2018 Drexel Library Fellows Initiative

Joy C. Phillips, PhD, School of Education

Report/Findings: February-June 2018

Report Overview:

This report provides details from the Spring 2018 investigation of the Library Fellows charge. The report has two major components. The first component includes the purpose and scope of the project and the project charge, and the second component provides the expected deliverables. The final deliverable is represented by this report and by a discussion at the end of the final section.

PART I: Purpose and Charge

Purpose and scope of the project:

As noted in the project's Memorandum of Understanding:

> The purpose of this project is to explore an idea to leverage library resources and expertise in improving the University's connections to scholarship through a collaborative educational offering that strengthens graduate student and emerging researchers' skills in contributing to scholarly communications.
>
> The Libraries has recognized the competitive advantage for researchers and their institutions to understand the management and dissemination of research output (including research data), and to effectively discover and retrieve, ethically utilize, and openly share these assets in contributing to scholarly communications.
>
> Funding requirements, government regulations, the publishing industry, systematic inquiry practices, ethical and socially conscious principles of research, and evolving infrastructures of systems and services to curate data, are among the changes that affect researcher behavior.
>
> Through partnerships with faculty, coaching activities with students, and in informal learning environments, the Libraries assists learners to master "information literacy" skills; it has begun to expand the scope to go beyond bibliographically organized resources, to include diverse formats, such as data sets.
>
> In conjunction with other campus departments the Libraries also is beginning to address the challenge of raising awareness across disciplines at Drexel, of the new demands for incorporating the management of research data in the research life cycle. One strategy to do so is to target early scholars—graduate students, junior faculty and emerging researchers—through an extracurricular learning experience—whether a credit carrying course or a different learning experience or recognition--offered through a collaboration between the Libraries, the Graduate College, and possibly other departments.

This project will identify whether and how such a unique offering complements existing educational offerings (e.g. the data management session of Drexel's Responsible Conduct of Research course) and advances the role of the Libraries and Graduate College in building campus awareness of data within the research life cycle.
Summary of the exploration, including recommended design of an educational offering and details of how to achieve the goal are sought deliverables.

Project Charge:

As initially conceived, the charge for this project:

> Develop an extracurricular course to build competitiveness for young scholars through effective dissemination of research. Digital content, information technologies, commercialization of publications, government funding regulations, privacy compliance, are among contemporary issues affecting the cycle of research to scholarship--from design of research to appropriate publication of results and managing research data for future discovery and use by others.

As the project evolved, the work was further conceptualized as occurring in four stages during Spring 2018 with a fifth stage recommended for further action:

1. **First Phase: Exploration and Personal Learning**
   - Explore and catalog resources related to research output management (data and dissemination)
   - Collect and examine models of research and scholarly communications life cycle,
   - Review additional resources regarding scholarly communications (e.g., ACRL Scholarly Communications Toolkit, etc.),
   - Collect and review strategies for best practices for data literacy education (e.g., Dalhousie University, EU Digital Competence Framework, etc.).
2. **Second Phase: Reviewed Pedagogy Options**
   - Explore feasibility of developing a local extracurricular course and/or using publisher vendor-developed packages.
3. **Third Phase: Gauging Potential of Joint Partnership Sponsoring**

   Conversation with Elisabeth J. Van Bockstaele, Interim Vice Provost for Graduate Education about developing a thematic series merging this work with existing Graduate College Professional Development courses:
   - Responsible Conduct of Research Course (existing)
   - Teaching Assistant Orientation and Preparation Course (existing)
   - Emerging Scholars (some ideas under consideration);
4. **Fourth Phase: Developing Pilot Course Prototypes**

   Creating or identifying available model prototypes including learning outcomes, pedagogy, and content.

Recommended next step:

5. **Fifth Phase: Pilot elements of a potential extracurricular course.**

PART II: Deliverables:

1) Critique of educational approaches that address dissemination of research output through new requirements of publications and accessibility of research data; Analysis to include both exemplars and opportunities to address gaps, as well as feasibility of a Drexel course offering from the Libraries and possibly through the Graduate College.

To address this component, a wide variety of resources related to 1) research output management, 2) research and scholarly communication life cycle models, 3) additional resources regarding scholarly communications, and, 4) best practices for data literacy education were identified and explored.

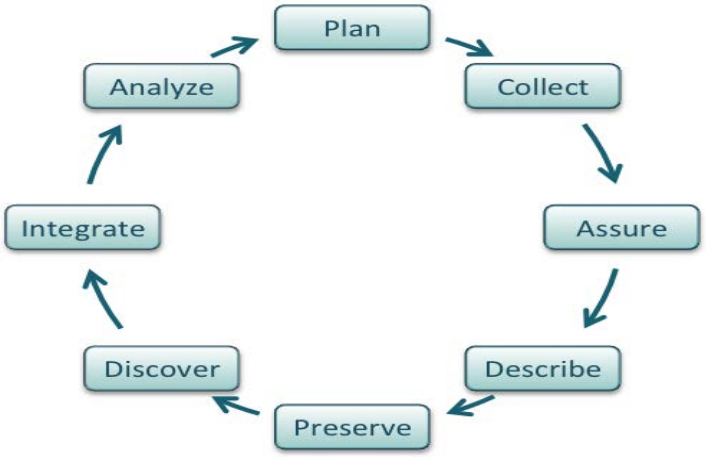
Research Output Management

An extensive review of resources related to research output/data management was conducted. A summary of selected resources is provided in this section.

- ✓ **DataONE**
  Primer on Data Management: What you always wanted to know*
  (* but were afraid to ask)
  Carly Strasser, Robert Cook, William Michener, Amber Budden
  (https://www.dataone.org/sites/all/documents/DataONE_BP_Primer_020212.pdf)

  This primer describes the fundamentals of data management practices including "how to effectively create, organize, manage, describe, preserve, and share data." The primer contains 9 major sections and is 11 pages in length.

  The primer includes a data life cycle model:



- ✓ **Inter-university Consortium for Political and Social Research (ICPSR)**
  Data Preparation Guide
  (https://www.icpsr.umich.edu/icpsrweb/content/deposit/guide/index.html)
  Guide to Social Science Data Preparation and Archiving

  45-page comprehensive guide to data management.

- ✓ University of Tennessee-Knoxville
  Data Services Guide
  (https://libguides.utk.edu/dataservices/home)

  Library Guide contains 8 sections from "Writing a data management plan" to "Sharing research data." Guide includes curated slides including instructions on how to use the DMPTool (https://dmptool.org/help)

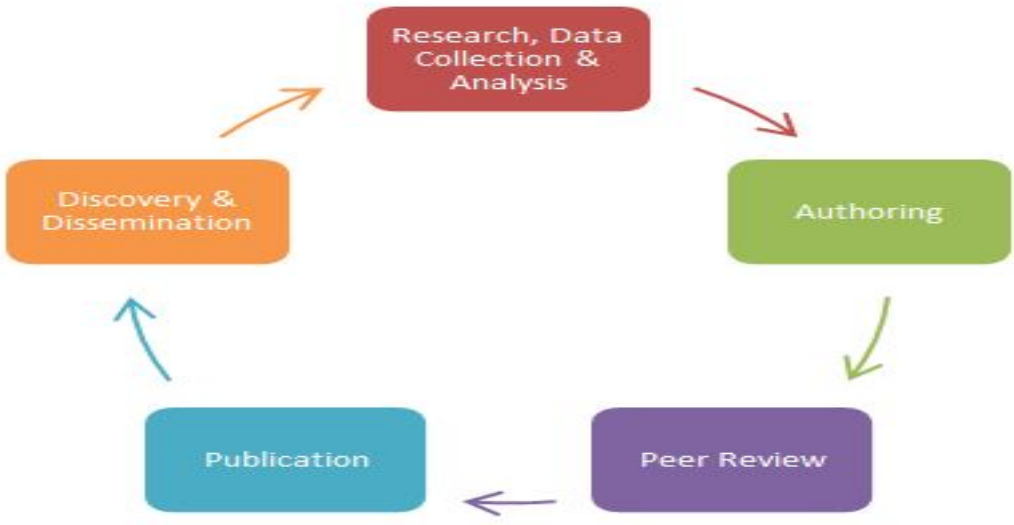
Research and Scholarly Communications Life Cycle Models

Five life cycle models were identified and explored: 1) Association of College & Research Libraries (ACRL) Scholarly Communications Cycle, 2) University of California-Irvin, 3) Data Verse, "What is Open Science," and 4) University of Victoria. Each model is shown graphically below with the accompanying website address.

While all the models are useful, the ACRL Scholarly Communications Cycle appears to be the most straightforward model, and it is the one that will be used in this report for the proposed action plan.

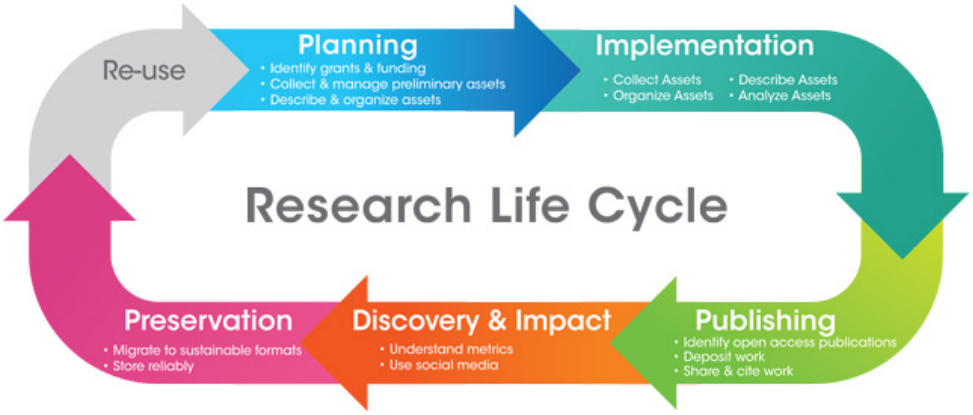
1) **Association of College & Research Libraries (ACRL**), defined scholarly communication in 2003 as:

   The system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic listservs." Scholarly communication is frequently defined or depicted as a lifecycle documenting the steps involved in the creation, publication, dissemination and discovery of a piece of scholarly research." (http://www.ala.org/acrl/publications/whitepapers/principlesstrategies)



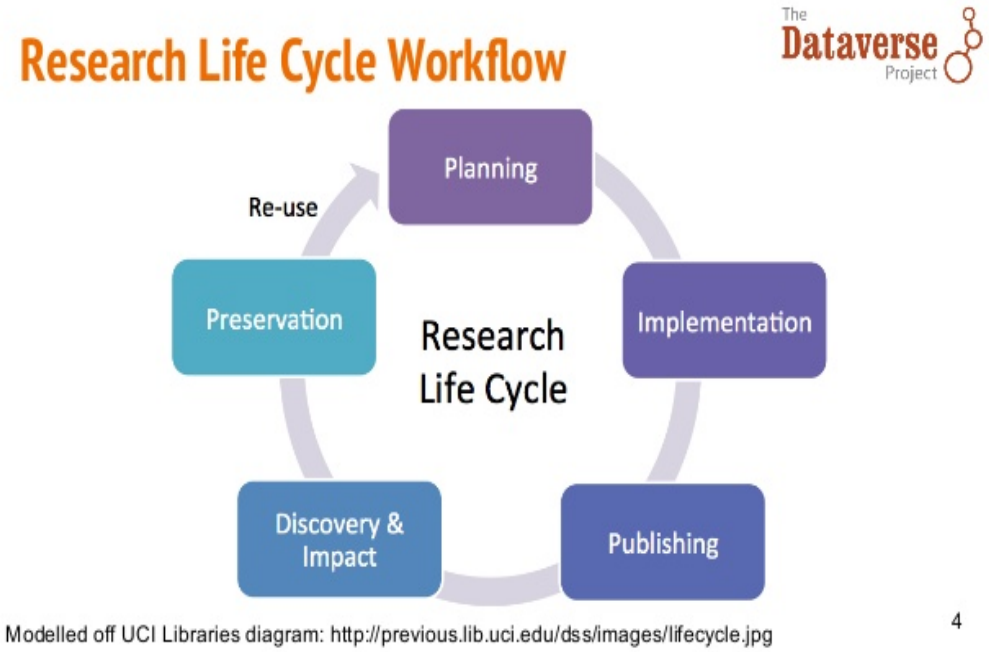
(http://acrl.libguides.com/scholcomm/toolkit)

2) University of California-Irvine



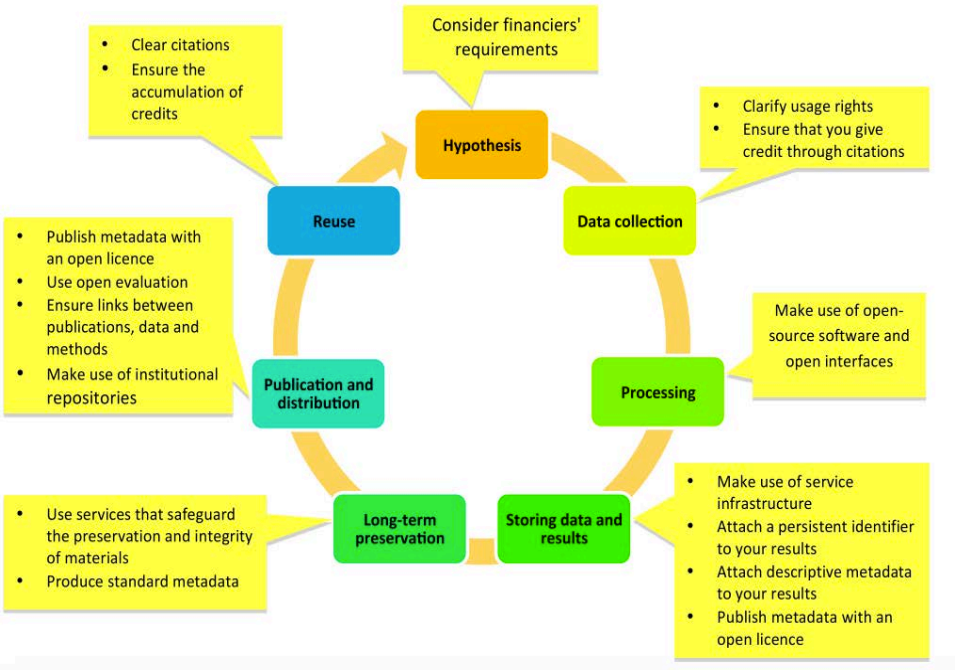
(attributed to UC Irvine; located at https://guides.lib.umich.edu/DiscoveryPoE)

3) Data Verse



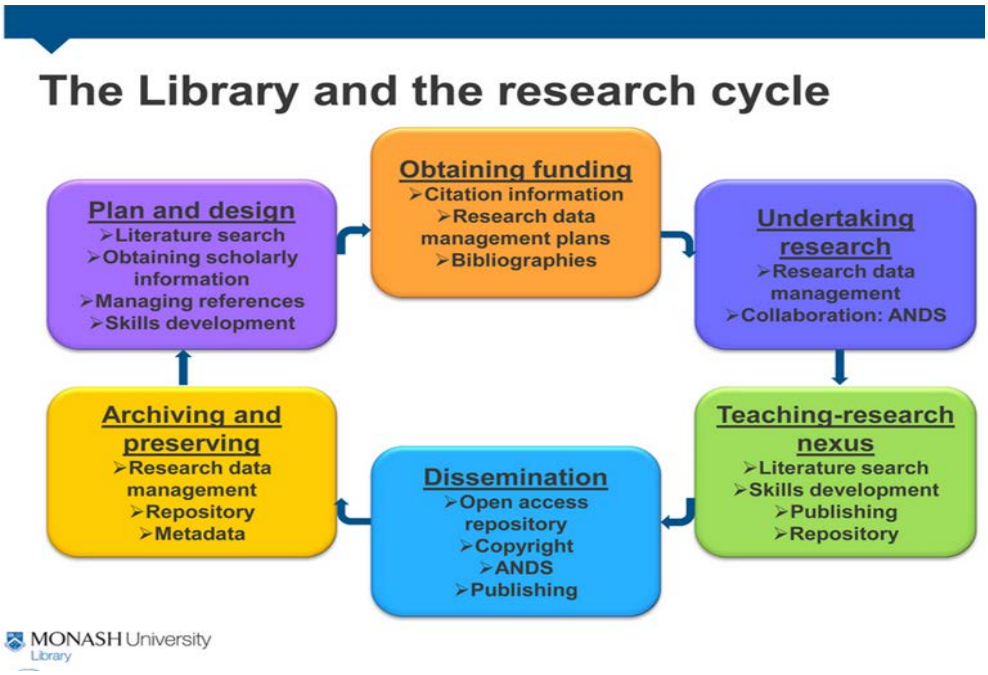
(https://www.slideshare.net/EleniCastro/dataverse-helping-researchers-publish-their-data-through-automation)

4) What is Open Science (Foster, part of Horizon 2020)



(https://www.fosteropenscience.eu/content/what-open-science-introduction)

5) University of Victoria



(https://libguides.uvic.ca/c.php?g=256706&p=2364848)

Additional Resources regarding Scholarly Communications

ACRL Scholarly Communications Toolkit

The Association of College and Research Libraries (ACRL) also provides an extensive *Scholarly Communications Toolkit*, which is described as an educational resource geared primarily to librarians to "assist them with 1) integrating a scholarly communication perspective into library operations and programs, and 2) preparing presentation on scholarly communication issues for administrators, faculty, staff, students, and other librarians" (http://acrl.libguides.com/scholcomm/toolkit).

Resources available include handouts; slides; exercises, forms, and worksheets, and workshop offerings. (http://acrl.libguides.com/scholcomm/toolkit/RDMWorkshop)

An example of a life cycle exercise, which is located at the above website, follows:

These are slips for the life cycle exercise. Make as many copies as you need and cut them apart. Place on the tables. You should never put Creating data on a table. That will be discussed as a brainstorm in the group as a whole and the information is displayed on the screen in the PowerPoint.

Creating data • design research • plan data management (formats, storage etc) • plan consent for sharing • locate existing data • collect data (experiment, observe, measure, simulate) • capture and create metadata UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle
Processing data • enter data, digitise, transcribe, translate • check, validate, clean data • anonymise data where necessary • describe data • manage and store data UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle

Analyzing data • interpret data • derive data • produce research outputs • author publications • prepare data for preservation UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle
Preserving data • migrate data to best format • migrate data to suitable medium • back-up and store data • create metadata and documentation • archive data UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle
Giving access to data • distribute data • share data • control access • establish copyright • promote data UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle
Re-using data • follow-up research • new research • undertake research reviews • scrutinize findings • teach and learn UK Data Archive. *Research Data Life Cycle*. University of Essex, 2002-2016. Web. 5/11/2016. http://www.data-archive.ac.uk/create-manage/life-cycle

Drexel Libraries: LibGuides on Scholarly Communication

Drexel Library has produced a set of 5 library guides on Author Rights, Copywrite: FAQ, Open Access, Public Access, and Scholarly Impact Measures

(http://libguides.library.drexel.edu/c.php?g=526480&p=3599499)

Best Practices for Data Literacy

Internationally, interest has intensified over the need to clarify what constitutes Data or Digital Competence. In this section, a set of international and national sources are provided.

EU Science Hub
The Digital Competence Framework 2.0
(https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-20-digital-competence-framework-citizens-update-phase-1-conceptual-reference-model)

This framework identifies five key components of digital competence: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving.

Dalhousie University
Strategies and Best Practices for Data Literacy Education:
Knowledge Synthesis Report
(https://dalspace.library.dal.ca/bitstream/handle/10222/64578/Strategies%20and%20Best%20Practices%20for%20Data%20Literacy%20Education.pdf?sequence=1&isAllowed=)

Report defines data literacy as "the ability to collect, manage, evaluate, and apply data, in a critical manner." The report considers the context and strategic value of data literacy for 21st Century Citizens, Canadian employers and the economy, and Canadian students; best practices for teaching data literacy including timing, delivery, curriculum, teaching approaches and learning environments, engaging with real world data, successive/iterative, practical hands-on learning, and assessment and evaluation.

Informatics Europe
Informatics Education in Europe: Institutions, Degrees, Students, Positions, Salaries.
Key Data 2-11-2016.
(http://www.informatics-europe.org/publications.html)

ACRL
Characteristics of Programs of Information Literacy that Illustrate Best Practices: A Guideline.
(http://www.ala.org/acrl/standards/characteristics)

The guidelines are articulated in 10 categories: mission, goals and objectives, planning, administrative and institutional support, articulation within the curriculum, collaboration, pedagogy, staffing, outreach, and assessment and evaluation.

2) Summary of reactions to the project ideas among select librarians, administrators and faculty (e.g., Graduate College, Library Advisory Group).

This project was the brain child of Dean Danuta Nitecki, and her interest, support, and guidance were essential to my carrying out the project charge. Our meetings, phone calls, discussions and emails were crucial to my understanding of the project purpose and scope.

None of the work reported in this document would have been possible without the invaluable support of Drexel Librarian, Janice Masud-Paul. Not only did Janice provide guidance to critical resources, but she also served as an exceptional thought partner in my process of thinking through this project assignment and conceptualizing potential outcomes.

The joint Zoom conversation between Dean Nitecki, Elizabeth J. Van Bockstaele, and me was exceptionally helpful. As Interim Vice Provost for Graduate Education in the Drexel Graduate College, Dr. Bockstaele is a key stakeholder for the outcomes from this project. She enthusiastically suggested that a thematic series of topics covering the research life cycle and research data management targeted toward emerging scholars (i.e., current graduate students and perhaps recent graduates) would be a terrific addition to the Graduate College Professional Development courses. I will return to this idea in the following section.

Feedback for the Drexel Library Advisory Group (LAG) was also helpful. While attendance was low, participants indicated a general interest in the focus of this project. One faculty member stated that she fully covered copywrite issues with her students and did not see the need for additional instruction. Other 2018 Library Fellows in attendance were supportive, and their comments suggested that the collective projects were/could be inter-related. I will return to that thought in my recommendations.

Drexel Librarian, Deborah Morley, followed up with me after the LAG meeting. She provided encouragement and support and connected me to the *ETD+ Toolkit* produced by the Educopia Institute, which is funded by the Institute of Library and Museum Services. ETD is the working acronym for Electronic Thesis and Dissertation. After reviewing a number of free and fee-based educational modules, the ETD + Toolkit and the accompanying 6 modules appear well-aligned with the goals of this project. This module will be fully described in the following section.

I also found interest among School of Education (SoE) faculty about the idea of having targeted professional development on the research life cycle and research data management for emerging scholars. Such courses would be valuable for students in both the SoE PhD and EdD programs, as well as, potentially for master's level students.

While the SoE is my faculty home, my interest in this project is multi-disciplinary, as is my professional background. Location of potential courses in the Drexel Graduate College would benefit all Drexel graduate students.

3. A proposed design of an educational format and at least outline content for an offering.

To fully explore the project charge of identifying an existing or creating an educational course for emerging scholars (i.e., Drexel graduate students) that focuses on the research life cycle and research data management, several existing models were reviewed. These models will be briefly summarized. This report does not recommend creating a new educational course at this time, as several models are available that cover well the research life cycle and research data management.

The recommendation is for Drexel to adopt the ETD+ Toolkit developed by the Educopia Institute, which is funded by the Institute of Library and Museum Services. Following the brief review of other models considered, the ETD+ Toolkit is fully described.

Wiley Publishers
Wiley Researcher Academy (WRA)
(http://news.wiley.com/wileyresearcheracademy)

The developers state that the aim of the Wiley Research Academy is to "enable researchers to be ever more successful in getting their articles accepted by quality, peer-reviewed journals." The product contains 50+ hours of self-paced, digital learning. Fourteen core "learning paths" introduce the participant to major aspects of the publishing process.

While this product is self-guided, it is not open access. Further, it does not cover all the elements of the established research life cycle or research data management.

Elsevier Publishers
Elsevier Research Academy
(https://researcheracademy.elsevier.com/learn#tab-cycle)

This publisher developed product "provides free access to countless e-learning resources designed to support researchers on every step of their research journal." The "research cycle" includes five components: research preparation, writing for research, publication process, navigating peer review, and communicating your research.

While this product promises free access and includes 3, 1-hour modules on research data management, it appears to be focused on publishing research.

Nature Publishing Group/Springer Nature
Nature Masterclasses
(https://masterclasses.nature.com/documents/16465-nature-masterclasses-brochure)

The Nature Masterclasses are available as fee-based face-to-face workshops, online training, and webinars. The online training consists of 15 modules with approximately 15 hours of learning time. The modules are divided into 3 main categories: Planning/Writing, Submitting, and Publishing.

Although this product includes a one-hour module on data management, it appears to focus primarily on the publishing process.

American Chemical Society (ACS)
ACS Reviewer Lab
(https://www.acsreviewerlab.org)

This product focuses on providing peer-review training for scientific researchers. This free training course was designed by ACS editors and includes 6 interactive modules: Introduction to Peer Review, Ethics in Peer Review, Preparing for Review, Assessing Significance and Technical Quality, Assessing Presentation and Readiness for Publication, and Writing Your Review.

RECOMMENDED COURSE MODEL

Educopia Institute/funded by the Institute of Library and Museum Services
ETD+ Toolkit (ETD=Electronic Thesis and Dissertation)
(https://educopia.org/etdplustoolkit)

Product developers describe the open access ETD+ Toolkit as "an approach to improving research output management" by focusing on the electronic thesis and dissertation as a "mile-marker." The Toolkit "provides introductory training in a series of crucial data curation and data longevity techniques. The Toolkit may be freely adopted and adapted. The product developers state that "each module is released under a CC-BY license, and all elements are openly editable to make reuse as easy as possible."

The Toolkit contains 6 modules: Copyright, Data Organization, File Formats, Metadata, Storage, and Version Control. Each module includes:

- Learning Objectives
- 1-page Handout (overview of module)
- Guidance Brief that can be customized for user campus
- Slideshow with full presenter notes
- Evaluation Survey in form of pre- and post-tests

(ETD+ Toolkit (the Google Drive-based Open Curriculum package)

After accessing the Toolkit in Google Drive, the first step is opening the folder named *About the Toolkit*. This folder contains step-by-step information about how to access and download the curriculum. The *About* folder also contains two sets of guidelines developed separately for Administrators (Guide) and Students (Overview); each guide is presented as a slideshow with full trainer notes.

In addition to the *About the Toolkit* folder, the Google Drive also contains the complete curriculum for all six modules. As an example, materials from *Module 1: Copyright,* including *Learning Objectives* and *Module Brief,* are shown below.

The ETD+ Toolkit Team:

PROJECT STAFF

1. Dr. Katherine Skinner (PI, Educopia Institute)
2. Sam Meister (Co-PI, Educopia Institute)
3. Dr. Martin Halbert (University of North Texas)
4. Dr. Tyler Walters (Virginia Tech)

5. Zhiwu Xie (Virginia Tech)
6. Christina Drummond (Educopia Institute)
7. Courtney Vukasinovic (Educopia Institute)

PROJECT ADVISORY GROUP

1. Dr. Tyler Walters (Virginia Tech)
2. Michael Witt (Purdue University)
3. Christopher "Cal" Lee (University of North Carolina-Chapel Hill)
4. Gail McMillan (Virginia Tech)
5. Kathleen Shearer (Confederation of Open Access Research)
6. Dwayne K. Buttler (University of Louisville)
7. Amy Jo Barton (Purdue University)

PROJECT STEERING COMMITTEE

1. Dr. Martin Halbert (University of North Texas)
2. Holly Mercer (University of Tennessee, Knoxville)
3. Chris Eaker (University of Tennessee, Knoxville)
4. Carly Dearborn (Purdue University)
5. Gabrielle Michalek (Carnegie Mellon University)
6. Michael Boock (Oregon State University)
7. Mike Furlough (Penn State University)
8. Austin McClean (ProQuest)
9. Eli Windchey (Bepress)
10. Joe Swanson, Jr. (Morehouse College)
11. Zhiwu Xie (Virginia Tech)
12. Rachel Howard (University of Louisville)
13. Cinda May (Indiana State University)

ETD+ Toolkit Team
Questions? Concerns? Ideas?
Contact us!
Katherine@Educopia.org
Sam@educopia.org
Courtney@educopia.org

Module 1: Copyright
Learning Objectives
Students who complete this module will:
● Understand when and how to seek appropriate permission to use existing works.
● Know ways you may establish and signal copyright for your own works.
● Recognize what research outputs are and are not copyrighted automatically.

ETDPLUS: GUIDANCE BRIEFS, COPYRIGHT (EDUCOPIA INSTITUTE, 2017)

Module 1: Copyright
Brief (overview of the module, activities, tools, resources)

You have successfully defended your dissertation and are ready to submit it to your institution. Your research findings depend heavily on a range of materials – including a master dataset – that you want to submit and store with your text-based dissertation. You find yourself worrying about copyright – first, about whether you may have infringed on someone else's copyright within your dissertation, and second, about whether someone may infringe on yours after it is submitted. You wonder what your options and responsibilities are. You also wonder what you need to do to ensure that your work is both shareable and protected.

Rationale and Motivations (Why)

As a researcher in an academic environment, understanding copyright basics can help you to share and protect your work effectively and purposefully. The decisions you make now about copyright will have implications for your work, including how it can be built upon in the future. As you work on your thesis or dissertation, it is useful to build a basic understanding of two key aspects of copyright:

1. How copyright impacts your ability to include others' works within your own (including those you have collaborated with to produce or that you have already published);
2. How decisions you make about your own copyright may impact the future of your own research outputs.

In other words, you need to know how to recognize and use copyrighted materials produced by others *and* how to register and manage copyright for your own work. There are many guides and resources available to students regarding copyright that can help you to evaluate and select from a range of options available to you, many of which we reference herein.

This guide focuses specifically on some of the decisions you may need to make regarding the materials you have created or used in your research process, including drawings and photographs, tables and charts, lab notes and datasets, interviews and newscasts, software and digital artworks. It describes in non-legal language the basics of a few important terms, including "fair use," "public domain," "Creative Commons," and "patent" as they may apply to these materials.

Failure to consider the implications of different copyright and patent approaches for your own work can limit the impact of your work. Failure to adequately review, vet, and seek permission to use others' work can, in a worst-case scenario, prevent your work from getting published or (in rare cases) lead to legal actions.

The Basics (How to do it)

Copyright is a legal tool authors and creators use to signal what other people can – or cannot – do with their works. There is no single or "right" approach to protecting a researcher's interests in the copyright realm. For some, restricting access and use is critical to prevent the misuse or appropriation of a work. For example, a computer science student may create a code-base that has potential for commercial release; the protection of that student's interests may include both registering copyright for the code and patenting that invention. For others, copyright may be used

to signal to others that they may safely use a research output. For example, a political science student may produce a dataset that would benefit other researchers, including journalists. Releasing the dataset with a license that clearly explains how and when it may be used will enable others to replicate or build upon it without concern.

Legal terminology can often be confusing. Below are brief outlines of a few key and often-used terms, with references to documents that offer more nuanced explanation.

- **Public Domain.** Works fall into the public domain once a defined period of copyright protection has lapsed, at which point they are no longer governed by copyright and can be freely used by anyone. That said, the time frames governing just when copyright ceases to apply are defined by a series of laws and rulings that make the content landscape look like a patchwork. It is worth reviewing a good, short framework of what those boundaries are as a first step to seeing if the work in question may be in the public domain.[1] Also, most federal documents in the U.S. context are in the public domain.
- **Fair Use.** Many scholarly uses are, ultimately, "fair use." Fair use is codified in Section 107 of the U.S. Copyright Act, Title 17 of the U.S. Code. It provides legal protection for an author's inclusion of copyrighted materials within a new work if those materials are essential to a scholarly argument or are being evaluated or critiqued in that work. If you are using a work that is within copyright, but meets certain "fair use" criteria, courts have found that no formal permission is needed. The criteria that are taken into account include the purpose of the work (e.g., educational and research uses favor fair use while commercial uses generally do not); the nature of the work (e.g., factual or nonfiction-based information may favor fair use; highly creative work likely will not); the amount of the work to be used (e.g., small quantities vs. a significant portion of the original work); and the effect of using the work (e.g., not having a negative impact on the copyright holder).[2]
- **Creative Commons.** Creative Commons (CC) is a set of licenses that are available to copyright owners to designate what uses are permitted for a copyrighted work. These licenses put into plain language a set of legal constraints, including when a user needs to seek permission from the copyright holder, how the work's user should credit the original copyright holder, and what types of uses (including commercial/non-commercial) are permissible.[3]
- **Patent.** Patents are another form of protection that can be important for particular types of works. In scholarly environments, patents are most often sought when

[1] Kenneth D. Crews, "Copyright and Your Dissertation or Thesis: Ownership, Fair Use, and Your Rights and Responsibilities," ProQuest, 2013, http://media2.proquest.com/documents/copyright_dissthesis_ownership.pdf.

[2] See National Communication Association, "Best Practices in Fair Use in Scholarly Research." https://www.natcom.org/fair_use.aspx; and College Art Association, "Code of Best Practices in Fair Use for the Visual Arts." http://www.collegeart.org/pdf/fair-use/best-practices-fair-use-visual-arts.pdf. See also Kenneth D. Crews and Dwayne K. Buttler, "Fair Use Checklist," Copyright Advisory Office, Columbia University Libraries, last updated May 14, 2008, https://copyright.columbia.edu/basics/fair-use/fair-use-checklist.html; and Michael Brewer and the ALA Office for Information Technology, "Fair Use Evaluator," Librarycopyright.net, 2008, http://www.librarycopyright.net/resources/fairuse/.

[3] For more information about CC licenses and what they cover, see https://creativecommons.org/licenses/.

university policy and/or funder requirements require or necessitate it. Students rarely need patents; those who do (or whose university plans to claim a patent on her/his research outputs) will usually discuss these obligations in advance with their advisors and/or funders.

Using Copyrighted Works

As an author, your first step is to consider the appropriate way to recognize others' work in your own creations. You may be quoting from books and articles, inserting images or a few bars of printed music or lyrics; you may be including film clips or other audio-visual material, architectural drawings, or examples of someone's computer code.

There are three core options to consider when building upon or referencing someone else's work: (1) the work may already be in the public domain or licensed to allow it to be used freely. In this case, good practice still suggests a proper citation. If the work is not in the public domain, either (2) the way in which you use it may qualify as "fair use," in which case, once it is properly cited, no other action is needed; or (3) you will need to obtain permission from the copyright holder.

If a work that you want to reference or reuse is under copyright, you need to know if you have the right to reuse it the way you want to. Official statements (e.g., a "CC" license, or an institutional licensing agreement) can provide you with this information in some cases. However, if the work you wish to use contains no obvious statement permitting reuse, and if you cannot assert fair use, you will need to seek the copyright holder's written permission or find an alternative work to use that is allowed by license or is in the public domain.

How and where to do that depends on the works involved. Some aggregators, like the Copyright Clearance Center, may facilitate the process for you if they manage the copyright of the work you want to cite. Otherwise, you may find yourself needing to track down and contact an author or artist, or their publisher/agent/label or estate, to seek permission. Your campus library may be able to help you accomplish this step. If there are fees associated with using content, they tend to be based on the intended uses. Commercial uses intended for large audiences (such as licensing a photograph to use on the cover of a new CD by a major recording artist) are likely to command higher fees than non-profit uses for scholarly audiences (such as reproducing a small copy of an artwork in a book with a projected print run of 500 copies). As mentioned above, the majority of scholarly uses are covered under fair use.

Managing Copyright for Your Works

Once you complete your thesis or dissertation, you will deposit it with your university, and/or perhaps with one of your university's partners (such as ProQuest). As the author of the work, copyright for the work automatically belongs to you, whether or not you have chosen to officially register it with the U.S. Copyright Office. There are additional benefits that you will gain by registering your copyright, though, as documented by the U.S. Copyright Office.

Copyright may or may not extend to the research outputs you have produced and want to include with your thesis or dissertation. For example, data is only thinly protected by copyright; specifically designating a CC license to accompany a dataset (e.g., CC0) is a good approach for simultaneously sharing and protecting your data.

On occasion, there may be reasons to want to relay or restrict access to a thesis or dissertation. These may include that there is a patent pending, a publication pending, that the work contains material under copyright (and not cleared), or that the work includes material of a sensitive

nature. Note that while some graduate students have raised concerns that making dissertations publicly available hinders chances at publication by a publisher, recent studies have shown that this is generally not the case.[4]
If, in the course of creating your dissertation, you have created a work falling into the category of industrial property, such as an invention you may wish to patent, you may wish to consult with your campus legal office or technology office.

Tools (What to use)

As you prepare your research for submission as a thesis or dissertation, you likely will grapple with questions about copyright (and perhaps patents), both for managing your own work and for including other works within your work.
Several important tools have been produced recently, including the National Communication Association (NCA)'s "Best Practices in Fair Use in Scholarly Research" (https://www.natcom.org/fair_use.aspx) and the College Art Association's "Code of Best Practices in Fair Use for the Visual Arts" (http://www.collegeart.org/pdf/fair-use/best-practices-fair-use-visual-arts.pdf). Both provide solid guidance that is relevant across the range of disciplines.
Another tool that has been influential across U.S. scholarly communities is Kenneth Crew's "Copyright and your Dissertation or Thesis" (http://media2.proquest.com/documents/copyright_dissthesis_ownership.pdf), in which the author offers two major categories of considerations that we summarize briefly below.

Decision Group One: Managing Your Copyright

- Do you own the copyright in your work?
- Should you register your copyright?
- Should you use a Creative Commons license?
- Should you make your dissertation Open Access?

There is no "right" pathway for managing your own copyright; there is a spectrum of options, all of which may make sense to different individuals in different scenarios. You already hold copyright when you create something in tangible form. Registering that copyright is necessary in order to defend that right against unapproved use (e.g., filing a lawsuit to collect statutory damages). Making your thesis or dissertation "Open Access" (depositing it with your institution where others may find and use it without encountering a pay-wall), and using a CC license to designate how and when others may use the work, will maximize your scholarly visibility. In rare cases (such as when your thesis or dissertation has commercial potential), you may want to embargo your work for a period of time or apply a more restrictive CC license.

Decision Group Two: Using Other Copyrights

- Have you identified all third-party materials?

[4] See e.g., Josh Brown and Kathy Sadler, "E-Theses Best Practice Summaries," http://www.rsp.ac.uk/documents/etheses-briefing-papers/ImpactOnFuturePublication.pdf; Ramirez et. al. "Do Open Access Electronic Theses and Dissertations Effect Publishing Opportunities in the Sciences," http://vtechworks.lib.vt.edu/handle/10919/23910?show=full; and Ramirez et. al, "Do Open Access Electronic Theses and Dissertations Diminish Publishing Opportunities in the Social Sciences and Humanities?" http://vtechworks.lib.vt.edu/handle/10919/23911.

- Are any of them in the public domain?
- Are your activities within fair use?
- Do any materials have CC licenses?
- Do you have permissions (where needed)?
- Are you including any materials by you, but previously published?
- Can you avoid some of these issues?

Identifying all materials used in your thesis or dissertation that were created by other people is a crucial first step. Once you have an inventory of the works you are using, you can take that inventory with you to your campus library and ask a reference librarian if your institution can provide guidance requesting usage permissions. At the least, your library should be able to help you track down publisher names and addresses. In some cases, your library can also advise you about "fair use" and how it applies (or doesn't apply) within your thesis or dissertation.

Deciding if a patent is needed

Universities often have designated offices to deal with questions arising about new inventions or innovations. Some examples of different ways campuses handle this are offered here, but because these questions involve the intellectual property policy of the university, and its policy on ownership, understanding your institution's policies is a must. Some example policies are listed below:

- Columbia University Technology Ventures http://techventures.columbia.edu/inventors/protect-your-innovation
- Stanford University's Office of Technology Licensing http://otl.stanford.edu/inventors/inventors_patent.html
- Indiana University's Research and Technology Corporation http://policies.iu.edu/policies/categories/administration-operations/intellectual-property/intellectual-property.shtml

Local Practices (What's happening on campus)

This section should include information specific to your institution, e.g., what resources do you offer, and who can a student contact with questions about copyright issues?

Resources (For more information)

The United States Copyright Office website has a series of circulars on specific topics. The full list is available here: http://copyright.gov/circs/. Some that may be of special interest include:

- "Copyright Basics" http://copyright.gov/circs/circ01.pdf
- "How to Investigate the Copyright Status of a Work" http://copyright.gov/circs/circ22.pdf
- "Ideas, Methods or Systems" http://copyright.gov/circs/circ31.pdf

Many individual institutions offer generalizable guidance online for students who are engaged in the thesis/dissertation process. These include the following:

- "How to Make Your Own Work Open Access," The Berkman Center at Harvard

University
http://cyber.law.harvard.edu/hoap/How_to_make_your_own_work_open_access
- "Fair Use Checklist," Cornell University
http://copyright.cornell.edu/policies/docs/Fair_Use_Checklist.pdf
- "Copyright Term and The Public Domain in the United States," Cornell University (Peter B. Hirtle)
http://copyright.cornell.edu/resources/publicdomain.cfm
- "A Graduate Student's Guide to Copyright: Open Access, Fair Use, and Permissions," University of Michigan
http://www.lib.umich.edu/files/services/copyright/Dissertations.pdf

There are also guides specifically on the application of "Fair Use" available from several scholarly associations:

- "Best Practices in Fair Use in Scholarly Research," National Communication Association https://www.natcom.org/fair_use.aspx
- "Code of Best Practices in Fair Use for the Visual Arts," College Art Association
http://www.collegeart.org/pdf/fair-use/best-practices-fair-use-visual-arts.pdf

World Intellectual Property Organization (WIPO) has produced a series of overviews on intellectual property:

- "Understanding Industrial Property"
http://www.wipo.int/edocs/pubdocs/en/intproperty/895/wipo_pub_895.pdf
- "Understanding Copyright and Related Rights"
http://www.wipo.int/edocs/pubdocs/en/intproperty/909/wipo_pub_909.pdf

Additional resources include:

- Brewer, Michael, and the ALA Office for Information Technology. "Fair Use Evaluator." Librarycopyright.net. 2008.
http://www.librarycopyright.net/resources/fairuse/.
- Brewer, Michael, and ALA Office for Information Technology. "Is it protected by copyright?" Librarycopyright.net. 2012.
http://librarycopyright.net/resources/digitalslider/.
- Crews, Kenneth D. "Copyright and Your Dissertation or Thesis: Ownership, Fair Use, and Your Rights and Responsibilities." ProQuest. 2013.
http://media2.proquest.com/documents/copyright_dissthesis_ownership.pdf.
- Crews, Kenneth D., and Dwayne Buttler. "Fair Use Checklist." Copyright Advisory Office, Columbia University Libraries. Last updated May 14, 2008.
https://copyright.columbia.edu/basics/fair-use/fair-use-checklist.html.
- Henry, Geneva. "Guide to Access Levels and Embargoes of ETDs." In "Guidance Documents for Lifecycle Management of ETDs." Educopia. Last updated March 2014.
https://educopia.org/sites/educopia.org/files/publications/Guidance_Documents_for_Lifecycle_Management_of_ETDs_0.pdf.
- Hswe, Patricia. "Briefing on Copyright and Fair Use Issues in ETDs." In

"Guidance Documents for Lifecycle Management of ETDs." Educopia. Last updated March 2014. https://educopia.org/sites/educopia.org/files/publications/Guidance_Documents_for_Lifecycle_Management_of_ETDs_0.pdf.

- ProQuest. "Copyright Guide." Proquest.com. Last updated 2014. http://media2.proquest.com/documents/UMI_CopyrightGuide.pdf.

Activities

1. Start with a chapter from your dissertation, at whatever stage it is now, and identify all the other works you cite, reference, or borrow from.
2. Using the "Fair Use Checklist," the "Best Practices in Fair Use in Scholarly Research," and the "Code of Best Practices in Fair Use for the Visual Arts," determine which (if any) works may require additional research to determine if permission is needed.

The entire curriculum is available at the ETD+ Toolkit website, (https://educopia.org/etdplustoolkit)

4. **Report on findings/insights and recommended next steps.**

This report provides a comprehensive overview of the project activities and findings during the Spring 2018 term. The report contains examples and samples of resource materials that I reviewed for this project. Web links are provided to enable easy access to view source materials.

In sum, after extensive investigation and review, I conclude that Drexel Libraries would be best served, at least in the short term, by piloting educational modules provided open access by Educopia Institute in the form of the *ETD+ Toolkit*. In the previous section, the Toolkit was described and samples from the curriculum were shared, along with web links to the Institute homepage and the full *ETD+ Toolkit*.

I further recommend that *Module 1: Copyright of the ETD+ Toolkit* be piloted with a group of Drexel graduate students. The Educopia Institute developers are interested in having the curriculum piloted, and they have created a survey to collect data from pilot sites.

While the *Toolkit* does not cover all the elements of the ACRL Scholarly Communications Cycle, it provides a solid foundation in research data management. If Drexel Libraries, in conjunction with the Drexel Graduate School, chooses to pilot, and perhaps later adopt, the full *ToolKit*, additional modules can be secured from other sources or developed in-house to provide a robust education in the scholarly communication cycle.

One concern at the outset of this project was what would motivate graduate students to participate in education about the scholarly communication cycle. Drexel has an available graduate student group who are willing to participate in a pilot demonstration of Module 1. This group is available as early as late summer 2018. This multi-disciplinary group of graduate students are currently working on their own dissertations and helping to develop a Drexel-based student-run educational journal. The Module materials and activities would provide them with a dual benefit: using their own dissertation work in the Module activity and providing them training in research data management that they can employ in their role as journal editors. The current graduate student members of this journal editorial group, representing a total of 13 doctoral degree programs: 11 Drexel degree programs and two degree programs from other universities:

2018 Emerging Voices in Education Co-Editors
Term: February 1, 2018 – June 30, 2020

Delaney, Brian	PhD, School of Education	Drexel University
Galoyan, Tamara	PhD, School of Education	Drexel University

2018 Emerging Voices in Education Editorial Board
Term: May 1, 2018 – June 30, 2019

Dennis, Dr. Traci Cohen	EdD, Educational Leadership and Management	Drexel
Galib, Christine	EdD, Educational Leadership and Management	Drexel
Gleeson, Sarah	PhD, Philosophy	Drexel

Gupta, Ipshita	PhD, Biomedical Engineering	Drexel
Hegazy, Amir	PhD, Chemical and Biomedical Engineering	Drexel
Johnson, Lauren B.	PhD, Clinical Psychology	Drexel University
Lazarow, Dr. Sherine	EdD, Higher Education Leadership and Management	Drexel
Le, Sunny	EdD, Educational Leadership and Management	Drexel
Mangongsong, Ague Mae	PhD, School of Education	Drexel
Meloche, Alysha	PhD, School of Education	Drexel
Murphy, Jackie	EdD, School of Education*	Drexel
Niedt, Greg	PhD, Communication, Culture & Media	Drexel
Orsini, Alex	PhD, Project Management (Engineering)	Drexel
Oyekanlu, Emmanuel A.	PhD, Electrical Engineering	Drexel
Petrovich, Mark	PhD, School of Education	Drexel
Pinder, Dr. Antoinnette	EdD, Educational Technology and Ed Tech Leadership	New Jersey City University
Rasheduzzaman, MD	PhD, Environmental Engineering	Drexel
Slear, James	PhD, Administration and Supervision of Curriculum	Auburn University
Slear, Susan	PhD, Administration and Supervision of Curriculum	Auburn University
Talafian, Hamideh	PhD, School of Education	Drexel
Thomas-El, Shawnna	PhD, School of Education	Drexel
Wallace, Dr. Jade	EdD, Educational Leadership and Management	Drexel
Yerk, Walter	PhD, Environmental Engineering	Drexel

From limited conversation with several of the other 2018 Library Fellows, it seems that there is, or could be, some project overlap. For example, one Fellow is looking specifically at data management. If Drexel Libraries decides to pilot one or more of the *ETD+ Toolkit* modules, I would recommend that the Fellow assigned to data management vet any related modules. I believe that more communication among and between the Library Fellows would strengthen the work of each and all.

I also recommend that Drexel Libraries create a "place" to house materials such as those detailed in this project report. Clearly librarians nationally and internationally have made tremendous progress in conceptualizing, articulating, and developing guidelines and other resource materials on the scholarly research life cycle and research data management; however, as a faculty member in one Drexel University school/college, I was unfamiliar with most of the materials I reviewed. I suspect that is likely true for many, if not most, other faculty. This knowledge gap may lead faculty to presume that they, and their students, do not need support. Making this knowledge visible and accessible would be a remarkable contribution from Drexel Libraries and the Drexel Graduate College.

Finally, I would be interested in continuing this work in some capacity. I would especially be interested in conducting a pilot run of the *ETD+ Toolkit*. Because the Toolkit includes pre- and post-tests, we would be able to collect data on these efforts. If the Toolkit is adopted, data could be collected on an ongoing basis to assess whether and to what degree students are mastering the Learning Objectives.

I have thoroughly enjoyed this Fellows' experience, and in many ways, I feel like I have just begun to scratch the surface. One particular interest of mine is exploring to what degree the Drexel Institutional Review Board (IRB)is connected to the research data management work being done in the library sciences. I personally have found a disconnect between what I have learned in this project and what I have experienced in the IRB review/approval process.