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Responding to Emerging Data Workforce Demand: Harnessing Data Center Expertise

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ABSTRACT

As demand for data expertise intensifies, educators are developing new programs to prepare professionals for emerging roles in data systems and services. They are challenged, however, by not knowing enough about evolving workforce needs and the state-of-the-art and emerging best practices at the forefront of the field. This interactive panel will report on recent studies on workforce demand and educational strategies that are meeting that demand through academic programs built in partnership with established data centers. This panel will offer insights from both LIS educators and practicing professionals in data centers, on building collaborations to develop curriculum and field experiences for students.

Keywords

data curation, LIS education, workforce trends, data centers, data systems and services, research data expertise

INTRODUCTION

In this era of data intensive research, demand for data expertise is intensifying as data production proceeds at a relentless pace and need escalates for infrastructure, services, and technological advances to manage and use these data. Organizations of all kinds are recognizing the important contributions data professionals can make to local management and application of data resources and to the development of data systems and services at the

institutional, disciplinary, national, and international levels. Educators in Library and Information Science (LIS) schools and iSchools are working hard to develop programs that adequately prepare professionals to move into these roles (Gold, 2010). They are challenged, however, by not knowing enough about how expectations are evolving in the workforce and by the lack of formalized or codified best practices, as they continually change in response to new problems and advances in informatics, data science, and data curation. This panel will address both workforce demand and how to meet that demand through engagement and partnerships between educational programs and established data centers.

The data workforce requires professionals with specific skills and knowledge in data management, preservation, access and use, and ensuring data integrity (American Council of Learned Societies, 2006; Atkins, 2003; Rusbridge, 2007; Lord & Macdonald, 2003). As expected, new data professional roles have emerged such as data curator, data scientist, and data journalist (Lyon, Wright, Corti, Edmunds, & Bennett, 2013). The Library Journal survey of 2012 LIS graduates identified “data librarian” as an emerging professional role along with the more general growth of responsibility in libraries for digital content management (Maatta, 2013).

Panelists will report on more recent analyses that demonstrate how these trends are evolving. Results from a survey of North American academic libraries conducted as part of the NSF-funded DataONE project show the wide range of research data services now offered or planned by academic libraries. Placement and survey data from graduates specializing in data curation provide indicators of how positions are evolving and first-hand accounts of professional responsibilities and preparation currently needed by data professionals (Palmer, Thompson, Baker, & Senseney, 2014). Results from a study of data center

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employers, as part of the Data Curation Education in Research Centers (DCERC) initiative (Kelly, et al. 2013; Palmer, Thompson, Mayernik, Williams, & Allard, 2014), provides a critical perspective of the evolving profession and the challenges and opportunities we face as educators.

To be effective in this dynamic environment of data systems and services, it is essential for academic programs to expose students to real-world emerging data practices (Gregory & Guss, 2011). The panel will offer insights, from both LIS educators and practicing professionals in data centers, on building collaborations to develop curriculum and field experiences for students. In particular, national data centers, where data systems and services have been maturing for many decades, have extensive state-of-the-art expertise to share. At the same time, the principles and approaches of the information professions have much to contribute to existing data center operations. Thus, partnerships between data curation education programs and premier data centers are mutually beneficial and one of the most promising strategies for innovation in data workforce development.

KEY CONTRIBUTIONS

The panel will enable the ASIST community to engage around current data workforce trends and approaches to preparing students to work in the rapidly changing field of scientific data curation. The presentations will contribute results from workforce studies and lessons learned and unique perspectives from educators and federal data center personnel, as well as student experiences in education programs and as new professionals in data centers.

PANELISTS

Research Data Services: What Opportunities Really Exist in Academic Libraries?

Carol Tenopir is a Chancellor's Professor at the School of Information Sciences; Director of the Center for Information and Communication Studies; and Director of Research, College of Communication and Information at the University of Tennessee at Knoxville. Dr. Tenopir is a DCERC co-investigator, and her research focuses on information access and retrieval in science and scholarship. She will report on the 2014 survey of academic libraries conducted as part of DataONE, an NSF-funded cyberinfrastructure for environmental science information, to shed light on the job opportunities for data curation graduates in these settings.

Lessons Learned from Job Placements, Internships, and Employer Interviews

Carole L. Palmer is Director of the Center for Informatics Research in Science and Scholarship (CIRSS) and Professor in the Graduate School of Library and Information Science (GSLIS) at the University of Illinois at Urbana-Champaign. She has been leading education initiatives in data curation since 2005 and is the Principal Investigator on the Data Curation in Research Centers

(DCERC) project and the Site-Based Data Curation project, both funded by IMLS. She served as co-PI on the NSF Data Conservancy initiative and is a member of the National Academy of Sciences study committee on preparing the digital curation workforce.

Cheryl A. Thompson is a doctoral student at GSLIS and research assistant at CIRSS at the University of Illinois at Urbana-Champaign. As the DCERC project coordinator, she is engaged in the project evaluation and the interviews with data facilities. She also worked on the survey of UIUC GSLIS graduates specializing in data curation.

Palmer and Thompson will report on the jobs and responsibilities of new graduates working in the field of data curation, focusing on the 50% who are working outside of academic libraries. They will cover how engagement with the National Center for Atmospheric Research (NCAR/UCAR) and other data centers has enhanced the GSLIS data curation program and new results from interviews on data staffing needs at national labs and data facilities.

Data Center Perspective on Engagement with LIS Programs

Matthew S. Mayernik is a Project Scientist and Research Data Services Specialist in the NCAR/UCAR Library. Dr. Mayernik's work focuses on data service development including data curation education, data publication and citation, metadata practices and standards, and social and institutional aspects of research data. He serves as a DCERC co-investigator involved in designing and administering the Master's and Doctoral student field placements at NCAR and in evaluating the DCERC model for sustainability at NCAR and transferability to other research centers. His presentation will provide a research center perspective on preparing students for data curation roles and engaging with LIS educators and students.

Educator Perspective on Engagement with Research Centers

Suzie Allard is Associate Professor and Associate Director at the School of Information Sciences at the University of Tennessee at Knoxville and holds an appointment at Y-12 National Security Complex. Dr. Allard's research interests focus on how scientists use and communicate information. Allard is actively involved in preparing LIS students for the scientific data workforce and is co-investigator on the DCERC project and principal investigator on other educational projects including Science Data and Information Professionals for the Future (SciData), and Data Specialists Enabling Team Science (Team Science). On DataONE, Allard is a co-investigator and member of the leadership team. She has worked with Oak Ridge National Laboratory (ORNL), U.S. Geological Survey (USGS), and Y-12 National Security Complex to connect classroom work to practical experiences and to provide internship opportunities for students. Recently, she has completed a

survey of data practices at USGS. In her presentation, Dr. Allard will discuss her experience as an LIS educator engaging with data centers as well as survey results on USGS data services and staffing.

Student Perspective on Data Curation Education & Future Trends

James (Jim) Kreft is Technical Lead and Systems Analyst at the USGS Center for Integrated Data Analytics (CIDA). He received an MSLIS with a Specialization in Data Curation from UIUC in 2013. At the USGS, he primarily works on the Water Quality Portal and the USGS Publications Warehouse, focusing on data curation and building services to make science data more visible and accessible to users. He will discuss how concepts learned in the data curation curriculum helped him succeed at the USGS and how information science and data curation are going to play an ever-larger role in surmounting current and future data challenges at the USGS. His presentation also will highlight needs for graduates with data curation skills and the potential for transferring the DCERC model to other organizations such as CIDA and USGS more generally.

FORMAT OF THE PANEL

This event is planned for a regular 90-minute conference activity slot. The panel will be conducted as five short presentations (8-10 minutes), followed by 30 minutes of facilitated discussion. Five minutes will be allotted for introduction and wrap-up by the organizers.

AUDIENCE INVOLVEMENT

We will seed and facilitate a lively 30-minute interactive exchange with the audience. Many in the audience will have relevant experience from which to share observations and commentary. In particular, we will begin by inviting the audience to talk about their direct knowledge on the two themes of the panel—workforce trends and data center contributions to education programs. We will then focus discussion on development of field experiences for students and the opportunities and practical challenges of collaborations between academic programs and data centers.

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