

# Model Development for Scientific Data Curation Education

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# Data Curation Education in Research Centers (DCERC)—Collaborators

Information Schools at the Universities of Illinois and Tennessee which have established graduate education and research programs in data curation

National Center for Atmospheric Research (NCAR) which has mature data archives

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# Rationale

- Increased need for curation expertise to support emerging scientific practices and data management requirements
- Researchers expressed concern about their lack of preparedness in this area
- Need for data curation practitioners to become more engaged with formal education process—as instructors and mentors—to bring current issues and experiences to professional education



# DCERC Goals

- Develop sustainable and transferable model for educating Library and Information Science students in data curation
- Build capacity in LIS community to engage in data curation
- Provide real-world experiences in research and data centers for students to engage with current practices and challenges of data curation
- Evaluate model effectiveness with the intention of scaling the program to a larger cadre of partners and participants

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# DCERC Model

- Build on foundation of theoretical education in data curation
- Provide practical experience for Masters and research opportunities for PhD students in working with scientists and data managers
- Apply multiple mentoring model of established and proven internship program

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# Program Components

- Education program at iSchools
- Integration through inter-institutional communications to build strong DCERC cohort
- Foundations in Data Curation Course
- Engagement of data curation professionals as instructors and mentors
- Internship Program at NCAR
- Mixed method evaluation

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# Foundations of Data Curation

- Semester-long graduate course, providing overview of theoretical and practical problems in data curation
- Examines current issues from an information science perspective, including:
  - appraisal and selection
  - preservation
  - research lifecycles
  - workflows
  - levels of representation
  - metadata
  - legal and intellectual property issues

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# Internship Overview

- Multiple mentor model (scientist, data manager, peer, and institutional)
- Mentor training
- Student / mentor matching based on research interests and background
- Collaborative project development to meet student and mentor goals and conduct project
- Workshops and seminars
- Weekly progress reporting
- Formal project reporting / presentation and dissemination

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# Masters Student Projects

- ***Preparing data sets for ingest into a repository.*** Reviewed data lifecycle from research to access, use, and reuse
- ***Evaluating climate model metadata.*** Exploration of ways data curators can collect metadata about context and use of data
- ***Auditing data management workflow.*** Reviewed varying data workflows of several groups to increase efficiency and reduce redundancy
- ***Assisting in data and metadata organization.*** Assisted data managers and scientists to enhance communication, with the aim of creating a manual for best practice and data management planning

# Reciprocity in Learning: Reflections



# Student Reflections

Experience synthesized theoretical and practical skills, providing more confidence and better preparation for future work environments



Improved understanding of role as integrator and how to communicate with scientists and data managers on their levels

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# Scientist Reflections

- Recognized need to focus on improving data management practices for access and help with products or services to make data accessible
- Achieved improved understanding of mental models of data curators and scientists



# Data Manager Reflections

- Curator expertise and repository support is required everywhere when data is basis of fact finding, not just part of large national and international centers
- Scaling these services can come from these new developing professionals



# Initial Evaluation

Through survey instruments and focus groups:

- Students and mentors rated the overall experience as extremely valuable
- Scientists and data managers value engagement of IS professionals





# Recommendations

- Facilitate early placement to ensure sufficient student—mentor interaction prior to the internship
- Provide students more in-depth introduction to NCAR science and institutional culture prior to the internship
- Improve student understanding of expectations and norms for scientific collaboration

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