricing can be accessed at http://www.il.proquest.com/products_umi/dissertations/orderingres.shtml.

The ProQuest Dissertations and Theses – full text and ProQuest Dissertations and Theses – A&I databases offer several mechanisms by which ETDs can be easily searched for and retrieved. The most common way is keying in any one of the following elements: citation and abstract, author, advisor, subject, location, degree, title and year. A variety of search options including setting up an e-mail alert for a specific topic area or sorting by date or relevance to a specified topic are also useful features.

The major limitation to retrieving the full-text thesis or dissertation from the ProQuest Dissertations and Theses collection is the cost. Electronic copies or printed versions are expensive for both USA and international academic and non-academic users. Thus, these costs may prohibit many nurses from ordering an ETD from ProQuest Dissertations and Theses unless they are affiliated with a university library that subscribes to the database in which case the full-text is available free of charge.

Australasian Digital Theses Program
The Australian Research Council in association with the Council of Australian University Librarians established the ADT Program in 1997 to provide access to, and Promote Australian research to the international community (Australasian Digital Theses Program 2007). Since 2000, the ADT Program is open to all Australian universities and their students and nurse scholars worldwide as well as the general public. Approximately 40 universities belong to this programme. The ADT library can be accessed at http://adt.caul.edu.au/.

Electronic theses and dissertations are easily searched and retrieved from the ADT library by entering the title, author, subject, abstract, school or department, date or URL number. A search can include all of these universities or can be limited by selecting a specific university from the pull down menu located by clicking browse. In some cases, only the abstract is available but in most cases the full text thesis or dissertation is available in electronic format.

University databases and online catalogues
Another way to access ETDs is through university databases, the library's information resource vendors and online catalogues. ETDs can usually be found by entering the author's name, title, subject or specific keywords. The department or school, for example nursing, can be entered on some university ETD sites in which case a comprehensive list of all ETDs produced from that school of nursing is made available to the viewer. From there it is easy to scroll down the list for a topic of interest and retrieve the abstract and/or download the full-text electronic thesis or dissertation to save in electronic format or to print the document. Interested nurse scholars are encouraged to browse through the ETD collections from those universities that allow public access to their ETD collection as shown in Table 1.

The major limitation to searching and retrieving ETDs through individual university databases is that a university's ETD database usually includes only the work of their graduates. Thus, it is necessary to know where a particular student graduated from in order to access the ETD or be willing to browse through several university digital libraries using the author's name or search terms for a specific topic. In addition, not all university ETD collections are available to the public.

Fortunately, universities that catalogue their dissertations and theses will often also place them into WorldCat, which is a global network of library content and services. Through WorldCat, dissertations and theses can be searched. WorldCat requires a subscription, but Open WorldCat (http://www.worldcat.org) is available to the public free of charge. It offers fewer features than does WorldCat, but electronic dissertations and theses can be searched and retrieved easily. Upon entering

Table 1 Examples of university electronic theses and dissertations (ETDs) digital libraries

ETD collections	Web addresses	Public access
Boston College	http://dissertations.bc.edu/	Available
Case Western Reserve University Cleveland Health Sciences Library*	http://www.ohiolink.edu/etd/	Available
Duquesne University	http://www.library.duq.edu/etd/index.htm	Available
East Tennessee State University	http://etd-submit.etsu.edu/index.html	Available
Georgetown University	http://aladinrc.wrlc.org/handle/1961/2141	Restricted
Georgia State University	http://etd.gsu.edu/	Available
Loma Linda University (Mexico)	http://www.llu.edu/llu/nursing/library/dissertations.html	Restricted
Marshall University	http://www.marshall.edu/etd/NUR.html	Available
Northern Michigan University	http://www.nmu.edu/library/onlinedb/thesesanddissertations.htm	Restricted
University of Arizona	http://etd.library.arizona.edu/etd/	Available
University of British Columbia (Canada)	http://skeena.library.ubc.ca/why.htm	Available
University of Florida	http://www.uflib.ufl.edu/etd.html	Restricted
University of Missouri	http://healthlibrary.missouri.edu/omni2/databasedetails.cfm?EresourceID=10453	Available
University of North Carolina – Chapel Hill	http://www.lib.unc.edu/	Restricted
University of Pittsburgh	http://www.pitt.edu/~graduate/etd/	Available
University of Saskatchewan (Canada)	http://library2.usask.ca/etd/ETD-browse/browse?first_letter=all	Available
University of South Africa	http://www.unisa.ac.za/Default.asp?Cmd=ViewContent&ContentID	Available
University of Sydney	http://www.library.usyd.edu.au	Available
University of Wisconsin – Milwaukee	http://www.uwm.edu/Libraries/	Restricted
Washington State University	https://research.wsulibs.wsu.edu:8443/dspace/handle/2376/625	Available

The ETD collections listed above are only a few from universities that either permit the public to access and retrieve ETDs or restrict access.
*Several ETD digital libraries from different universities in the state of Ohio can be accessed from this web site.

Table 2 Advantages of electronic theses and dissertations

Provides worldwide access to the most up-to-date students' research
Provides ability to review theses or dissertations electronically
Promotes creative expression through the use of computer technology
Encourages students to learn valuable computer skills
Presents the student with the opportunity to gain experience in electronic publishing
Offers faculty advisors, committee members and universities recognition and prestige
Saves library shelf space, storage and binding costs

the keyword 'nursing', over 1300 dissertations were found at http://www.worldcat.org/search?q=nursing&fq=fm%3Adeg+%3E+dt%3Aurl&qt=facet_dt%3A.

Benefits of ETDs

Electronic theses and dissertations offer many advantages to students, universities and the international community of nurse scholars as shown in Table 2. Most importantly, digital libraries provide access to theses and dissertations in the international community of nurse scholars worldwide in a timely manner. According to Young (1998), print and bound copies of theses or dissertations are rarely read by anyone other than the graduate student's faculty advisor and committee members. Rarely are bound copies circulated outside of the graduates' university library (Bolander 2001; Young 1998). And, if the student does not publish their research in a scholarly journal, the results of their research may never be disseminated. Even if the research is published, it may take several years after the student graduates before it actually appears in print (Goodfellow 2004). In some cases, by the time it is read, it is no longer current.

In many cases, ETDs are available for electronic review relatively soon after the master's or doctoral student graduates. ETDs have the potential to reach a much broader audience in a more timely manner than do printed versions (Eaton et al. 2000). Consequently, the most up-to-date research generated by graduate students can be cited and the research findings utilized much sooner than the traditional print versions. In addition, access to the most up-to-date research may prevent duplication of studies unless warranted. ETDs may also provide the practicing nurses with up-to-date information important to their clinical practice.

Electronic theses and dissertations have global, international appeal. For any nurse regardless of his/her level of education, the ability to access the most recent graduate students' research electronically from anywhere in the world is advantageous. For those

residing in developing countries where library resources are often limited or for those who live in remote areas in developed countries but far from university libraries, ETDs may be even more valuable.

Maintaining serial subscriptions of scientific journals in a country greatly impacts the university's library budget (Yiotis 2005). In addition, requests for reprints of a specific journal article from the publishing company are costly. Locating a printed version of theses or dissertations is often difficult and time consuming for nurse scholars living in both developing and developed countries. If it is not possible to borrow from a university's library, a copy can be ordered but again it is quite costly. ETD digital libraries offer nurse scholars access to information that otherwise may not be available or feasible to acquire. Just recently, a graduate student in physical therapy from Chile requested a copy of a journal article based on my doctoral dissertation. It would have been so easy to direct her to the full-text electronic version of my dissertation had I had the opportunity to submit it electronically.

Electronic theses and dissertations can be accessed via one of several digital libraries available today and from most computers with Internet access. For the nurse who does not own a home computer and is thus unable to access the Internet from home, a café or local library with Internet access can usually be found within a reasonable distance almost anywhere in the world. Based on personal experiences, Internet cafés have even been located in remote areas of several developing countries in Eastern Europe and the Central and South Americas, and also in Malaysia, Mexico, South Africa, Thailand and Turkey. Costs are approximately US$1–7 per hour.

Limitations of ETDs

Although ETD digital libraries benefit the international nursing community, there are also several limitations. Most are related to searching for and retrieving ETDs from the available digital ETD libraries. For example, in some cases, the graduate student may choose to make only the abstract immediately available. This prevents the reader from immediately accessing any in-depth information. Other times, the full dissertation is made available by the graduate student, but only through the universities' ETD collection that may or may not be accessible to the public. Awareness of the options and their effects on scholarly exchange need to be recognized and clarified as graduate students make these choices.

Conclusions

Globalization and advances in technology are continuously driving developments in electronic publishing and the transmission of educational information. Technology has provided the academic community with the ability to access the most up-to-date graduate students' research electronically. ETD initiatives have truly begun to transform publication and distribution of graduate student research worldwide. It has changed the future of academia (Edminster & Moxley 2002; Fox 1999). ETD digital libraries can also serve as a valuable resource to the international community of nurse scholars. As more nurse scholars learn about ETDs and more graduate students submit their research electronically, ETDs will become even more valuable as an immediate source of nursing knowledge. International and national nursing societies should advocate for making all nursing theses and dissertations freely and electronically available.

Electronic theses and dissertations are necessary for the advancement of knowledge (Beaven 2004). Several years ago, worldwide electronic access to the most up-to-date graduate students' research was never thought possible in the world of nursing. Now, the world has Internet that provides international access to the knowledge of its scholars, and graduate students are able to present that knowledge effectively in a digital world.

Implications

Thanks to modern technology and those who had the foresight and initiative to develop the appropriate tools, ETDs and the global digital libraries by which ETDs are accessed are making information globally accessible. This will help bridge the information gap across nursing. However, challenges will remain until ETDs are available to all scholars free of charge in a more academically based model. In addition, more effective indexing of topics is needed so that information searches can be targeted to specific topics rather than just fields of study. These and other challenges will hopefully be met as advances in technology and vision of worldwide, free access to ETDs continue.

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