From the Field

Collaborative Coordination in a Crisis: Electronic Theses and Dissertations Services During COVID-19 at the University of Pittsburgh

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Abstract

In this article, we share a report from the field about the collaborative model of the Electronic Theses and Dissertations (ETD) program at the University of Pittsburgh, and how the program's cross-departmental committee and distributed approvers model built a strong foundation that enabled success in the transition to remote operations during COVID-19. We review some of the ways that libraries are situated in the configuration of ETDs at different institutions, present a case study of the ETD process and support services at the University of Pittsburgh, and discuss how the configuration of ETD support and processing helped the University and its students during the COVID-19 crisis.

Keywords: ETD, Electronic Theses and Dissertations, COVID-19, collaboration, Provost's office, organizational agility

Introduction

In their editorial introduction to Volume 12 of *Collaborative Librarianship,* Michael Levine-Clark and Jill Emery write about the challenges to libraries prompted by the COVID-19 crisis. With physical libraries closed, they write that "…libraries and librarians can continue to do important work, even as our physical collections, our buildings, and our workspaces are inaccessible. Much of this work remains collaborative and requires more consistent engagement in our online environments."[1] The COVID-19 crisis happened at the beginning of the busiest and

most intense period for graduate students at the University of Pittsburgh, who were in the process of defending and submitting their theses and dissertations. When faced with the news of campus closure due to COVID-19, librarians at the University of Pittsburgh quickly collaborated with colleagues across the institution to utilize the infrastructure we had in place to make changes quickly and efficiently to the Electronic Thesis and Dissertation (ETD) support and approval process. Fortunately, the unusual collaboration model in place at the University of Pittsburgh allows for swift decision-making and

an agile response that ensured timely updates for students and a seamless transition to online procedures. In this article, we present a case study of the ETD program at the University of Pittsburgh; first, we review ETD programs at other universities, then describe characteristics of agile organizations, and finally discuss how the ETD program at the University of Pittsburgh produces an agile response to the COVID-19 crisis.

ETD Models

Collaboration in University ETD Programs: Background

Collaboration between library units and within the wider network have long been topics of research and discussion within libraries, from general analyses on the importance of collaboration[2] to case studies in cross-campus collaboration through co-location of services in shared spaces,[3] such as libraries collaborating with campus writing centers.[4] The literature about collaboration within ETD programs largely mirrors the types of research in the larger library literature, falling into two broad categories: collaboration within an institution and collaboration beyond the institution.

Collaboration within an institution is essential for a successful ETD program, particularly institutional buy-in for policies and strategies by collaborating with units like the Provost's Office and Graduate Studies.[5] Within the library, collaborations within technical services for metadata management focused on discoverability of ETDs and standardizing metadata collection for partners outside of the library.[6] The work of Paul and Middleton[7] on interdepartmental collaboration for ETDs at the University of Arkansas moves the discourse of ETD collaboration toward an analysis that recognizes that often there are multiple interested parties on campuses that have competing and occasionally conflicting interests in the management of the

ETD process. Their study built on previous work by Early and Taber[8] which also recognized that the ETD process requires a wide variety of skill sets and involves multiple departments; Early and Taber noted in particular information technology departments, as well as units responsible for managing intellectual property created with university resources. A commonality between these two works is that they focus on the central role of the library collaborating with a single campus entity that is responsible for graduate work on a campus.

Other past research focuses on inter-institutional collaboration between the library, university, and external partners; one example is the University of Waterloo E-Thesis project and the university's partnership with Theses Canada and the Networked Digital Library of Theses and Dissertations, which primarily focused on advocating for open access to ETDs.[9] There are also inter-institutional collaborations between universities such as the collaboration between the fourteen member institutions in the Texas Digital Library, focusing on the development and implementation of a common interface and approval process largely focused on common meta-data standards for the shared repository.[10] Significant work has been done on university collaboration with external vendors, most notably ProQuest, formerly University Microfilms International (UMI), which has been supplying microfilm of dissertations since 1939[11] and now provides a system for students to submit their theses and dissertations to be approved by representatives from the institution. Universities like Michigan State receive metadata in return, which is reviewed before being added to the library's catalog.[12] This vendor-supplied system can be useful for those institutions who do not have a robust institutional repository, or whose repository system cannot support the approval process needed by their school. However, as described by Clement and Rascoe,[13] many of

these decisions are made from either convenience or with perceptions that students will receive royalties from their dissertation publishing; many institutions (especially those with an institutional repository) have made ProQuest submission optional for students.[14]

The University of Pittsburgh (Pitt, for short) has a model that departs from those described in the literature. At Pitt, ETDs are deposited in a locally hosted and maintained institutional repository, facilitated by a distributed network of approvers in each school (called ETD Contacts) and a centralized ETD Support center in the University Library System. At the head of this process is a committee called the ETD Process Group, with representatives from stakeholder groups from across the university. This collaborative, decentralized process embodies aspects of agile organizations that enabled the program to respond in a crisis. In the next section, we provide some background on organizational agility to contextualize our case study.

Organizational Characteristics and Crisis Response

"Agility" is a common term to describe an organization's response to a changing environment; "organizational agility" can be described as "the ability of an organization to sense or create environmental change and respond efficiently and effectively to that change."[15] Harraf and colleagues outlined the pillars of organizational agility: "a culture of innovation," "empowerment," "tolerance for ambiguity," "vision," "strategic direction", "change management," "communication," "market analysis and response," "operations management," "structural fluidity," and "development of a learning organization."[16]

Technology is a major disruptor to organizational behavior in higher education, where new developments and software platforms significantly impact instructional and research needs, and organizational response frameworks for

technology mature regularly. Gunsberg and colleagues studied an information services division of a post-secondary institution, identifying relevant characteristics of an "organizational agility maturity model" in their case study. Those characteristics are "(1) leadership and management; (2) innovation; (3) strategy; (4) culture; (5) learning and change; and (6) structure."[17]

Because the ETD program at the University of Pittsburgh was nearly two decades old at the time of the COVID-19 crisis, we view Gunsberg and colleagues' characteristics of a mature organizational agility model as being most relevant to the description of our response at that time. Below, we briefly describe each of the six characteristics from the literature; in a small departure, we collapse two categories identified by Gunsberg and colleagues ((2) innovation, and (5) learning and change) into one category (innovation, learning, and change) because the concepts become linked in the literature and are certainly linked our case study.

Leadership and management: Harraf and colleagues describe the essential balance between centralized authority and de-centralized autonomy as a critical component of management: "the powers of organizational leaders and lower-level employees are distributed, separated, or shared. The most basic sub-component of this pillar is the concept of centralization and decentralization, and its determination of decision-making authority."[18] Communication is another essential component of leadership and management; the most agile organizations effectively combine top-down, horizontal, and bottom-up communication. Horizontal communication facilitates information sharing between people doing similar types of work and is effective at managing ongoing work. Bottom-up communication identifies potential issues and solutions based on proximity to ongoing work, and is crucial to inform top-down communication and decision-making. Top-down communication is

particularly helpful when a fast response is required, such as in a crisis situation.[19]

Strategy: Components of strategy for a mature organization include engagement, industry awareness, and planning.[20] Strategy can cut across many of the other characteristics, such as strategic approaches to setting up teams and organizational structures, as well as using various forms of communication to learn about issues and trends that are impacting different parts of the organization.

Culture: In Gunsberg and colleagues' study, organizational culture had themes of accountability, values and principles, and trust.[21] Accountability is of particular relevance to this case study; we use the definition of accountability proposed by Gelfand, Lim, and Raver: "the perception of being answerable for actions or decisions, in accordance with interpersonal, social, and structural contingencies, all of which are embedded in particular sociocultural contexts."[22] Accountability is intertwined with trust and collaboration across actors in an organization; in a trustful context, accountability can build on trust for growth of an organization.[23]

Innovation, learning and change: Harraf and colleagues describe a learning mindset as one that seeks to improve and transform its processes through the learning of its members. Sharing resources between members and being committed to fostering improvements through an ongoing feedback process leads success in adapting and growing.[24]

Structure: Aghina and colleagues describe how organizational structure can intersect with cross-departmental teams meant to handle certain tasks, and how these teams may not be reflected on an organizational chart but are essential to communication and decision-making. A single cross-functional team, according to Aghina and colleagues, can speed up decision making, and a considerate approach to the membership of that team can ensure that all stakeholders feel represented in those quick decisions.[25]

Throughout the following case study, we will identify the parameters of the ETD program at the University of Pittsburgh that correspond to these agile organization characteristics.

Case Study: The University of Pittsburgh's Distributed Setup

The Creation of the ETD Process Group and Early Strategic Choices

As part of a voluntary pilot project starting in December 2001, the University of Pittsburgh's Council on Graduate Study created an ad hoc committee called the ETD Working Group to assess the feasibility and advantages of ETDs compared to paper manuscript submissions. This ETD Working Group was a cross-functional team that cut across the University's hierarchy, establishing a mechanism for horizontal communication across the organization. By December 2002 the committee work included beginning the ETD Pilot Project that involved a transitional period that would last until 2004. During this period, the ETD Working Group was split into two separate entities: the ETD Steering Committee, which was designed to handle policy and strategic decisions, and the ETD Process Group to identify technical issues and process impasses in the field. In November 2003, the ETD Steering Committee voted unanimously to recommend ETDs as a University requirement for graduation starting in December 2004. During this time, the ETD Process Group had begun the creation of Word and LaTeX templates that would conform to an updated set of guidelines that had been previously used for the print manuscripts. A strategic decision was also made at this time to create a locally hosted database in which to store the newly created ETDs; the committee assigned this work to the University Library System, whose stakeholders created a local version of the ETD-db software to facilitate

the storing and sharing of ETDs. Because of the robust approval workflows available in this system, the ETD Process Group also enacted the decision to have each school be responsible for the final approval of their own graduate students' work. The ETDs were then delivered to ProQuest for inclusion in their Dissertations and Theses database (now called PQDT); this is a marked departure from other schools, where ETDs are submitted first to ProQuest which then delivers copies to an institutional repository or archive.[26]

At the completion of this work, the ETD Steering Committee disbanded and the ETD Process Group remained as a decision-making entity to handle questions that rose as part of ongoing ETD work at the University, such as the migration of the ETDs from the ETD-db database to the Institutional Repository (D-Scholarship@Pitt) in 2008. The ETD Process Group is now composed of representatives from the Office of the Provost, the Registrar's Office, the University Library System, and three school-based ETD approvers. This group is an essential component of the "Leadership and Management" characteristic of agile organizations, providing a centralized entity with representation from multiple stakeholder groups that could respond to questions and, eventually, react quickly in a crisis. This local arrangement for ETDs is an essential part of the strategy characteristic of an agile organization. Controlling ETDs and the ETD process fully on campus is a strategic choice that departs from many other use cases for ETDs and was one of the components of Pitt's ETD program that the Process Group committed to retaining. This strategy also incorporates elements of structure – in order to process ETDs locally, the ETD Contacts in each school had to be trained and comfortable interacting with the repository, while also deploying their specific expertise in the processes, policies, and norms of their schools and programs. The ETD Contacts informed the initial infrastructure

and best practices of the ETD workflow in the institutional repository and remain a vital part of how the University disseminates information about any proposed changes to the process. This also fostered a culture of learning, where the ETD Contacts as well as the ETD Process group hold each other accountable in the work of creating and deploying new systems, policies, and procedures.

ETD Support Setup in the Library

At the University of Pittsburgh, the ETD Support program from the University Library System (ULS) began in 2004 to facilitate the creation and maintenance of the Word and LaTeX templates for students, providing instructional workshops, and engaging with students one-on-one when they had questions and issues with creating their ETDs. To accomplish this work, the ULS assigned a librarian as the manager for ETD Support; this manager was responsible for the three e-mail lists to direct different questions, as well as crafting a walk-in service and a set of monthly workshops to teach students to use the ETD templates and the submission process. Additional workshops on copyright and publishing issues specific to ETDs were added in 2015 in collaboration with the ULS's Office of Scholarly Communication and Publishing.

This system persisted until 2018 when the ULS underwent a restructuring and realignment of departments, offices, and personnel that impacted ETD Support and provided an opportunity to update the service offerings. The responsibilities of managing and providing ETD Support were assigned to the Office of Scholarly Communication and Publishing, which also provides the repository services. In addition, the Repository Librarian, whose job duties included ETD Support, undertook a reconfiguration this area to update the processes and materials provided to all stakeholders. The reorganization strengthened ETD Support from a structural

standpoint by aligning it with the broader responsibilities of managing the institutional repository as well as bringing the service to the same unit that regularly offered copyright and publishing advice to the campus.

Since the library was a stakeholder represented in the ETD Process Group, this reconfiguration prompted the ETD Process Group to revisit and update the general ETD policies and services that had been in place since the migration of the database to the institutional repository in 2008. These updates included a new ETD website, revisions to the templates, a streamlined communication for ETD Support, an update of policies and procedures to simplify the student experience and meet contemporary publishing standards, new digital forms for students to use, and guidance and accommodations for students who had multimodal dissertations and datasets to share. The 2018 ETD update re-started the work of the ETD Process Group, ETD Support, and the ETD Contacts in each school to learn about ways to improve ETDs at the University. To modernize the ETD program required changes to the workflows of the ETD Contacts, which they were able to accommodate and provide feedback on their experiences with the process. This process not only required accountability on the part of each ETD Contact to implement the required changes by a deadline, but also developed a culture of trust as the feedback from the Contacts helped the ETD Process Group respond to questions and further refine the service. This process reified the multiple paths of communication that are crucial to an agile organization: top-down (ETD Process Group to ETD Contacts and ETD Support), horizontal (ETD Contacts to each other and to ETD Support), and bottom-up (ETD Contacts and ETD Support providing ongoing feedback and information about implementation and needs to the ETD Process Group).

The 2018 update was crucial to our COVID-19 response in 2020 because it fostered a learning and change culture among the contacts and the ETD staff across the University; this culture is an essential pillar of organizational agility and response to crisis.[27] When COVID-19 hit, they had already been looking at their own processes for improvements; instead of having to suddenly introduce change to local processes that had not been updated since 2008, each member of the ETD Process Group found themselves well situated to pivot to changes needed. Communication lines were in place with the ETD Contacts, and past changes and deadlines fostered a culture of accountability and trust. COVID-19 accelerated some of the ideas already in process, and the open lines of communication and previous building of trust and accountability served to help the organization adapt to the required rapid change.

Agility in a Crisis Time

This distributed approval model has at times seemed unwieldy when having to train new staff or facilitate a change of process or policy. However, during the COVID-19 crisis, the distributed approval model proved to be a boon to the University and its students. In the time of crisis, a centralized adjustment of ETD Support services to online-only delivery required only a few staff to make adjustments; when those support services for students had been moved to online delivery, the distributed network of contacts in the schools was able to send out information to students and continue approval of theses and dissertations through their regular workflows. The burden of work to spread this support information as well as approve and process ETDs did not fall on the shoulders of a few, and the network of expertise proved to be a valuable resource to both students and staff colleagues who were trying to quickly adjust a process in response to a crisis.

Recalling the discussion by Harraf and colleagues about the balance between a centralized

decision-making model and de-centralized autonomy, a rapid response requires the presence of an upper-level decision making body that can quickly act on an issue combined with autonomy and authority on the part of lower-level employees.[28] Because the ETD Process Group, composed of representatives from all parts of the ETD program, was the upper-level decision-making body that could respond quickly, the group had the requisite input and communication lines already in place when COVID-19 required the closure of the physical campus of the University of Pittsburgh on March 15, 2020.

The standard ETD approval process included physical signatures of committee members on a paper form, initialed paper copies of abstracts, and payment of fees within a campus building. All of these items needed rapid attention to adapt them to the digital and remote environment. When the campus closed, the Office of the Provost forwarded a new ETD Approval Form that would allow for electronic signatures. Included in this shift to electronic approval forms was the policy shift to allow digitally initialed abstracts or statements of approval via an email message. The shift in method of approval and collection of materials allowed for the responsible parties in each school to reconfigure their document retention and workflow procedures and simplified the student and faculty experience. As the pandemic continued longer than initial projections, the Provost's office also extended the approval period to allow extra time for students that were impacted directly by the closure of the campus and forced to leave the country.

With representation from the University's Office of the Registrar on the ETD Process Group, a new method for payment of the processing and graduation fees was also introduced. The ETD Process group had already been analyzing possible methods prior to the pandemic as part of the general program update, so the transition was not something that required a greater than average lead-up to implement.

For the ULS the largest shift was in how to continue offering ETD Support services that were performed in-person. In 2018, we had started streamlining the process to get ETD support by using the library's "Ask Us" LibAnswers service from Springshare; which we titled *Ask an ETD Specialist*. Because of this existing shift we were also able to establish an ETD Support online chat service using Springshare's LibChat application to replace the walk-in hours that were no longer physically possible. The University of Pittsburgh purchased an institutional Zoom account to allow instructors flexibility in moving their classes online. We took advantage of this change by moving the ETD Workshops to an online-only venue via Zoom. We also utilized sign-up and contact features in Springshare to send the new connection information to those who had signed up for the workshops; an added bonus of doing online workshops was the ability to use live closed captioning, which was not previously implemented in face-to-face workshops.

ETD Support wrote up a summary of the service changes and sent a message to the ETD Contacts and the Office of the Provost, informing them of the changes. We also placed an alert box on the Help section of the ETD website that detailed the immediate changes:

Figure 1: Screen capture of the notice of altered ETD Support due to COVID-19.

Due to the changes in campus availability due to COVID-19, ETD Support will no longer be providing walk-in hours or in-person workshops for this semester. These services will be moved to an online venue.

- The workshops will be presented using Panopto/Zoom and a link will be shared with you and will also be available via the calendar listing for each workshop. Please be sure to register for workshops, so that any further changes can be communicated with you.
- Walk-in questions should be posted to our Ask-an-ETD Specialist email service or asked via our ETD Specialist chat when a specialist is available (see below.)
- Online consultations can be scheduled, and will be conducted via Skype, Skype for Business, or Zoom.

If you have any concerns about your ETD or how to get help, please contact us for more information.

This message was distributed through the network of ETD Contacts immediately after the closing of campus, allowing students to get the information from a trusted source in their school instead of being lost in a barrage of other official e-mails. The work of changing ETD Support fell to one unit in the University Library System, but the work of informing the students ended up shared among all of those who had been participating in the ETD program updates for the past months. Due to the custom of sharing changes to a de-centralized group, the sudden shift was less of a burden, and the lines of communication remained clear. Because of the agile setup of the ETD program and the ongoing updates, which align with the pillars of organizational agility as summarized in Table 1 below, we were able to provide a similar level of ETD services for students, staff, and faculty when COVID-19 disrupted the campus while accommodating students who needed additional time to complete their work. The ETDs for the Spring term were processed in nearly the same manner as in previous years with the above changes implemented.

Table 1: Summary of organizational agility pillars and their manifestation in the University of Pittsburgh's ETD Program.

Pillar Name	Manifestation(s) in ETD Program
Leadership and Management	ETD Process Group with decision-making capacity; top-down, horizontal, and bottom-up communication methods and practices.
Strategy	Locally-hosted repository for ETDs; local control over systems and processes.
Culture	Accountability of ETD Contacts to a central body; cross-institutional sharing of needs and resources.

Innovation, Learning, and Change	2018 program update; ongoing training and communication; feedback mechanisms between Contacts, Support, and Process groups.
Structure	Representation in Contacts at each school; representation from many departments and units on ETD Process Group.

Conclusion

This article presents a case study of the utility of a distributed approval model of ETDs, with a particular lens on adapting to a crisis. The University of Pittsburgh uses a distributed model of ETD ingestion and approval, with representatives from each school at the University assigned to review and approve their school's ETDs. This model allows for many hands to make light work, with the burden of reviewing and approving many ETDs not falling on the shoulders of one or two individuals. In addition, the update of the ETD process at the University occurred at an ideal time, as an experienced group of ETD personnel was already investigating policies and procedures to streamline ETD processing at the University and was in regular contact with all ETD personnel across the campus. This foundation of an agile organization, attentiveness to ETD communications, support, and training, as well as dedicated staff in each school, provides a stable system that could readily adapt to change, small or large.

The spread of expertise across the University allows for information sharing that results in rapid response to the COVID-19 crisis, with experienced ETD approvers able to shepherd a revised process behind the scenes while maintaining the regular review and approval patterns for the majority of staff. Furthermore, the ETD Support model, centralized in the University Library System, ensures that graduate students are able to receive support through online mediums, and that no students from one part of the University struggle to get support because of a lack of staffing or an uneven support response. The stability of ETD Support plus the ongoing work of approvers and staff behind the scenes results in the smoothest transition possible for students.

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