Bit by Byte: Building Best Practices in Data Literacy

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Background

Data-related jobs are among some of the fastest growing in the United States. According to the Bureau of Labor Statistics, demand for data scientists is likely to grow by more than 30% by 2030 (Kness, 2022). Even if students don't choose a data science career, data skills are becoming more and more in demand across several professions, from marketing to the health sciences. Increasingly, "digital technologies and data systems play central roles" in our lives and in society (Raffaghelli & Stewart, 2020, p.435).

In order to jumpstart data skills at Towson University, LIS professionals at the Albert S. Cook Library sought to incorporate and support data skills and proficiencies through several different approaches over time.

Evidence of Need

Over the past decade, academic educators have determined a need to incorporate data proficiencies into the classroom. For example, as early as 2010, statisticians Deborah Nolan and Duncan Temple Lang called for a change to educational culture and curricula, with a focus on 1) broadening statistical computing skills, 2) deepening computational reasoning and literacy, and 3) computing with data (Nolan & Lange, 2010). In 2018, the European Union published a *Digital Competence Framework for Citizens* that included eight proficiency levels of data literacy and five competence areas, including information and data literacy and problem-solving skills. Educators need to contribute to useful skill-building for students, and also receive support in their professional development toward these goals. At the Cook Library, LIS professionals recognized an increase in data-focused courses and a need for the availability of data tools.

Methods

Software Carpentry Workshop

In January 2022, as a result of a Data Science Award from the National Library of Medicine, the Cook Library hosted a three-day, 15-hour, virtual Data Skills Workshop. The workshop was taught by three instructors from the Carpentries. They covered the Software Carpentry Core Curriculum, which included Unix, Git, R, R Studio, and GitHub. 13 faculty and 5 librarians participated. Faculty participants were asked to submit a future course assignment that would incorporate data proficiencies into their curriculum. Pre/post surveys assessed satisfaction and learning.

Data Skills Collection

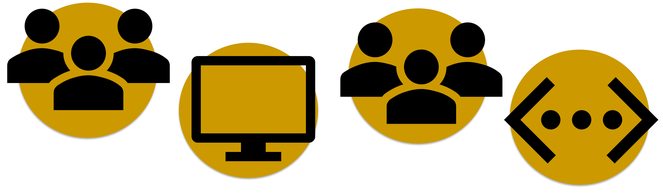
To support data literacy at Towson University, LIS staff purchased items for a distinct and modern data science book and e-book collection. Recent publications were added to the existing collection that covered the use of R, Git, Python, as well as best practices in data analysis and data visualization.

Data Studio

Just two weeks before the COVID-19 pandemic closed Towson University's in-person operations in March 2020, Cook Library opened a dedicated data makerspace called the Data Studio. This space includes five high-powered workstations with data analysis, data visualization and GIS software.

When the Data Studio opened, the provost hailed it as "transformative." With most classes remaining remote until fall 2021, however, data skills seemingly languished and the Data Studio received little use. This workshop had the potential to reinvigorate data skills and the Data Studio.

Community of Practice



Following the Data Skills Workshop, the library hosted a brainstorming session with stakeholders from across campus. The group included librarians, librarians in information technology, faculty, staff, and fellows with interest or experience in data science. The discussion included talking points on open source software, open educational resources for data skills, the Data Studio, finding datasets and statistics for coursework, and the Albert S. Cook Library's potential role in supporting these initiatives.

Conclusion

Having taken the first steps toward creating data proficient students and faculty, the Cook Library is well-positioned to support future efforts. Many of the faculty who participated in the Software Carpentry Workshop indicated that they would appreciate more training in data skills, particularly in R, network analysis, and data visualization. Additionally, the Cook Library hired a Data Science Librarian that will start in Fall, 2022. Having a dedicated position for data science will pave the path for buy-in from data champions across campus, and also help create a culture of sustainability surrounding these skills. Finally, following a renovation of the Cook Library building, the Data Studio, with its dedicated software and workstations, will return to prominence within the library. There has also been discussion about further software training and installation on library computers supported by library IT.

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