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The Role of Interdisciplinary GIS and Data Curation Librarians in Enhancing Authentic Scientific Research in the Classroom

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The Role of Interdisciplinary GIS and Data Curation Librarians in Enhancing Authentic Scientific Research in the Classroom

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Research Assumptions

- “Researchers increasingly need to integrate the disposition, management, and curation of their data into their current workflows.” Carlson, et al. (2011)
- “Libraries also possess well-developed expertise in several related areas, including collection development, archival practices, cataloging and indexing, development of platforms for discovery and distribution, and education and user support.” Steinhart (2006, p. 267)
- Geographical information systems library services may be utilized efficiently in data repository implementations.

Abstract

Data science is a recently evolved area of scientific inquiry, where data, often collected by others, is analyzed by independent investigators to draw new conclusions. As such, data literacy needs to be incorporated into authentic research activities. The earth sciences in particular have a trove of data that resides in national data centers as well as individual investigators' labs, which can be repurposed to provide the inputs for students to make their own inquiries into the data. With the amount of data available, students can make more substantive conclusions than if relying just on data they’ve collected themselves.

An Authentic Earth Science data flow from Higher Ed to K-12

Research Data

- Unfiltered data
- Utilitarian
- Complex scientific concepts and principles

K-20 appropriate data

Available research Data

Higher Ed

Water
Soils
Etc
GIS repository data

K-20

Water
Soils
Etc
GIS Re-Usable

GIS repository

data

Filtering Data

Educational data Curation

- Data Curation Profiling of Educators (needs assessment)
- Applying Metadata
- Data Lifecycle Management
- Consensus building (interdisciplinary perspective)

Educational Interventions (Activities)

- Ability to make a prediction from data
- Spatio-temporal thinking
- Data management competence

Possible Outcomes for students

Library Services

- Appropriate Use of Data
- Limitations of Data
- Evaluation of learning impacts
- Locating data, interpreting, metadata & navigating taxonomies

Library Services

- Research Data Repository

- Provides context
- Simplified models
- Visualization

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References


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