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putting the pieces together: theory and practice

Developing a Data Fellowship Program and Peer-to-Peer Support Model

Nicholas Ruhs, Florida State University, Tallahassee, FL, US, nruhs@fsu.edu (iD)

Abstract

Objectives: To support the library's research data services program and provide opportunities for student employees to gain skills in supporting data science research and teaching, the author led the creation of a data fellowship program at their institution. The author describes the development of the program's peer-to-peer support model and how that model was integrated into the library's broader research data services program.

Methods: There were two aspects to the fellowship's peer-to-peer support model. First, the data fellows provided direct support to their peers—through instruction, reference support, and outreach—who were engaged in data-related research projects and class assignments. Second, the fellows engaged in professional development and learning opportunities led by library colleagues.

Results: During the first year of the program, the data fellows provided virtual data reference support, developed two CANVAS modules, conducted an email outreach campaign, and authored several blog posts. Furthermore, the data fellows received data reference training and engaged in discussions with library experts on pertinent data-related topics. These discussions provide the fellows with knowledge and skills that can be utilized both during and after the fellowship.

Conclusions: The first year of the STEM Data Fellowship program proved to be successful in establishing the foundation for a robust peer-to-peer learning and support model for research data services at the author's institution. The author plans to further enhance and grow the program in future years by providing more opportunities for established and new data fellows to contribute to the library's ongoing RDS efforts.

Introduction

The last decade has seen an explosive growth in data-focused research and job opportunities across academia and private industry. Job growth in data-related fields is estimated to grow approximately 28% through 2026 (U.S. Bureau of Labor Statistics 2018). This growth coincides with a need for universities to provide opportunities for students to acquire skills related to data literacy, analysis, wrangling, and management. A natural opportunity exists for academic libraries to provide students with opportunities to enhance their data skills while also supporting the library's research data services program. While the literature in this area is quite limited, there are a few examples. Seton Hall library utilizes federal work-study students to support data reference and instruction (Ince et al. 2020, 149). The University of California Berkeley employs student data peers to consult on data science and computing software (Berkley Division of Computing, Data Science, and Society 2022).

Building upon previous and ongoing efforts to enhance student success and career readiness at Florida State University (FSU), the author saw an opportunity to provide student employees with experience and skills in data science, while also supplementing the libraries own research data services program. This idea led to the creation of a strategic initiative to our library administration (Florida State University Libraries 2020). The primary goal of this initiative was the creation of a STEM Data Fellowship program, wherein student data fellows would provide peer-to-peer data reference support, instructional support and outreach to fellow students in academic departments. The initiative was approved as a pilot project in April 2021 for the 2021-2022 academic year. The program was initially funded for one year, with additional funding possible after the initial pilot period.

Following approval of the initiative, the author developed an initial plan outlining the structure of the program and how the data fellows would support data reference, instruction, and outreach. Training and orientation materials for the data fellows were also developed, along with a detailed set of best practices and procedures. Then, several meetings with library and campus stakeholders were held in order to achieve buy-in and support for the program, as well as solicit feedback, ideas, and potential partnerships. This feedback was incorporated into the overall design of the program.

Discussion

The peer-to-peer model for the data fellows program has two distinct but interrelated aspects. First, the fellows are responsible for providing data reference and instructional support to students in academic departments. As students themselves, the data fellows have a greater understanding of the data research and learning needs of their peers. Furthermore, as they will be taking classes and interacting with classmates on a daily basis, they have greater access to their fellow students. The second component of the peer-to-peer model focuses on the data fellows' interactions with library colleagues. Many of these interactions involved structured learning and professional development opportunities developed by library staff in collaboration with the author. These student development opportunities align well with the library's strategic goal of "develop[ing] and support[ing] faculty, staff, and student employees, with a commitment to enriching the individual in order to elevate the institution" (Florida State University Libraries 2020). Below, examples for how both components of the peer-to-peer model were integrated into the fellowship program are discussed.

Data Fellows Training and Development

Data reference training

As part of the fellowship, it was planned to have the fellows conduct virtual data office hours through a data channel on the library's Virtual Reference service. In order to prepare them to effectively support library patrons in this way, the fellows needed to receive training on how to provide data reference support and use our library chat service. To meet this goal, the author collaborated with the FSU Libraries' Instruction Librarian to develop a two-part data reference training. This training curriculum was designed specifically to address the nuances of data-related reference questions while integrating more general training on reference interviews and interacting with patrons. Topics covered during the first session included the RUSA Guidelines for Reference Transactions, data reference interviews, determining a patron's information needs, and referrals (American Library Association 2008). The second session covered how to navigate to the library's extensive selection of data repositories and resources, as well as how to interact with patrons through the Springshare LibAnswers software.

Topic discussions

In order to prepare the data fellows for future careers as data professionals, opportunities to learn about the general landscape of data and open science more broadly were incorporated into the fellowship. FSU Libraries is fortunate to have several faculty and staff with expertise in these areas, many of whom gladly agreed to meet with the data fellows. These professional development opportunities were primarily structured as one-hour weekly discussion sessions, wherein a guest from the library or campus community would lead a discussion on a predetermined topic. The guest facilitator would start with providing an overview of their work in the area, followed by a back-and-forth question and answer session with the fellows. Topics covered were varied and included sessions on social science, health, and government information data, as

well as open data, open science, and big data. These sessions prepared the fellows to advocate for good data stewardship with their peers, as well as instilled in them knowledge and skills that augmented their own professional and academic interests.

Direct support and outreach to students

The second component of the STEM Data Fellowship's peer-to-peer model was for the data fellows to engage students in STEM majors at Florida State University and to provide research and instructional support for data-related projects and class assignments. The fellows would utilize prior domain knowledge and data expertise—in addition to training and professional development received throughout the fellowship—to provide in-time and asynchronous support to students. At the same time, they would provide outreach and serve as "ambassadors" for good data practices and our library's research data services. Detailed below are examples of how this model was implemented.

Virtual data reference hours

When deciding on the best method to allow the data fellows to provide direct, real-time support to FSU students, considerations included the fellows' limited schedule and how students typically engage with the library. In this instance, we settled on the idea of regularly scheduled weekly office hours. Initially, these were planned as in-person hours utilizing a walk-in type of format. However, the on-going COVID-19 pandemic in Fall 2021 caused us to reconsider the short-term feasibility of in-person support. We then pivoted to offering virtual reference hours via FSU Libraries' online chat service, which utilizes the LibAnswers platform through Springshare. The author collaborated with the library's Teaching, Learning, and Engagement team (the administrators of this platform) to launch a virtual reference channel specifically for data reference. This channel, which was integrated into the library-wide "Ask-a-Librarian" chat service, provided a dedicated space for patrons to ask data-related reference and resource questions. The service launched in October 2021, with the data fellows "staffing" the channel for two hours on both Tuesdays and Fridays (four hours total per week). While the specific hours varied each semester, scheduling was based primarily on the data fellows' availability. This new service received positive reception from the campus community and library leadership. In the future, we plan to explore the possibility of in-person walk-up office hours within the library, which will likely increase engagement further.

Asynchronous learning objects

The data fellows were also incorporated into existing and to-be-developed instruction opportunities around data. This allowed the fellows to both assist their peers in developing data analysis and visualization skills and to enhance their own teaching and instructional design skills. The fellows were first asked to design asynchronous learning modules, with the goal of incorporating them into the library's recurring data workshop series as they gained more experience. Allowing the fellows to design asynchronous learning materials first would provide a more accessible introduction to data instruction. Utilizing this method would

also allow the fellows to use their prior experience and knowledge with data software and methodologies to design materials that would be beneficial to students and touch on pain points that may be experienced when first learning new tools. To that end, each fellow undertook the design of a CANVAS module on one of two data analysis software—MATLAB and R. Both modules were designed to serve as an introduction to the software, with the goal of being released on CANVAS Commons and also integrated as supplemental material into classroom instruction. The modules also served as a complement to existing workshops on MATLAB and R coordinated by FSU Libraries.

Data outreach

Another important role for the STEM data fellows was engaging in direct outreach to the FSU student community to get them excited about data and spark interest in FSU Libraries' research data services. The data fellows were uniquely well-positioned to do this, as they can draw on their own experiences with data and they naturally have more direct connections with their peers.

The first component of this outreach involved an email campaign to FSU Registered Student Organizations (RSOs), primarily those with a stated focus in STEM or adjacent data-related fields. Contact information for club advisors and presidents was pulled from NoleCentral, a publicly accessible database of the university's RSOs. An initial message was distributed to organizations in November 2021, with follow-up messages distributed in February 2022. These messages provided a brief overview of our library's data services and links to resources we believed useful for undergraduate students. Several groups responded offering to share our information with their members, with a few clubs requesting a face-to-face Zoom meeting with us to further discuss our services. However, only one organization ultimately followed through on a Zoom conversation, with the discussion centering around offering a workshop in the future to their members. While this is a positive start and we plan to re-engage with RSOs moving forward, we will continue to evaluate the best method and timing for doing so to optimize engagement.

The data fellows also partnered to write a series of informational blog posts on selected data topics, written in such a way as to be broadly applicable to students at all levels of data expertise. Topics were selected in such a way as to be timely and relevant to ongoing data discussions both within the academic community and the private sector. Emphasis was also placed on minimizing the amount of technical "jargon" used to make these posts more accessible to a wider audience. The fellows collaborated with the libraries' marketing team to advertise these posts through social media and various newsletters. Excitingly, these posts have seen relatively high engagement levels (Table 1). Based on this success, we believe that this is an extremely viable form of outreach and plan to build on this moving forward.

Table 1: Statistics for blog posts published by the data fellows. (As of: 2022/06/23, WordPress)

Post Title	Data Published	Views
What is Big Data anyway?	2021/10/29	169
How do the Pros do data analysis?	2022/02/01	91
STEM Data Fellow spotlight: William-Elijah Clark	2022/02/16	57
STEM Data Fellow spotlight: Diego Bustamante	2022/02/18	20

Conclusion

Overall, there were many success stories from the first year of the STEM Data Fellowship program. The examples detailed above highlight initial efforts to build a fully-realized peer-to-peer model of data teaching and learning at Florida State University Libraries. Since this was the inaugural year of the program, a significant portion of time was spent fine-tuning our processes and workflows. As a result of the efforts detailed above, the fellowship program received funding to expand the program in year two. As of the publication of this article, the second year of the fellowship is ongoing.

Continuation and expansion of the program presents opportunities as well as challenges. Continuation of the program will allow the data fellows more opportunities to partner with faculty in academic departments to provide data instruction in their courses, as well as provide the data fellows more opportunities to co-teach and develop workshops for FSU Libraries' on-going data workshop series. One challenge involves moving the program beyond the pilot phase and securing long-term funding, through either the library or another source. Another challenge is the time investment required of the author to train and mentor an evolving roster of data fellows that rotate into the program. One possible solution is the implementation of an internal peer-to-peer mentorship model, where experienced data fellows are able to mentor incoming fellows.

Competing Interests

The author declares that they have no competing interests.

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