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Developing Data Literacies for Graduate Students in the Social Sciences

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DEVELOPING DATA LITERACIES FOR GRADUATE STUDENTS IN THE SOCIAL SCIENCES

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D|I|L
data information literacy

DIL GRANT

- What knowledge and skills with data will graduate students need to be successful?

- What role could librarians play in teaching these skills?
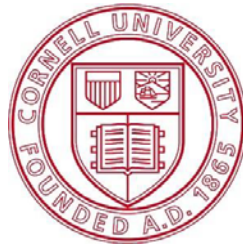
12 COMPETENCIES

Data Processing and Analysis	Data Curation and Re-Use
Data Management and Organization	Data Conversion and Interoperability
Data Preservation	Data Visualization and Representation
Databases and Data Formats	Discovery and Acquisition
Ethics and Attribution	Metadata and Data Description
Data Quality and Documentation	Cultures of Practice

data information literacy

ASSUMPTIONS

- Information Literacy can serve a foundation for Data Information Literacy

- Graduate students would be a logical starting point and a receptive audience

- The 12 DIL Competencies will be a useful foundation, but should not be prescriptive
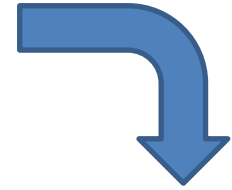
- Alignment with disciplinary cultures and local practices will be the keys to our success

PROJECT PHASES

Literature Review

Interviews

Develop Educational Programs
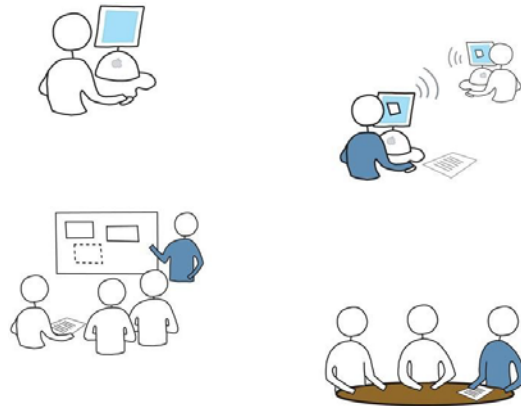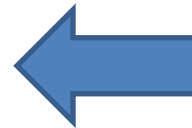
Implement Programs
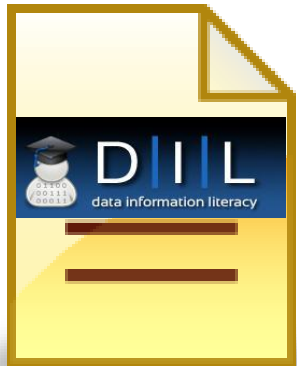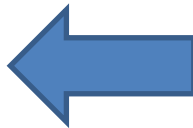
Develop DIL Model

INTERVIEW FINDINGS - STEM

- lack of formal training in data management

- lack of formal policies in the lab

- self-directed learning through trial and error

- focus on data mechanics over concepts

Carlson, J., Johnston, L., Westra, B., & Nichols, M. (2013). Developing an approach for data management education: A report from the data information literacy project. *International Journal of Digital Curation, 8(1). 204-217.*

INTERVIEW FINDINGS - STEM

Faculty and Student Rankings of Importance

Average Ranking of Faculty (n=8) — Average Ranking of Students (n=17)
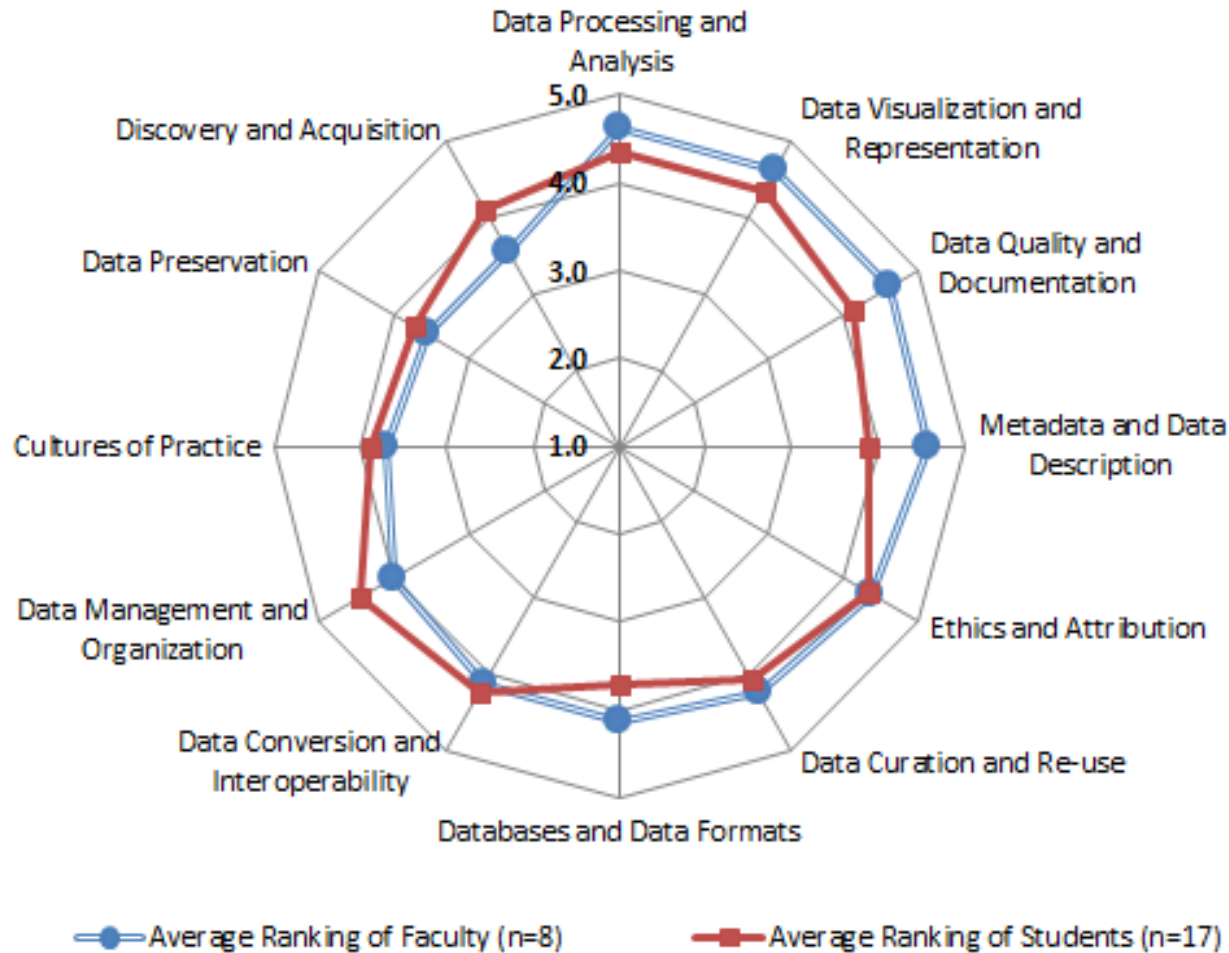
DIL FOR THE SOCIAL SCIENCES

Original DIL Questions

- What knowledge and skills with data will graduate students need to be successful?

- What role could librarians play in teaching these skills?

Plus…

- How are perceptions and practices in the social sciences different from STEM?

- What is unique about social sciences?

DIL
data information literacy

DIL-SS PRELIMINARY RESEARCH

6 Faculty

- 2 Political Science (Purdue)
- 1 Sociology (MSU)
- 1 Social Work (MSU)
- 2 Human Development & Family Studies (MSU)

3 Grad Students + 1 Post-Doc

- 3 Sociology (MSU)
    - 1 History (Post-Doc)
    - 1 Community Sustainability
    - 1 Visual Sociology
- 1 Human Development & Family Studies (MSU)

SS & STEM COMPARISONS

SS Faculty and STEM Faculty Rankings of Importance

Radar chart comparing SS Importance Faculty Average (n=6) and STEM Importance Faculty Average (n=8) across the following categories: Data Processing and Analysis, Data Management and Organization, Ethics and Attribution, Data Visualization and Representation, Data Quality and Documentation, Discovery & Acquisition, Cultures of Practice, Data Conversion and Interoperability, Metadata and Data Description, Data Curation and Re-Use, Databases and Data Formats, Data Preservation. Scale from 0.00 to 5.00.

SS Importance Faculty Average (n=6)   STEM Importance Faculty Average (n=8)

DIL-SS VS. DIL-STEM

Key Differences

- Working environments
    - No labs
- Multidisciplinary practices
- Quantitative vs. Qualitative
- Human Subjects

Commonalities

- Lack of formal training in data management
- Lack of formal policies/practices
- Self-directed learning through trial and error

WORKING ENVIRONMENTS – NO LABS

(MOST) RESEARCH IS INDIVIDUAL

"…we use so many different methodologies to do work our practices really vary greatly. …**This notion of labs and research groups isn't traditional** to [us in HDFS]…So I sort of purposefully don't call the students that I work with, or the group that I work with, a lab because I don't really understand the concept. I do work in a research group but **we do multiple things and not every student is doing the same thing or working toward one project**."

[HDFS Faculty #3]

MULTIDISCIPLINARY PRACTICES

Is familiar with the basic data processing and analysis tools and techniques of the discipline or research area.

"The one wrinkle in the question is this 'of the discipline.' I think you've talked with enough of us to know that **there is no discipline**. Some of us have ethnographic data; we are doing very contextual analyses, qualitative approaches. We haven't use a number in years. And there are other people who are working with various kinds of census data…"

[Sociology Faculty #2]

QUALITATIVE DATA

"…the thing about qualitative research that I think you might not see as standard practice of it is because it's supposed to be specific to the research. **So, when I think about qualitative research, standard kind of goes opposite of what qualitative research is about**. It's about really getting in, you know, really allowing your experiences…to shape how your view the research…that is very individual. So that's why I just think that there isn't like a set way. It's left opened like that probably on purpose."

[HDFS Student #1]

SS INTERVIEW FINDINGS - IMPORTANCE

Faculty and Student Rankings of Importance

Legend:
- Importance Faculty Average (n=6)
- Importance Student Average (n=4)

Axes: Data Processing and Analysis, Data Management and Organization, Ethics and Attribution, Data Visualization and Representation, Data Quality and Documentation, Discovery & Acquisition, Cultures of Practice, Data Conversion and Interoperability, Metadata and Data Description, Data Curation and Re-Use, Databases and Data Formats, Data Preservation

Scale: 0.00, 1.00, 2.00, 3.00, 4.00, 5.00

ETHICS (HUMAN SUBJECTS)

RESPECT FOR RESEARCH SUBJECTS

"But there's another culture from the research point of view…it has to do with all of those sensitivities toward community…**You don't just go into the communities and take your data and go….there's some responsibility that you have toward that community** and that may be…in the form of service."
[HDFS Faculty #3]

"The bottom line the owner of the oral history is the interviewee. … **It's their voice, it's not my voice**."
[Sociology Student #2]

DATA MANAGEMENT

IT'S IMPORTANT, NOW GO FIGURE IT OUT ON YOUR OWN

"Organizing your data is huge to make sense of it. … I have a system, but I don't think it's the best system. … [A training] would have been helpful because **that's one of the things that I really kind of struggled with when I first started was I don't know how to organize all of this and I never got a clear answer**. So, yes, that would have been very helpful."

[HDFS Student #1]

DATA CURATION/PRESERVATION

LOW IMPORTANCE + LACK OF SUPPORT

"[Preservation] is not something we're paying much attention to at all …We're **constantly chasing the next project** so this feels to me like work that has to happen that's kind of **I don't have time, energy or money** for…I just don't know that realistically it's something I could do."
[Social Work Faculty #1]

data information literacy

WHO'S JOB IS IT TO CREATE RE-USABLE DATA?

PRESTIGE, FUNDING, CULTURE

"[data description and metadata are] **relevant to certain students who we know will go heavily into research and not as relevant to those folks that won't**. … most of our students go to teaching colleges."
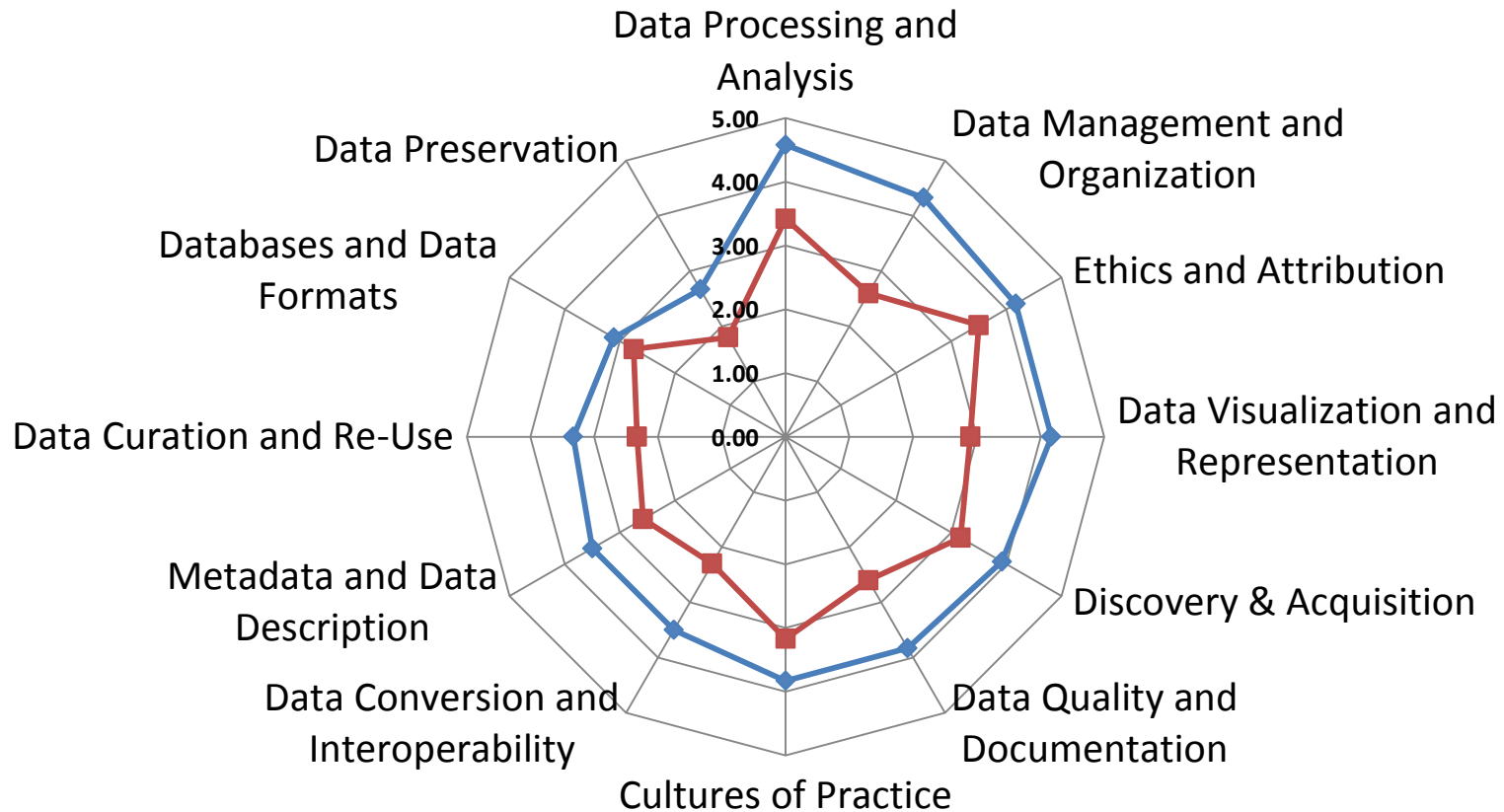[Social Work Faculty #1]

"we are very much a third tier department … we don't think about it. **We don't see our studies as having, as needing that kind of management**."
[Sociology Faculty #2]

INTERVIEW FINDINGS - GAPS

Gaps between Importance and Current Student Proficiency - Faculty

Radar chart axes (clockwise from top): Data Processing and Analysis, Data Management and Organization, Ethics and Attribution, Data Visualization and Representation, Discovery & Acquisition, Data Quality and Documentation, Cultures of Practice, Data Conversion and Interoperability, Metadata and Data Description, Data Curation and Re-Use, Databases and Data Formats, Data Preservation. Scale: 0.00, 1.00, 2.00, 3.00, 4.00, 5.00.

Importance of Competency for Students - Faculty (n=6)
Student Mastery of Competency - Faculty (n=6)

QUESTIONS?

DATA INFORMATION LITERACY – SOCIAL SCIENCES

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Data Information Literacy Project

http://datainfolit.org/