

Data in the Disciplines: Developing a Network to provide Data Management and Data Information Literacy Services at Small College and University Libraries**Statement of National Need**

As data intensive research alters the methodology of scholarship, college students need an understanding of how to find, apply, generate, share and manage data in their field of study. While libraries at large research universities are at the forefront of research data management, small college libraries have an opportunity to build on a culture of student/faculty research and faculty/staff collaboration to introduce data information literacy into the undergraduate curriculum. In this project, Lewis & Clark College and five partner colleges will develop a collaborative workshop model to empower small colleges' libraries to provide their faculty and students with data management and data information literacy support in specific disciplinary domains. In the process, we will develop and share curricular modules dealing with chemistry and ethnographic data for undergraduates. Lewis & Clark will be the lead applicant organization; we seek \$25,000 from IMLS and expect to contribute \$24,000 in-kind to support the project.

Project Design

Lewis & Clark has a longstanding and robust tradition of faculty-mentored student research, a vibrant and growing library data services program, and a track record of successful collaboration with regional peers. In the summers of 2015 and 2016, Lewis & Clark, Reed College, University of Puget Sound, Whitman College, and Willamette University, co-organized four workshops on data management in the sciences attended by a total of 101 faculty, students research assistants, and librarians.¹ These events pooled together library expertise in data management, fostered collaboration between researchers and librarians, and improved practices in research laboratories.²

Feedback from the first set of workshops, as well as another documented case of data management training,³ has indicated that a more focused, disciplinary approach would prove valuable to scholars working in areas where data practices are very distinct. The proposed project will be a collaboration with the institutions named above and will result in two 1.5-day workshops for faculty, students and staff to increase understanding of research data management practices in particular disciplinary domains and develop undergraduate curricula in data information literacy specific to those domains. Our earlier workshops were highly subscribed, and we believe that faculty will be eager to attend the proposed workshops because of the opportunity to improve their research processes, develop curricula for teaching, and develop ongoing connections with regional colleagues in their area of research/teaching. Student research assistants attending will gain skills to apply in their research teams and be valuable stakeholders in conversations about both research data management and curriculum development.

¹ The Mellon Foundation supports collaboration between these five liberal arts colleges in the Pacific Northwest as the Northwest Five Consortium and funded this workshop series.

² The team that developed the workshop reported on it in the March 1 2017 issue of the *IFLA Journal* <https://doi.org/10.1177/0340035216678239>.

³ Qin, Jian, and John D'Ignazio. "Lessons learned from a two-year experience in science data literacy education." (2010).

Lewis & Clark College

Building on a collaboration with Dr. Anne Bentley,⁴ a previous workshop attendee with whom we developed a data management lesson for integration into an upper-level Inorganic Chemistry course, we envision one workshop focused on chemical data. On the first day, we will tailor and deliver our generalized data management curriculum to more deeply address the needs of chemists.⁵ For example, we will introduce file-naming and organizational strategies for commonly encountered chemical data types (spectra and other instrument output, physical samples, assays), explore best practices for capturing and cross-referencing key details of the experimental narrative in lab notebooks, and consider current practices for data-publishing and data-sharing within the discipline including emerging repositories in the field. Breakout sessions will provide an opportunity to explore strategies and tools specific to various analysis outputs such as SEM images or protein conformations. On day two, we will distill some general concepts around chemical data literacy into a one-hour curriculum module for chemistry majors. Chemistry has a particularly sequenced undergraduate curriculum similar across institutions, and we believe there is potential for broad application of the developed module within our five colleges and beyond. To provide some degree of breadth across the liberal arts and sciences, we plan to offer a second workshop in ethnographic research data. Ethnographic research has the potential to touch the curriculum of many fields within the social sciences (Political Science, Economics, Sociology, Anthropology, etc).

The libraries of Northwest Five Colleges have committed to the project and will plan the workshops within the first six months. The planning group will seek outside expertise to assist in developing the workshop curriculum. Following the workshop we will survey attendees on the workshop outcomes and address the IMLS-agency goal of learning/communities of practice. We will disseminate the curricular modules on the project website, and two librarians will present on the workshops at a national conference.

National Impact

In alignment with the National Digital Platform category, this project brings together scholars with librarians to advance data intensive scholarship and develop curricula that can have a broad impact among students at small colleges and universities. The project will provide 1) A tested model for establishing regional collaborations among small colleges/university libraries to support data management and literacy in specific academic disciplines and 2) an outline of a one-hour data literacy curriculum in two disciplines co-developed by librarians and faculty.

Budget Summary: The total anticipated costs of the proposed project are approximately \$49,000, which includes a \$25,000 budget request to IMLS and \$24,000 in cost sharing by Lewis & Clark and collaborating libraries. In terms of direct project costs, approximately \$18,000 will be requested from IMLS for the hosting of two workshops (lodging and mileage for out of town participants, and conference meals), \$3,500 in outside consulting services, \$1,500 in student wages, and \$2,000 for participation in conferences for dissemination. Lewis & Clark and partner libraries will contribute staff, librarian, and website development time, additional conference travel support for dissemination, and partial indirect cost waiver.

⁴ Dr. Anne Bentley, Associate Professor of Chemistry, Lewis & Clark College attended our workshops with her research team in the summers of 2015 and 2016.

⁵ The curriculum for our 2015 and 2016 workshops was adapted from the New England Collaborative Management Curriculum (NECDMC) modules. Our workshop slides are available here: <http://ir.library.oregonstate.edu/concern/defaults/sx61dq99g>