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Mira Waller
North Carolina State University, mpark@ncsu.edu

Heidi J. Tebbe
North Carolina State University

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The Nuts and Bolts of Supporting Change and Transformation for Research Librarians

Mira Waller, Associate Head, Collections & Research Strategy, North Carolina State University

Heidi J. Tebbe, Collections & Research Librarian for Engineering and Data Science, North Carolina State University

Abstract

Libraries have a rich tradition of providing services and support to researchers. In recent years, changing technology, evolving research methods and requirements, and the transforming landscape of scholarly communication have revealed a need for libraries to actively engage scholars and participate in the entire research lifecycle. As liaison and subject librarian roles shift to a more holistic and engagement-focused model, it is important that libraries provide them with the tools and resources to develop new skills.

This paper will focus on three ways in which the North Carolina State University Libraries created and supported relevant training and opportunities for research librarians to gain the expertise necessary to embrace new roles and deeper collaboration across the research enterprise. Examples include the Data and Visualization Institute for Librarians, the Visualization Discussion Series, and the Research Data Committee. Through these examples, we will share ideas for creating peer-to-peer learning opportunities, explore some of the skills necessary for increased engagement, and provide insights into the challenges and opportunities related to supporting and developing new skills for librarians.

Introduction

Subject liaisons have traditionally focused on providing services and collections. Recently, however, their roles have shifted from a support model to one that focuses more on engaging and collaborating with scholars throughout the research enterprise. In order to facilitate and ensure that such a shift is successful it is important that libraries provide the tools and the resources necessary to develop new skills. At North Carolina State University Libraries (NCSU Libraries), we are supporting the need for new skills by creating and providing training opportunities through a variety of methods including formal short courses, peer-to-peer training, committee work, and leveraging internal expertise.

This paper examines three ways in which the NCSU libraries designed, supported, and continue to provide relevant training and opportunities for research librarians: Data Visualization Institute for Librarians, the internal Visualization Discussion Series, and the Research Data Committee. All three of these examples were created in order to help librarians gain the expertise necessary to embrace new roles and deeper collaboration across the

research enterprise. In some cases, we were focused on internal staff, and in others, we were interested in providing opportunities to the larger library community. With each example, we provide a brief history, describe its current status, explore some of the challenges and opportunities surrounding it, and take a look into the future.

Data and Visualization Institute for Librarians

Background

The Data Matters: Data Science Workshop Series (<http://datamatters.org/>) was started in the summer of 2014. This week-long series of classes is held every summer in Chapel Hill, NC, which is just a short drive up the road from NC State University. The series is sponsored by the National Consortium for Data Science, the Renaissance Computing Institute, and the Odum Institute for Research in Social Science. The series is for researchers, data analysts, and other individuals who wish to increase their skills in data studies and integrate data science methods into their research designs and skill sets. Classes generally run from 10 a.m. to 4:45 p.m. In 2016, an additional workshop series was held on the

NC State campus. Librarians from NCSU libraries, including both authors, have attended classes in the series every year since the Data Matters Series began.

Inspired by the Data Matters Series, the NCSU libraries, in collaboration with the Odum Institute, offered the week-long data science short course for NC State librarians in October 2015. It was hoped that this short course would allow participants to gain hands-on exposure to some broadly applicable tools and become familiar with important concepts and practices in the areas of data analysis, visualization, and content mining in order to enhance support for and collaboration with researchers and students in these emerging areas. Like the Data Matters Series, the short course lasted one week with classes meeting from 10 a.m. to 4 p.m. every day. Managers were supportive of participants clearing schedules to allow for participation.

The short course started with an overview for those with limited or no previous experience with data analysis and included sessions about project management, data visualization, text analysis, and working with messy data. After the short course, participants were encouraged to use their new skills on their own projects and present on those projects at group meetings. These projects involved studying reference transactions using text analysis and topic modeling, searching for NC State faculty conducting open science, studying relevant APIs, and showing the international reach of NC State's College of Veterinary Medicine on a map.

This internal short course evolved into the Data and Visualization Institute for Librarians (DVIL). DVIL, a collaboration between the NCSU Libraries, the Odum Institute, and the Coalition for Networked Information, is a week-long course providing the opportunity for librarians to immerse themselves in learning about data science and visualization in collaboration with academic peers.

Overview

As with most initiatives and projects, getting DVIL off the ground and running smoothly took a dedicated group working together. In this case, that group consisted of the leadership of Honora Eskridge, Director of DVIL, and Hilary Davis, Head of

Collections and Research Services; a curriculum team comprised of librarians from several different departments; and a logistics team that included a member from our two main libraries. The first DVIL took place from May 23, 2016, to May 27, 2016. Applications were taken from February 15, 2016, to mid-March 13, 2016. Applicants were asked to provide a letter of support from their library director and respond to the following questions:

- What is your experience and/or interest in data science and data visualization as a component of your work as a librarian?
- How will participation in this program benefit your work? Please describe one or more projects or initiatives you would like to explore during the program.
- In what ways do you expect your particular skills, experience, and perspective to contribute to the group learning experience?

The week-long Institute's curriculum focused on the following topics: Data exploration and statistical analysis, data visualization, data description, sharing and reuse, data cleaning and preparation, and gathering and analyzing textual and multimedia data. Additional topics such as bibliometric analysis, version control with Git and GitHub, publisher and funder data use agreements, and open data and open science were discussed in short sessions, led by colleagues from the NCSU libraries. Participants were not required to have any computer programming or data analysis experience.

There were 85 applicants from diverse backgrounds. A common theme among applicants was the belief that they had a general sense of data science and visualization but lacked the deeper knowledge gained from more formal and hands-on training. Most applicants indicated they learned through massive open online courses, Lynda.com, webinars, and short courses. In some cases, applicants had intermediate knowledge in specific areas but needed advanced skills in order to best serve their researchers, faculty, and students. Additionally, librarians in tenure-track positions expressed a desire to apply data science and visualization techniques to their specific areas of research and scholarly output. Some institutions are creating data research or data management positions, while others are adding these responsibilities into existing positions such as subject

liaison librarians. Upon reviewing the applicant pool and responses, it is clear that there is a need and a desire for data science and visualization training from librarians, on both a basic and an advanced level. The cohort of attendees was limited to 27, of which five were internal. Since the applicant pool was so diverse, it was no surprise that the attendees ended up being a diverse group from a variety of backgrounds within libraries (e.g., medical, information technology, science, humanities, cataloging, and assessment) and locations (Canada, California, Texas, and Australia).

Challenges and Opportunities

As an academic research library, our mission and goals tend to revolve around our institution, our patrons, and our community. We are not typically in the business of running week-long institutes, which pull resources from other areas and require support. As a result, one challenge we faced was sustainability. Another challenge we encountered related to sustainability is resource creep. Originally, we projected eight people would be needed to run DVIL. It actually took 23 people, in large part due to computing issues and needs. This leads to another challenge we faced: logistics. Even with a logistics team, it was difficult to manage all the different needs and requirements, including software, hardware, travel, and catering. The diverse needs and skills of the attendees also presented some issues. For example, some attendees had intermediate skills and wanted a deep dive into a few specific areas, while others needed more of an introduction and overview. A few attendees were in management and building teams with data science and visualization skills rather than directly responsible for using the skills themselves.

Although we faced some tough challenges, DVIL also offered us a number of opportunities. By building upon successive iterations of DVIL, we will be able to build a community of practice among the cohorts of the Institute. We would also build a network of experts at the NCSU libraries to serve as internal resources and future instructors. Furthermore, through DVIL we would be giving back to the library community by building up the role of librarians to include these other areas of expertise. Although the differing needs of the first Institute's attendees were a challenge, they could also be turned into separate tracks for future DVIL sessions. During this first

iteration of DVIL, we learned through our applicants and attendees that despite their diversity, they had one thing in common: An increasing demand on their campuses for data support and growing expectations from their research and teaching communities for data services. With this increase in demand and expectations from academic and research communities comes an increased need for training options around data science for librarians, which is an opportunity for us to expand DVIL and create additional avenues for training.

Future

As we look to the future of DVIL, our first step is to incorporate the feedback we received from attendees of the first institute for more visualization, more hands-on training, and more networking opportunities. As part of this process, we also modified the name of the institute to better reflect its focus. DVIL is now the Data Science and Visualization Institute for Librarians or DSVIL (<https://www.lib.ncsu.edu/dataviz institute/about>). We will also continue working on ways to improve logistics and to maximize the efforts of the DSVIL working group. Since providing different tracks was identified as a potential opportunity to expand DSVIL, we will explore ways to provide different flavors of the institute tailored to different groups. At the time of writing, planning for DSVIL 2017 is almost complete, and applications for the Spring 2017 Institute will be accepted from December 12, 2016, to January 27, 2017.

Visualization Discussion Series

Background

The NCSU Libraries has several ultra high-definition video walls and high-tech visualization spaces. The ad hoc Visualization Services team, created in October 2014, was tasked with shaping and articulating the libraries' role in addressing campus-wide needs for visualization spaces, tools, and support. The original team was cross-departmental and included three members from the Digital Library Initiatives department (including one of the authors); one member each from the Research Engagement, Learning Spaces and Services, and Collections and Research Strategy departments; and one member from the Natural Resources Library.

The team is charged with supporting the Coffee and Viz seminar series (<https://www.lib.ncsu.edu/events/series/coffee-and-viz>). The Coffee and Viz series is a monthly event that takes place in one of the libraries' high-tech spaces. NC State faculty come to present on how they use visualization in their research and teaching. Coffee and bagels are served beforehand, and it has become a popular venue for folks from across campus to come together to talk, learn, and connect. The idea of "Coffee & Viz for an internal audience" was first proposed in November 2014. This was the start of the internal Visualization Discussion Series.

Overview

The internal Visualization Discussion Series was an ongoing series of informal discussions led by library staff members on visualization topics and problems of interest. Initially, the discussions were held on Wednesdays from 11:00 a.m. to 12:00 p.m., roughly once per month with the location alternating between our two main libraries. Initial objectives for the series included sharing tools and techniques for visualization, giving examples of how visualization can be applied, getting feedback on visualization-related projects and initiatives, and fostering discussion of perceived campus visualization needs and how services could be improved.

Sessions were held that covered broad topics such as choosing the correct visualization and identifying misleading or inaccurate visualizations, a debriefing of a one-day course taught by Edward Tufte that was attended by several people from the libraries, and visualization-related conferences attended by people from the libraries. Several tools were discussed in their own sessions, including D3.js, GIS, GitHub, OpenRefine, Plotly, SAS, and Tableau Public. We also discussed trends such as generative art and virtual reality.

The discussion sessions were led by volunteers who came from departments across the libraries and from multiple levels, everyone from NCSU Libraries fellows to department heads. One speaker joined us from nearby Duke University.

Challenges and Opportunities

Logistics is always a problem, particularly with librarians with packed schedules who are physically

spread across two main libraries and three branch libraries. Asking volunteers to lead sessions meant that a few people on the team ended up leading sessions more than once. Coming up with potential topics that someone in the library could speak about without undertaking a large amount of preparation became more difficult with time.

However, the series allowed for many opportunities. Attendees and leaders had the opportunity to learn new things. The discussion nature of the series allowed for idea generation and offered a place to share tools and techniques. It provided a forum for people to get public speaking experience in front of a friendly audience. It helped to foster discussion and encourage feedback. The series also contributed to collection development. As part of the *The Good, the Bad, and the Tufte* session, participants offered recommendations for visualization books; these recommendations were then used for an ongoing project to improve our data science collection.

Future

In the spring of 2016, the scope of the discussion series was expanded to include nonvisualization topics, such as digital media, making, and data science. The new series, Share with a Peer (SWAP), will maintain the emphasis on informal discussion and peer-to-peer staff development.

SWAP topics in 2016 included a staff hackathon, a discussion about the *A/V Geeks at the Hunt Library* series, orientations to the D. H. Hill Visualization Studio, the Teaching and Visualization Lab, and the Digital Media Lab, and a data repositories tour led by the research data committee.

Research Data Committee

Background

From July 2011 through January 2012, the NCSU Libraries took part in the ARL E-Science Institute (<https://www.diglib.org/community/groups/arldf-e-science-institute/>) to help frame a strategic agenda for supporting research data management and its broader e-science needs at NC State. The group conducted an environmental scan, interviewed key researchers and administrators, and participated in a capstone meeting with peer institutions. During this process, we learned the following: Researchers

expect the libraries to be up to speed, provide guidance, and advocate for their needs; researchers primarily need to store data and make it accessible to the public; and researchers are interested in access to computational resources and voiced a need for access to open data. The outcomes from participation in the ARL E-Science Institute included:

- Building good momentum to move the campus conversation forward about supporting needs around data management, discovery, sharing, and access.
- Bringing the libraries more firmly in the scope of being a part of the research process.
- Identifying the libraries as key to helping create a more cohesive approach at NC State to bringing partners together and reducing decentralized responses to data.
- Creation of the RDC.

Overview

The initial aims of the RDC were to build organizational literacy and position the libraries to be a partner as initiatives develop across campus. The RDC is currently charged with developing and promoting services to support research data management at NC State. The committee's current membership includes librarians from many different departments in the libraries such as branch libraries, collections and research strategy, research engagement, special collections, administration, acquisitions and discovery, and the copyright and digital scholarship center. Eventually, we hope to cycle as many librarians as possible through this committee so that we can build up internal expertise for research data support throughout the libraries. Having a diverse and rotating membership also gives us the ability to pull in expertise from the various departments across the libraries. To date the committee's efforts have been focused on providing introductory data management planning (DMP) training to both internal and external audiences, delivering customized guidance on individual researcher's DMPs through our DMP review services, connecting researchers with data repositories, and helping researchers understand the complex rules

and expectations around making grant-funded research publicly available.

Challenges and Opportunities

Staff time is finite, and it is often a challenge to carve out more time from someone's already full schedule to serve on an active committee. Furthermore, there is a high demand for "just-in-time" support for some of the services provided by the RDC. This kind of quick and last minute support requires a highly responsive and available team. Although we were pulling in expertise from different departments, it was unlikely that anyone on the committee would be an expert in all the areas related to research data support. Cross training would be necessary, and as new members rotate on to the committee, they would also have to be trained.

Fortunately, there are a number of opportunities and rewards that come from providing services through the RDC. By providing research data support in a highly responsive manner, we have been able to create more connections with the campus community and have more interactions with faculty, postdocs, and graduate students. Along with the internal network of experts we are building, this helps us to position the libraries to be a partner as initiatives around research data develop across campus.

Future

As the RDC continues to evolve, we anticipate providing enhanced training that includes more active, hands-on workshop components. We also believe that there will be a need to scale up on supporting public access compliance. We plan to follow up with principal investigators on DMPs that we have provided assistance on. We also would like to be included in research grants either as consultants or as actual personnel on the grant to support data management process. We are interested in providing more guidance on data publications—what they are and why they are useful to you, as well as providing assistance with tools or platforms that would support data publication. Finally, we will continue to use the RDC as a hub to train and build expertise and capacity internally.