Evolving in Collaboration: Electronic Thesis and Dissertation Workflows in North Carolina

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Abstract

Thirty-seven colleges and universities in North Carolina offer advanced degrees, and most require a thesis or dissertation. The websites of thirteen (35%) indicate they accept or require electronic submission of dissertations and/or theses (ETD). How do these institutions handle the interdepartmental communication and collaboration needs of ETD programs? To begin answering this question, this study examines current practices among ETD administrators in North Carolina and in current national literature, paying special attention to communication, collaboration, workflows, and divisions of labor. The literature review surveys current (since 2003) library and higher education articles on topics related to collaboration, workflows, and divisions of labor in ETD programs. Then the authors use a brief web survey (sixteen questions) that was emailed to twenty-three individuals identified on institutional websites as being involved in the ETD program. Fifty percent of recipients completed the survey, and the results tend to support common themes found in the literature: ETD depositories require a great variety of skill sets and thus will involve multiple departments; libraries and graduate schools are primary players, but not exclusively, in ETD workflows; and communication and collaboration between departments are important from start to finish.

Introduction

Colleges and universities offering advanced degrees increasingly require or allow the electronic submission of theses and dissertations in the United States and worldwide. Making the switch from paper to digital means developing new or modified procedures, workflows, and tools for all stakeholders at these institutions – from graduate schools to academic departments, libraries, professors, and students. From conception to institutionalization, this process requires that individuals from different departments talk and work together. Professors and students must understand digital format requirements as well as the untapped potential for digital multimedia enhancements to theses and dissertations. Graduate schools, libraries, or academic departments need to train students to prepare their documents to meet the format requirements and then review and return them until all requirements have been met. Once the finished papers are submitted and indexed, libraries need notification to begin their processes for cata-

loging and the provision of storage and access.

The University of North Carolina at Greensboro (UNCG) has accepted electronic submission of theses and dissertations since 2005 and required it since 2006. With a relatively new ETD program, UNCG is actively researching best practices while refining its own. In doing so, the authors of this article, a cataloger from the Libraries and an assistant director from the Graduate School, each traveled independently to the same ETD-related conference without knowing the other was attending. This was our first indication that our respective departments might benefit from increased communication. That realization, in turn, led to questioning how other institutions offering ETDs are handling the inter-departmental communication and collaboration needs of such programs. The resulting study examines current practices by surveying ETD administrators in North Carolina and reviewing current national literature, with special attention to communication, collaboration,

workflows, and divisions of labor. Although no clear consensus on best practices emerged, the survey results do reinforce the themes introduced in the literature review: the wide range of skills and personnel required to establish and maintain ETD depositories, the necessity of involving multiple departments within an institution, the importance of both libraries and graduate schools in typical ETD workflows, and the need for communication and collaboration between departments at every stage of the process.

As we discuss the findings of the survey and literature review, we will emphasize the repeating themes that emerge, highlighting the key areas where communication and collaboration are most important as well as where opportunities exist for their improvement.

Methods

There are thirty-seven North Carolina colleges and universities that offer at least one advanced degree, most of which require a thesis or dissertation. Of those, thirteen – thirty-five percent – have websites indicating they either accept or require electronic submission of dissertations and/or theses. We designed a brief web survey of sixteen questions and emailed the link to twenty-three individuals identified on these institutions' websites as being involved in the ETD process. Three of the emails bounced back, twelve of the remaining twenty responded to the survey, and ten of those twelve completed it, meaning that fifty percent of survey recipients completed the survey. Although we did not take our own survey, some of the tables that follow will include information about UNCG so as to provide a more complete picture of North Carolina ETD institutions.

Literature review

A national review of relevant, current (since 2003) library and higher education literature on collaboration, workflows, and divisions of labor in ETD programs consistently re-

flects the wide variety of skill sets called for in their management. Successful ETD programs require input from graduate school administrators, library or campus information technology (IT) staff, and professional cataloger librarians as well as from the students creating the documents.[1] In most colleges and universities, the graduate school and library are equally involved in designing new ETD programs, forging a relationship that continues through workflows as the programs mature. Personnel from multiple departments must address ETD program needs and issues such as student training and instruction in metadata creation, the need for sophisticated cataloging, the growth of institutional repositories, and efforts toward long-term preservation.[2] As electronic submission of theses and dissertations grows in popularity, the focus in the literature has shifted from the choice of platforms (local, open-source, or proprietary) for submission and storage to discussions on improving systems and training, building institutional repositories, increasing access and exposure, and ensuring long-term preservation.[3] Though ETD workflows may vary widely in such aspects as content management and storage systems, extent of automation, and departments involved, these common themes emerge: the variety of skill sets involved in ETD, the common elements in workflow procedures, and the importance of communication and collaboration.

Several recent articles discuss the complexity of ETD depositories and the resulting need for a variety of skill sets in their creation, development, and management: skills in leadership, project management, human relations, information technology, and cataloging all come into play.[4] The movement of university students and resources from traditional to electronic mechanisms raises the bar for both students and staff, necessitating advanced skills or additional training on all sides. Kristin Yiotis, in an overview of the history and requirements of ETD programs, points out some of these issues: current metadata and interoperability standards for Open Access Initiative (OAI) protocols; preservation and file format standards such as

PDF; open-source versus proprietary software platforms; intellectual property and levels of access; and start-up costs for human resources, infrastructure, and training.[5] To address such varied concerns, ETD programs must cross departmental boundaries in new ways. Ideally, the flexibility thus gained should continue, since the skills required are likely to change as these programs evolve alongside technological change.

The arrival of an ETD at its final destination, typically an institutional repository, is the conclusion of a lengthy workflow process. The thesis or dissertation itself, which may be the product of years of study, now must conform to institution and industry standards for digital form and format. To meet these standards, students are trained via workshops, websites, handouts, tutorials, meetings, or any combination thereof. The graduate school handles student instruction in most institutions; in a few, this role goes to the library. Once trained, the student prepares the document and uploads it to a vendor-operated or institution-built submission site. The document is reviewed, typically by the graduate school, and then either approved or returned to the student for changes. Once approved, the final digital file usually moves to the library, which provides both metadata – including cataloging to MARC and OCLC standards – and access. The order of these final steps depends upon the type and extent of automation built into the institution's submission system. Throughout the literature, workflows are described as the combined effort of graduate schools, libraries, and sometimes IT departments.[6] The interaction and interdependence observed in these workflows suggest the great importance of ongoing communication and collaboration among departments involved in ETD.

The birth and development of ETD programs usually spring from collaborative efforts between a variety of departments, spurring institutions to communicate, work together, and think collectively. Unfortu-nately, as colleges and universities grow comfortable with the ETD process, the level of communication tends to decline as staffs turn their attention to other projects. Susan Hall, et al., in a 2005 survey of United States ETD institutions, summarize here their respondents' advice to administrators building new programs: "recommendations…greatly stressed the importance of clear and ongoing communication among constituents at all levels, and securing commitment for support at the outset."[7] Throughout the literature the call is repeated to continue discussions and team efforts to maintain and improve levels of service, quality of systems and procedures, and the relationships built on ETD.

Three important themes echo throughout discussions in this literature review. First, the design, implementation, and maintenance of these programs require a variety of skills that cross traditional departmental boundaries in academia. Second, although ETD workflows vary widely from one college or university to the next, common elements include student training by the graduate school and description and access provided by the library. Finally, because the success of these programs depends on the contributions of multiple departments, the communication and collaboration necessary for their initiation continue to be important.

Results

The responses to our survey are always instructive, even when participants seem to interpret our questions in unintended ways. The following discussion of the sixteen questions and their responses includes evaluations of their accuracy and possible revisions when indicated.

Number of advanced degree programs offered at NC ETD institutions		
Do not know how many degrees offered	6	
Do know how many degrees are offered	5	21
		20
		74
		160 Master's and more than 60 doctoral degrees
		ca. 300 PhD per year

Table 1: Do you know how many graduate degrees are offered by your institution? Please specify.

The initial question asks how many graduate degrees are offered by the respondent's institution. Six did not know; five said they did, but the wide range of numbers given suggested a problem with the question. Were these participants giving us the number of degree *programs* or the number of *degrees granted* annually? The question could have been read either way and should be rephrased for clarity. For the purposes of this study, the question could have been worded "How many master's and how many doctoral degrees are granted by your institution per year?" which would have provided a clearer picture of the scale of the ETD programs under study.

The second question inquires whether electronic submission is required, optional, or variable by academic unit. Sixty percent of participants said electronic submission was always required, forty percent said optional, and none said it could vary by academic department.

Question three asks for the year when ETD programs began. Nine survey participants responded, with answers showing the largest cluster between 2005 and 2010. One early adopter began accepting electronic submission as an option in 1997. Two others introduced the option in 2002 and 2006. Two began requiring ETD in 2002, three in 2008, and one each in 2007, 2009, and 2010. Three respondents skipped this question and one did not know. At UNCG, ETD was optional starting in May 2005 and has been required since August 2006.
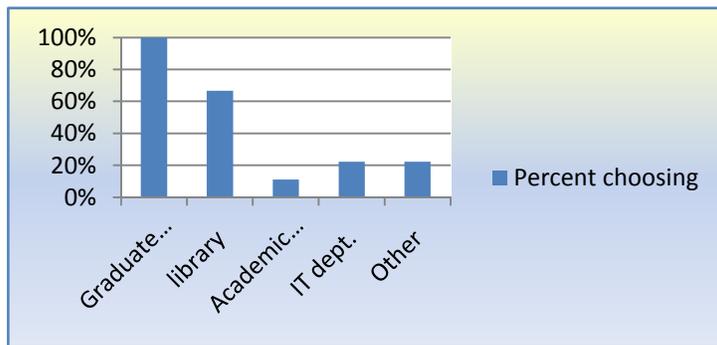

Figure 1: Which departments are involved in administering ETD at your institution?

Student training		Thesis review and approval	Creation / maintenance of website for submission / storage of files	Uploading of files (to ProQuest or institutional repository)	Metadata creation (including cataloging)	Other
Not applicable		Grad school exec. asst.	Grad school exec. asst.	Grad school exec. asst.	Grad school exec. asst.	
		Admin. support assoc.	Division tech. analyst	Admin. support assoc.		
Library staff		Grad school admin. asst.	Asst. head technology, library	Student	Student	
Thesis editor		Thesis editor	Library	Not sure – Proquest?	Library	
Grad school		Grad school	Library			
Thesis editor / Grad coord.		Thesis editor / Grad coord.	Systems librarian		Thesis editor / Grad coord.	Digital repository librarian
Grad school /	Library employee	Grad school asst.	Grad school asst.	Archives and asst.	Archives harvests from Proquest	
Grad school		Academic depts.	Grad school	Library		
Dean		Student services	Proquest	Dean	Library	
Grad school *		Grad school *	Library IT *	Grad school *	Library *	

*UNCG, not survey respondent

Grad school	Library	Dean	Academic depts.	Proquest	Undetermined

Table 2: Which personnel perform what ETD tasks?

The fourth question asks which departments are involved in ETD administration at the respondent's institution; each of the nine respondents names the graduate school. Six also select the library, one names the academic department, and two include IT and "other."

Question five asks who determined the division of labor for ETD tasks among the libraries, graduate schools, and IT departments. The responses are evenly divided, clustering respondents to name tasks for which they chose "other." The chart above color-codes responses by department when possible. Overall, ETD tasks appear to be fairly even-around either the graduate school (or its dean) or a committee / task force (which may or may not include the graduate school).

The sixth question lists five common tasks related to ETDs and asks who performs each task. Answers to this question were all over the map. The survey asks respondents to answer with position titles instead of names, but in retrospect the employees' departments might be the more useful information. Also, the survey should have asked ly divided between graduate school and library personnel (assuming archives are part of the library), with a few other departments taking part in some cases.
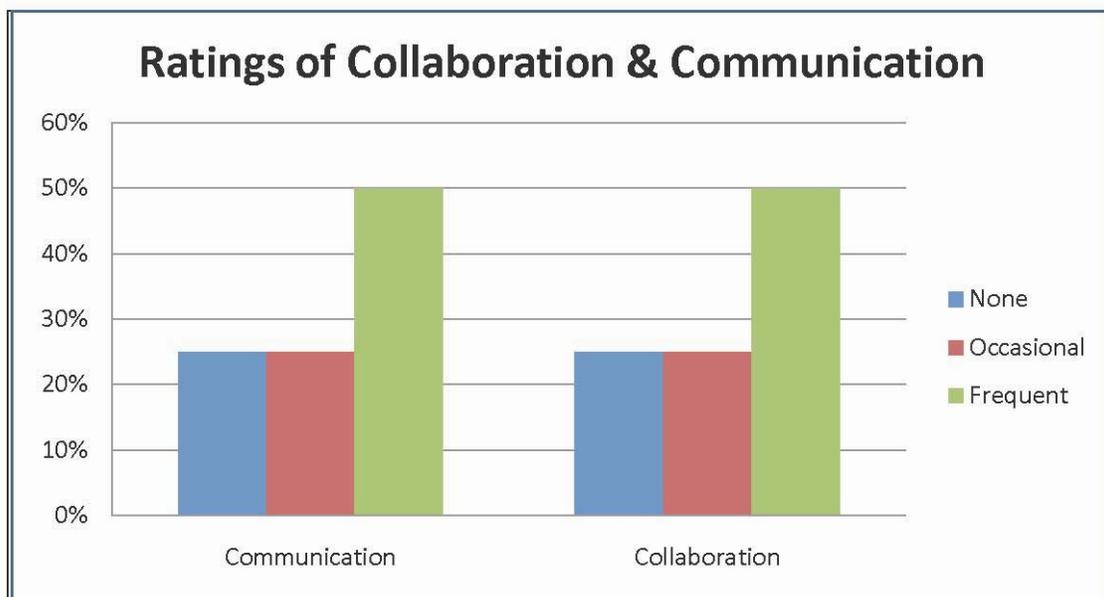
Figure 2: Please describe the amount of collaboration and communication existing between departments involved in ETD.

Question seven asks participants to rate communication and collaboration separately as "none," "occasional," or "frequent." Interestingly, each respondent rates both the same across the board. Two choose "none," two "occasional," and four describe both collaboration and communication as "frequent." One who selects "none" adds the comment that theirs is the only department involved in the ETD process. One choosing "occasional" states there is little need for communication or collaboration except when special questions arise regarding technical issues. One "frequent" responder notes that the current work group meets less often than it did when the ETD program was in its infancy. This group of responses suggests that where more than one department is involved, most ETD workflows at North Carolina institutions continue to feature regular communication and collaboration between those departments. For some, however, the communication/collaboration is need-based only, leaving fewer chances to communicate about larger issues or opportunities for improvement and change.

Question eight asks if the respondent's institution has written procedures and/or workflows for the ETD process, and if so, to email a copy. Our intention is to discover the steps followed by employees, but the only response received provides a link to the institution's website instructing graduate students in ETD preparation. This question also should be rephrased to clarify its objective: "Is there a written procedure, manual, or workflow describing ETD processing by employees at your institution?" Though the answers do not provide the information we hoped to receive, responses to the following specific workflow questions still help to draw a picture of the types of workflow processes in use by ETD programs in North Carolina.

The next group of questions seeks detailed information about the structure, mechanisms, and people that make an ETD program work – the type of system used, its connections and capabilities, and how and by whom it is used. Question nine inquires whether the mechanism for student submission of ETDs is an institution-built site, vendor-built site, or other. Five, the majority of institutions, respond that they use an institution-built submission site and three say they use a vendor-built site. Three respon-
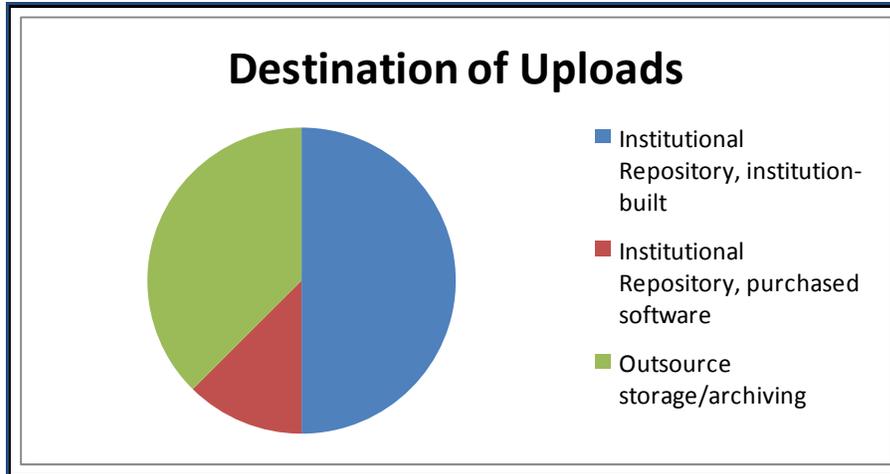
Figure 3: Does your institution provide digital storage of ETDs?

dents choose "other," but two of these specifically identify ProQuest/UMI, which has been publishing theses and dissertations for over 70 years and provides an online submission system as an optional service for colleges and universities. Although the submission site is customizable to the institution it is still built by ProQuest, so these two are added to the three claiming a vendor-built site. The institution-built and vendor-built submission sites are now tied at five each. The third "other" identifies ETD-db, the open-source platform from Virginia Tech.

Question ten asks whether the approved ETDs are uploaded to the vendor and/or server (a) singly, as they are completed; (b) all at once, as a batch; or (c) other (please specify). A small majority of institutions upload the final documents individually. The others upload as a batch, while one response indicated that the database used for submission may also serve as the storage/access system. The variation in this process does not appear to be impacted by whether or not the submission mechanism is "institution-built" or "vendor-built." It also appears to be independent of the destination of uploads (whether an institutional repository or an outside vendor is used for digital storage/archiving).

Question twelve addresses upload destinations, asking whether the institutions pro-

vide digital storage of ETDs (an institutional repository) and if so, if the storage system is institution-built or purchased. If the institution outsources digital storage/archiving of ETDs, they are directed to question thirteen and asked to specify the vendor or provider. Of the five choosing "yes," only one uses purchased software for the institutional repository. The others are using open-source products, two naming D-Space and two Virginia Tech's ETD-db. Two institutions say they do not provide local archiving; both list ProQuest/UMI as the vendor providing digital storage of their ETDs.

Questions nine, ten, twelve, and thirteen cover the structural setup used by North Carolina institutions with ETD programs, delving into details of product (what) and process (how). The remaining critical workflow component, of course, is personnel (who). Questions eleven and fourteen investigate the employees responsible for ETD tasks as well as how much they communicate interdepartmentally concerning those tasks.

Question eleven asks which department is responsible for uploading ETDs. All six survey participants who answer select the graduate school. Two also chose "other," one adding that uploads take place automatically upon the thesis reviewer's approval and the other saying the student uploads the ETD. In the latter case, the responder may

have meant either the initial, pre-approval upload or a post-approval resubmission that moves the process forward.

Question fourteen asks how the departments or individuals know when uploaded ETDs reach their destination and for a description of communications surrounding this stage. Answers show greater variation than in other parts of the workflow. One institution indicates the graduate school sends a notification to the library. Another mentions a list that shows when files are ready or "available" to move forward. A third refers to an email confirmation, but does not specify whether from a staff member, from ProQuest, from an institution-built automated system, or a host of other possibilities.

The next question, number fifteen, asks respondents to describe ETD workflows at their institution from the time a document is approved until the moment it becomes accessible by the public. Five respondents answer and seven skip question fifteen; most responses do not yield the kind of information we were seeking. They range from "none" to a link to the online guide for students preparing master's theses. Two answers do provide a basic description of the workflow process from student or thesis editor input up to public release. These descriptions are compatible with the information gained from the rest of the survey, as they reiterate the extensive roles of graduate schools and libraries along with the variations in timing and automation between universities. The final question provides respondents with the option to provide other information or comments.

Summary and Discussion

In this simple survey, a significant relationship surfaces between graduate schools and libraries involved in ETD administration. It also reveals the basic framework for a generic workflow process in universities across North Carolina that – despite a few differences – shows many similarities. Finally, the survey sheds light on the variations in workflows, communication, and collaboration across ETD programs in the state.

As suggested in the literature and confirmed by the survey, a variety of academic and administrative units are involved in the ETD process from document creation to archiving. The evolving collaboration that makes such programs possible calls for a wide range of skill sets such as project management, academic writing and editing, training, cataloguing, archiving, and more. Technical support is required throughout the process to design, build, and maintain systems and software. These skill sets and the departments in which they are found are clearly visible in several survey responses. Project management, training, and administrative and academic support are typically provided by graduate school staff. Academic writing and editing skills are called on for the review and approval phase, which often moves from academic units to the graduate school. The building and maintenance of systems to receive and store the ETDs require the technical skills of library and information systems specialists. Cataloging and archiving depend on the expertise of library professionals and technicians. As technology changes and new opportunities appear, all of these skill sets must continually evolve to include new advancements.

The survey also confirms that the creation of ETD programs is typically rooted in the efforts of the graduate school and the library. Answers to question four clearly indicate that the graduate school and library are the primary departments involved in administering ETD. The specific tasks of the process show again the extent of their involvement (See Figure 3). The continuing functionality of these programs depends upon the efforts of these two units, whose relationship begins at the developmental stages of ETD programs and continues through their evolution and growth.

Question six highlights common elements in workflow procedures across North Carolina ETD programs. In most cases, the graduate school is responsible for student training

and thesis review and approval. Creation and maintenance of the submission and file storage site are sometimes functions of the graduate school, sometimes the library. Likewise, the uploading of files to the vendor and/or institutional repository may be handled by either the library or graduate school. The library takes the lead in the final components of the process, with cataloging and other metadata creation.

Another common element is the amount of both communication and collaboration. These ebb and flow from the development of the ETD program through its regular maintenance and occasional changes or problems. The importance of communication and collaboration is a theme that carries over from the literature review, as seen in the responses to question seven. The literature indicates the necessity of communication and collaboration in starting ETD programs but also in sustaining them. A strong 50% of respondents indicate that ETD workflow participants engage in frequent communication and collaboration; however, this leaves the remaining 50% doing this occasionally or never. Respondents who believe communication and collaboration can be need-based only, or are just necessary when creating new programs, fall into the second category.

Implications of This Study

The results of this statewide ETD survey show two substantial deficiencies in programs that – by their very nature – require interdependence, constant monitoring, and technological advancement. The study also discovered a variety of submission mechanisms and storage/archiving systems—a possible barrier to future efforts to link ETDs across the state or region. The survey questions that aim to identify the detailed structure of a university's ETD system and process add to the picture of variation between institutions but confirm the following: continued involvement of the graduate school and library, the existence of workflow processes (some formal or written, others informal and understood), and a mix of communication and collaboration.

Recommendations

A review of the survey data brings to mind a number of recommendations. The three that follow are those we believe most likely to improve ETD programs at their foundation as well as in the long term:

1) Schedule annual or bi-annual meetings of all involved and interested ETD staff (teleconferences or e-meetings could be sufficient) to discuss problems, provide updates, consider training opportunities, share information about professional development opportunities, make suggestions, and map out future directions and improvements.
2) Develop written workflows. These can be particularly useful in finding gaps in the process or areas that need improvement. The workflow should include time frames for each step of the process to ensure that everyone involved knows who does what, when. These documents can help faculty, students, and other administrators who need to understand the details of the process and the various units involved in its success. They can also be useful in the event of leadership and/or staff personnel changes.
3) As we continue to learn new ways of thinking about the ETD process and consider new ways to approach it, we believe a North Carolina ETD conference would provide a strategic forum for discussing our findings, learning from each other, staying on top of new trends, networking, and more.

Future Research

There are always lessons to be gained from any research project. Looking back at our survey, several questions could be worded differently to produce answers that more

directly target the intended question. A second survey could also provide descriptive information about the purpose behind the questions. For example, a descriptive heading such as "History of the ETD Program" would precede a series of basic questions regarding the time frame and origins of ETD at the respondent's institution. It might also be helpful to define the word *workflow* as it is used in this context.

Future research, whether via a similar survey or other format, should focus further on workflow details, such as who does which tasks (and their definitions), how, and when. It should also focus on the strategic development of the workflow and its usefulness as a tool. The written workflow can help improve collaboration and communication, a deficiency already noted. It can also help institutions seeking to improve ETD programs by increasing efficiency and highlighting missing components and opportunities for improvement.

In addition to new ETD workflow studies, future research should include a reinvigorated approach to the communication and collaboration that seem strong in ETD program development but tend to wane in established programs. The mentality that "we only need each other when we need each other" may be impairing the ability of some programs to be responsive to students' needs, keep up with technological changes, and consider improvements in their system.

Conclusion

With more than one third of North Carolina's public and private institutions offering advanced degrees and either accepting or requiring electronic submission of dissertations and theses, the topic of ETD practices is particularly relevant now. Our brief web survey reveals clear connections to the current literature while it illuminates the strong collaborative relationship between graduate schools and libraries in creating and sustaining ETD programs. Workflow tasks are typically divided between these two units, beginning when the student submits the doc-

ument. The skill sets needed to accomplish the required components of the workflow vary by nature of the task. By examining these tasks through the entire process, from submission through public access and archiving, we glean a picture of these workflows even where they are not documented. Student training, preparation for submission, review and approval, and overall administration are typically tasks of the graduate school. Maintenance of the submission site may be done by library staff or an outside vendor. Uploading documents to their final destination and creating metadata to enable access also often fall to the library side of the workflow.

The interdependence of ETD processes that involve multiple administrative units predicts the need for those units to work together to maintain and grow the program. Though the idea may originate with either one, both the graduate school and library (and sometimes information technology) are nearly always at the foundation of building ETD programs, working together as committees, teams, or task force groups. After programs go "live," the amount and type of communication and collaboration change as the needs shift from development to maintenance. For some North Carolina institutions, communication and collaboration between units remains strong; for others who view them as need-based only, these key relationship components become infrequent. It is normal to experience such shifts as a project moves from paper to reality, but as this survey shows, a continued effort to work together is important for several reasons. Open lines of communication create a space for regular workflow evaluations and discussions of new ideas, improvements to efficiency, and problems large or small. As technology expands our options, continued collaboration is equally necessary, providing the flexibility to take advantage of new opportunities. Thus communication and collaboration, the soil from which ETD programs have sprouted, are also the sun and rain that must continue to nourish their growth.

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Appendix A: The Survey

1. Do you know how many graduate degrees are offered by your institution?

    a. no

    b. yes (please specify)

2. Is electronic submission of theses and/or dissertations required, or optional?

    a. required

    b. optional

    c. varies by academic unit

3. Please give the year in which ETDs were allowed and/or required at your institution:

4. Which departments are involved in administering ETD at your institution?

    a. Graduate School

    b. Library

    c. Academic Departments

    d. IT Department

    e. Other (please specify)

5. Who was responsible for determining the division of labor between libraries, graduate schools, and IT departments? Please supply position title, not an individual's name.

6. Which personnel perform what ETD tasks? Please supply position title, not an individual's name.

    a. Student training

    b. Thesis review and approval

  c. Creation/maintenance of website for submission/storage of files

  d. Uploading of files (to ProQuest or to institutional repository)

  e. Metadata creation (including cataloging)

  f. Other

7. Please describe the amount of collaboration and communication existing between departments involved in ETD.

  a. The amount of collaboration is:

    i. none,

    ii. occasional,

    iii. or frequent

  b. The amount of communication is:

    i. none,

    ii. occasional,

    iii. or frequent

  c. Explain (optional)

8. Are there written procedures and/or workflows for the ETD process? If yes, please consider sending us a copy via Email

9. What is the mechanism for student submission of ETDs?

  a. Institution-built submission site,

  b. Vendor-built site,

  c. Other (please specify)

10. Once submitted and approved, are ETDs uploaded to the vendor and/or server:

  a. Singly, as they are completed;

     b. All at once, as a batch;

     c. Other (please specify)

11. Who performs these uploads?

     a. Library,

     b. Graduate school,

     c. Academic unit/department,

     d. Other (please specify)

12. Destination of uploads: Does your institution provide digital storage of ETDs? (If no, skip to next question)

     a. Yes, institutional repository –

         i. Institution-built software,

        ii. Purchased software (specify below)

13. If your institution outsources digital storage/archiving of ETDs, please specify the vendor/provider:

14. How do you know when uploads reach their destination? Please describe communications surrounding this part of the process.

15. Please describe ETD workflows at your institution from the point of a document's approval until it is accessible to the public.

16. Do you have any other information or comments you would like to provide?

Appendix B: UNCG Workflow Chart

THE UNIVERSITY of NORTH CAROLINA
GREENSBORO

ETD Workflow Chart

Chart key: | Student | Grad School | UMI/Proquest | Library Cataloging

Student attends ETD training → Student prepares document using guidelines on website

Student prepares document using guidelines on website → Student uploads to UNCG/Proquest site

Student uploads to UNCG/Proquest site → Thesis/Dissertation Reader reviews document and advises student of any changes needed

Thesis/Dissertation Reader reviews document and advises student of any changes needed → Student revises and re-submits

Student revises and re-submits → Thesis/Dissertation Reader approves final version

Thesis/Dissertation Reader approves final version → Thesis/Dissertation Reader sends approved documents in batch to UMI/Proquest

Thesis/Dissertation Reader sends approved documents in batch to UMI/Proquest → UMI/Proquest microfilms, indexes, and adds documents to database

UMI/Proquest microfilms, indexes, and adds documents to database → UMI/Proquest sends documents to library via FTP, notifies E-Resource Cataloger via email

Thesis/Dissertation Reader sends approved documents in batch to UMI/Proquest → Thesis/Dissertation Reader emails list of documents and information to E-Resource Cataloger

UMI/Proquest sends documents to library via FTP, notifies E-Resource Cataloger via email / Thesis/Dissertation Reader emails list of documents and information to E-Resource Cataloger → E-Resource Technical Assistant uploads documents to IR and supplies metadata using information supplied by the Thesis/Dissertation Reader: ETDs NOW AVAILABLE TO THE PUBLIC!

E-Resource Technical Assistant uploads documents to IR and supplies metadata using information supplied by the Thesis/Dissertation Reader: ETDs NOW AVAILABLE TO THE PUBLIC! → E-Resource Cataloger adds Library of Congress Subject Headings to IR records

E-Resource Cataloger adds Library of Congress Subject Headings to IR records → E-Resource Team downloads the preliminary MARC records from IR

E-Resource Team downloads the preliminary MARC records from IR → E-Resource Team uses MarcEdit and/or constant data to complete MARC records

E-Resource Team uses MarcEdit and/or constant data to complete MARC records → Complete MARC records are loaded into library catalog system