

# Universities Should Require Electronic Theses and Dissertations

*Making theses and dissertations available electronically dramatically widens their exposure and usefulness*

By **Joseph M. Moxley**

While in the past a university's quality was linked to its library, in the future a university's quality will be linked to its digital library of theses and dissertations, which are easily available over the Internet. Universities that lag in adopting training programs for electronic thesis and dissertation (ETD) authors or in providing the resources to create ETDs will lose students and faculty to more supportive universities. Researchers will celebrate the good work of the innovators at progressive universities. The opportunity to participate in creating and disseminating ETDs could attract top candidates and raise standards for graduate-level composition. In addition, graduate students and their sponsoring faculty could benefit from increased exposure of their work, both in job and other financial opportunities and in professional reputation.

For example, the Virginia Polytechnic Institute and State University's digital library of ETDs has raised significant interest in the work of its graduate students. According to Gail McMillan, Director of Virginia Tech's Digital Library and Archives, ETDs are extremely popular and much more accessible than traditional theses or dissertations. In fact, ETDs are 100 times more likely to be circulated than print theses and dissertations. Virginia Tech's circulation records show that between 1990 and 1994, 15,335 theses and dissertations were approved; 3,967 of

these works were checked out in 1998. In contrast, by 2000–2001 Virginia Tech had 3,393 ETDs in its collection; 1,565,151 PDFs (largely ETDs) were downloaded by users. That remarkable increase clearly resulted from the university's shift to ETDs, as no other significant changes took place at Virginia Tech in the same period.

## Lost Opportunities

Approximately 1.8 million students are enrolled in U.S. graduate programs, and the U.S. invests billions of dollars each year to support graduate research. Each year more than 43,000 students produce doctoral dissertations, and 420,000 students earn master's degrees, with many of them writing theses. Nonetheless, in the traditional graduate model, few theses or dissertations circulate past local libraries; much of the research is poorly written; more than half of the students who begin doctoral work fail to complete their dissertations; and few studies benefit from the effective use of multimedia tools, animation, or interactive features. Lacking substantial numbers of readers, the dissertation has been purported to be an academic hurdle — an exercise in writing for an audience of five rather than in making a meaningful contribution to a discipline's literature.

Universities possess a simple, inexpensive solution to some of these problems. By requiring graduate students to publish theses and dissertations in digital libraries, universities

significantly increase access to student research. While in the past few theses and dissertations were read by anyone beyond the committee, works archived at the Networked Digital Library of Theses and Dissertations (NDLTD; see <http://www.ndltd.org/>) are read by thousands, potentially millions, of people. When universities require ETDs, they inspire faculty and graduate students to experiment with new mentoring models and to develop new ETD genres. By creating an online community of writers, universities also improve the likelihood that students will complete better written, more relevant theses and dissertations.

Surprisingly, most American universities are slow to embrace digital scholarship, preferring the traditional five-chapter dissertation with one-inch margins. Only five American universities require ETDs for graduation: Virginia Tech, West Virginia University, East Tennessee State University, the University of North Texas, and the University of Texas at Austin. Massachusetts Institute of Technology is scanning new and past theses and dissertations and making them available electronically. A half dozen other universities have individual departments that require ETDs. The preliminary results from these universities are resoundingly positive: ETDs save students and libraries money (no binding costs or shelf space), increase readership, and introduce students to electronic publishing.

UMI, a private company that has been the central repository and disseminator for North American print dissertations for the past 50 years, now scans all the print dissertations it receives and converts them to Portable Document Format (PDF) files. Thanks to UMI's Current Research@ service (see <http://wwwlib.umi.com/cresearch/gateway/main/>), users can search citations and abstracts of dissertations and theses and view 24-page previews of dissertations published after 1996.

Interestingly, many graduates don't know that their dissertations are available electronically via UMI or other services. For example, when Contentville.com recently marketed dissertations, faculty on Internet listservs vigorously criticized this commercialization, yet Contentville.com was merely extending UMI's service.

### **Tradition and ETDs**

Universities typically allow students to limit access to their work to their home campuses — a move that some faculty champion for works that they hope will lead to journal articles, fearing that increased access constitutes prior publication. In a recent survey of journal editors and publishers, however, 83 percent said that an online thesis or dissertation widely available through a Web-based archive would not be considered prior publication according to their journals' existing policies. Typically, students must significantly revise their academic work, particularly the detailed account of their results, to accommodate the differences between academic and commercial publishing.

If hiring, tenure, and promotion committees value readership, citations, and influence on the field, then why shouldn't they prize a frequently accessed and cited thesis or dissertation? Admittedly, the traditional five-chapter dissertation took time to develop from the model of the first dissertation submitted in America — a six-page, handwritten thesis at Yale University in 1860. We can't expect major institutions to reinvent themselves overnight. Theses and dissertations are cherished academic genres, and we must carefully

## **Joining the NDLTD**

To join the NDLTD, institutions should send a letter (see <http://www.ndltd.org/join/>) indicating that intention to NDLTD Director Edward A. Fox (fox@vt.edu). There is no cost. Joining only requires agreeing with the goals and objectives of NDLTD, as explained on the Web site. For members to fully benefit from the services provided, however, they should also attend the annual ETD conference, follow the standards developed by NDLTD, participate in the emerging union catalog of ETDs, and make their content available through the NDLTD library <<http://www.theses.org>> and other venues. Eventually, they should require submission of ETDs as suggested in this article. Note, ETD 2002 will be hosted by Brigham Young University from May 30 through June 1, 2002.

monitor their evolution. Still, evolve they must, or languish unread.

I propose that American universities join the NDLTD, require ETDs, provide necessary resources to meet faculty and students' needs as authors, and study the evolving ETD genres and new mentoring models. Infringement need not become an issue, since digital libraries of ETDs enforce graduate students' ownership of their texts in the sense that students archiving their work at the NDLTD can put passwords on small sections of their work, on diagrams, or on whole chapters. These actions restrict access while leaving the work available worldwide.

### **Growth of the NDLTD**

Conceptualized in 1987 and realized in part in 1997 through efforts by Vir-

ginia Tech's Ed Fox, Gail McMillan, and John Eaton, the NDLTD is a truly international consortium, with almost half of the members located outside the United States. Unlike UMI, which charges for ETDs, the NDLTD provides free access to scholarship worldwide. Presently, more than 106 research universities, associations, and professional organizations have joined the NDLTD. In a recent informal discussion on the NDLTD listserv, participants counted more than 8,000 ETDs in the NDLTD and nearly 18,000 scanned theses and dissertations.

A steering committee directs overall strategy. Its many representatives include members from the Council of Graduate Schools (CGS), Committee on Institutional Cooperation (the academic consortium of the Big Ten universities and the University of Chicago), Coalition for Networked Information (CNI), Association of Research Libraries (ARL), Ibero-American Science and Technology Education Consortium (ISTEC), National Library of Canada, Online Computer Library Center (OCLC), and UNESCO. The University of South Florida hosted 225 people at ETD 2000, the annual conference for the organization, and the California Institute of Technology hosted 190 people at ETD 2001.

Australia, Germany, France, and India are implementing policies at the national level to guide and standardize the development of local ETD initiatives, whereas in the U.S. only Ohio has a state-wide consortium in the works. In Australia, the Australian Digital Theses (ADT) Program, a national collaborative model, now coordinates ETDs for just under half of Australia's universities. Last March, the French Minister of Education distributed a public letter to every university president and graduate school announcing his desire to implement ETDs at the national level. In Germany, the Conference on University Rectors distributed a similar statement.

Thanks to UMI's policy of scanning all works it receives, American doctoral research is available worldwide, yet the bitmap scan UMI produces is inferior to an author's original ETD, which can

be indexed and analyzed. An author's ETD has smaller, more manageable file sizes and can include full text, working hyperlinks, navigational tools, and metadata — data about data that facilitates searching the document. Furthermore, very few master's theses (except from Canada) reach UMI. Thus, in places that don't yet require ETDs, master's theses are likely to become obscure beds for dust mites.

In the U.S., we need current NDLTD members to move decisively beyond their existing pilot projects and require ETDs. However, simply recommending ETDs is insufficient, particularly when the suggestion comes at the tail end of graduate students' programs. Universities must also take the next step, providing resources, training, and clear policy statements.

## Providing the Tools

On a campus where Microsoft Office 2000 is available, for example, faculty and students can use MS Word's tracking and commenting capabilities to provide online evaluations. In this way, faculty can see one another's criticisms of a particular student's documents, which should aid the student's sense of audience. In turn, after saving documents to the Web, students can invite evaluation from experts and colleagues around the world.

When students first enter their graduate programs, if they don't already know how, they should learn how to use word processing tools, specifically style sheets, templates, hyperlink and image insertion, and formatting of tables of figures and contents. Ideally, students should learn how to create a Web portfolio, which provides a space in which they can develop their research projects and annotated bibliographies.

Throughout training workshops, the trainers should show how these tools can save faculty and students time. For example, advanced graduate students could learn how a bibliography tool like Endnote can be used for coursework integration, exam preparation, and scholarly writing; universities should provide design templates and

celebrate exemplary models. Graduate students can form online writing communities, referring to online research, downloading mentors' criticisms, and providing their feedback to peers' documents.

Style sheets, hypertext links, linked Excel tables, and inserted visuals offer simple ways to create richer theses and dissertations. Ultimately, however, creative researchers will challenge our conception of academic writing. Increasingly, linear text with one-inch margins will give way to hypertextual writing, streaming multimedia, interactive chat spaces, three-dimensional modeling, and features we can't even imagine right now.

For example, ETDs such as Paulette Robinson's (see <http://www.towson.edu/~probinso/Dissertation>) or Christine Boese's (<http://www.nutball.com/>

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[dissertation/index.htm](http://www.cine.com/dissertation/index.htm)) use interactive features (forums and surveys), animated menus, image maps, sound files, and color-coded indexes to organize their results in playful, nonlinear ways. Simon Pockley's ETD (<http://www.cine.com/media.net/FOD/>), which has been accessed by more than one million distinct computers, provides an excellent example of how ETDs can continue to evolve following "completion." Since 1998, Pockley has received hundreds of e-mails each day about his work, with comments ranging from the profound to the profoundly weird (<http://www.cinemedia.net/FOD/FOD0989.html#Richardson3>). Now *that's* exposure!

## Longevity versus Wide Access

Undoubtedly, we face significant archival questions when students use all the whiz-bang features of new pro-

prietary tools. For example, while we can confidently predict that Adobe's PDF standard will evolve (in light of its widespread adoption by governments, industry, and academe), how can we be sure that students' .avi movies will be viewable once compression technologies improve and lead to new formats? By working together at the state, national, and international levels, universities can agree to open, internationally accepted standards that would increase access now and in the future. This solution enables students to use any tools as long as they save their work in an approved format and reduces conversion costs.

Ultimately, while I respect my colleagues' concerns regarding archival issues, I view ETD initiatives from my perspective as a writing teacher and coach. Even if we cannot preserve a particularly innovative EDT, one that uses media in startling new ways, as a writing teacher I would respond, "So what? Who cares?" In my opinion, a document that can be read over the course of several years by many people is preferable to a document available for a million years and read only by a few people (that committee of five).

Our concepts of research, the authority of knowledge, and the shape of content are being radically challenged. To produce students endowed with Knowledge Age literacy, universities must provide the resources and training that faculty and graduate students need to write and annotate documents online, to incorporate visuals with a degree of sensitivity to their rhetorical value, and to publish and metatag documents on the Web (for efficient retrieval). Ultimately, for those of us who spend significant time online, a university's digital library of theses and dissertations reflects that institution's heart and soul. Anything less than widespread adoption of mandatory ETD requirements is academic myopia. *e*

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