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

What role could librarians play in teaching these skills?

http://datainfolit.org
## 12 COMPETENCIES

<table>
<thead>
<tr>
<th>Data Processing and Analysis</th>
<th>Data Curation and Re-Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Management and Organization</td>
<td>Data Conversion and Interoperability</td>
</tr>
<tr>
<td>Data Preservation</td>
<td>Data Visualization and Representation</td>
</tr>
<tr>
<td>Databases and Data Formats</td>
<td>Discovery and Acquisition</td>
</tr>
<tr>
<td>Ethics and Attribution</td>
<td>Metadata and Data Description</td>
</tr>
<tr>
<td>Data Quality and Documentation</td>
<td>Cultures of Practice</td>
</tr>
</tbody>
</table>

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
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

INTERVIEW FINDINGS - STEM

Faculty and Student Rankings of Importance

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

Average Ranking of Faculty (n=8) vs. 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-SS PRELIMINARY RESEARCH

10 INTERVIEWS @ PURDUE & MICHIGAN STATE UNIVERSITY

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

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

SS Importance Faculty Average (n=6) - STEM Importance Faculty Average (n=8)
DIL-SS VS. DIL-STEM

COMPARISONS

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
“(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

DIFFUSE METHODOLOGIES + LACK OF DISCIPLINARY IDENTITY

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]
“...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

Data Processing and Analysis

Data Management and Organization

Data Preservation

Ethics and Attribution

Databases and Data Formats

Data Visualization and Representation

Data Curation and Re-Use

Data Quality and Documentation

Metadata and Data Description

Discovery & Acquisition

Data Conversion and Interoperability

Cultures of Practice

Importance Faculty Average (n=6)

Importance Student Average (n=4)
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]
“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]
“[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 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]
Gaps between Importance and Current Student Proficiency - Faculty

Gaps in Competencies:
- 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 Curation and Re-Use
- Metadata and Data Description
- Data Conversion and Interoperability
- Databases and Data Formats
- Data Preservation

Legend:
- Blue line: Importance of Competency for Students - Faculty (n=6)
- Red line: Student Mastery of Competency - Faculty (n=6)
QUESTIONS?

DATA INFORMATION LITERACY – SOCIAL SCIENCES

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Data Information Literacy Project
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