Data Literacy & the Academic Library

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Data Literacy & the academic library
Ellie Dworak
1. What?

2. Why?

3. How?
What is Data Literacy?
Depends on who you ask
A broad category of skills required for students to “read” and “write” with data.

- Creating Data Literate Students
Understanding what data mean, including:
- how to read charts
- draw correct conclusions from data
- recognize when data are being used in misleading ways

- Carlson et al., 2011
The desire and ability to constructively engage in society through and about data.

- DataPop Alliance
The knowledge and skills involved in collecting, processing, managing, evaluating, and using data for scientific inquiry.

- National Library of Medicine
Why so many definitions?
Data Literacy is contextual
Data Literacy is on a spectrum
Understand impacts of data

Select, analyze & draw conclusions from data

Produce & manage datasets

Interpret charts

Use data to communicate
Data Literacy is one of many literacies
Research within the disciplines

Statistical literacy

Data literacy

Information literacy

Mathematics literacy

Data information literacy

Some of the literacy worlds & contexts
Roughly speaking

Data literacy is “understanding what data mean, including how to read charts appropriately, draw correct conclusions from data & recognize when data are being used in misleading or inappropriate ways” (Carlson et al., 2011).

Data information literacy relates to the organization, access, re-use, and preservation of research data, originally in support of open science.

Information literacy is the ability to seek, evaluate, use, and create information to achieve a goal.

Statistical literacy is the ability to interpret and evaluate statistics.
n.b. data literacy assessment also has to be contextual
<table>
<thead>
<tr>
<th>COMPETENCY</th>
<th>SCAFFOLDING</th>
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<tbody>
<tr>
<td>Recognize how data is integrated into daily life.</td>
<td>Introductory Level</td>
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<tr>
<td>Interpret and critically evaluate data and their sources.</td>
<td>All Disciplines</td>
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<td>Analyze data.</td>
<td>All Levels, with increasing complexity</td>
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<td>Communicate data with visualizations.</td>
<td>All Disciplines</td>
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<tr>
<td>Read/understand data types &amp; formats.</td>
<td>Introductory</td>
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<tr>
<td>Clean / process / convert data.</td>
<td>Natural Sciences</td>
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<tr>
<td>Find, select, access, or create datasets in order to test a hypothesis or answer a research question.</td>
<td>Natural Sciences</td>
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<td>Ethically collect / use / cite data.</td>
<td>Upper Level/ Undergrad Research</td>
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<td>Integrate and synthesize data into different contexts with other sources and prior knowledge.</td>
<td>Upper Level/ Undergrad Research</td>
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Data Literacy Competencies with Disciplinary Scaffolding 2.0
Data Literacy: A Working Definition

Use
Data to communicate

Recognize
The types of data & their utility

Consider
Factors such as source & purpose

Locate
Reliable data

Within a specific context
02. Why Data Literacy?
Work & Career

“Automation, robotics & AI are creating fundamental changes in how we live & work. Data is the universal language of this fourth industrial revolution.”

- The Data Literacy Index
52% of American adults don’t have the skills to use technology for personal learning.

- Pew Research Center
Privacy

91% of Americans feel that they have lost control of their data & don’t know how to get it back.

- Pew Research Center
“Data is a persistent part of our lives, no matter whether we fill in a form with our personal details to take part in a raffle, or whether we control the lights and the heating in our apartment with an app.”

- Critical Edges
Civic Engagement

“Data literate individuals are more likely to gain informed opinions on current topics, be able to express their opinions, & be able to propose informed solutions.”

- Erica Deahl
Global Development

In the Fourth Industrial Revolution, big data have become the new gold.
Social Justice

“Adoption of technology for adult learning in both personal and job-related activities varies by people’s socio-economic status, their race & ethnicity, & their level of access to home broadband & smartphones.”

- Pew Research Center
“Universities are failing to ensure students have the data literacy skills they need.”

- Dataversity
How?
Libraries as Organizations

support for librarian data literacy

Set clear expectations, measures, & incentives

Provide learning resources that work for learners

Learning takes time. Act accordingly

Offer opportunities to use new skills

Icons courtesy of thenounproject.com
Libraries as Organizations

support for student data literacy

- Support data literacy related learning objectives
- Encourage librarians to teach
- Promote library representation on curriculum committees

Icons courtesy of thenounproject.com
Librarians as Individuals
improving one's own data literacy

- Set learning goals
- Create or locate a syllabus
- Work it into your schedule & your work
- Ask for help

Icons courtesy of thenounproject.com
Librarians as Individuals
support for student data literacy

- Increase your own data literacy
- Build data lit skills into information literacy instruction
- Watch for data literacy initiatives on campus & in the profession
- Don’t be afraid to learn from students

Icons courtesy of thenounproject.com
Resources

Learn
- Data Literacy Guide
  A robust guide to the concepts of data literacy
- Data Literacy Project
  Free brief learning modules

Teach
- Data Literacy in Academic Libraries: Teaching Critical Thinking with Numbers
  This forthcoming book looks fantastic
- Data Literacy Lab
  A teaching toolkit designed for college journalism curricula
- Data Literacy Teaching Toolkit
  Includes competencies and activities

More
- Creating Data Literate Students
  Focused on high school students
- Data Information Literacy Project
  An IMLS-funded research project that generated a number of useful resources
Questions?

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