

Developing Data Literacy Lessons

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Beyond the Numbers
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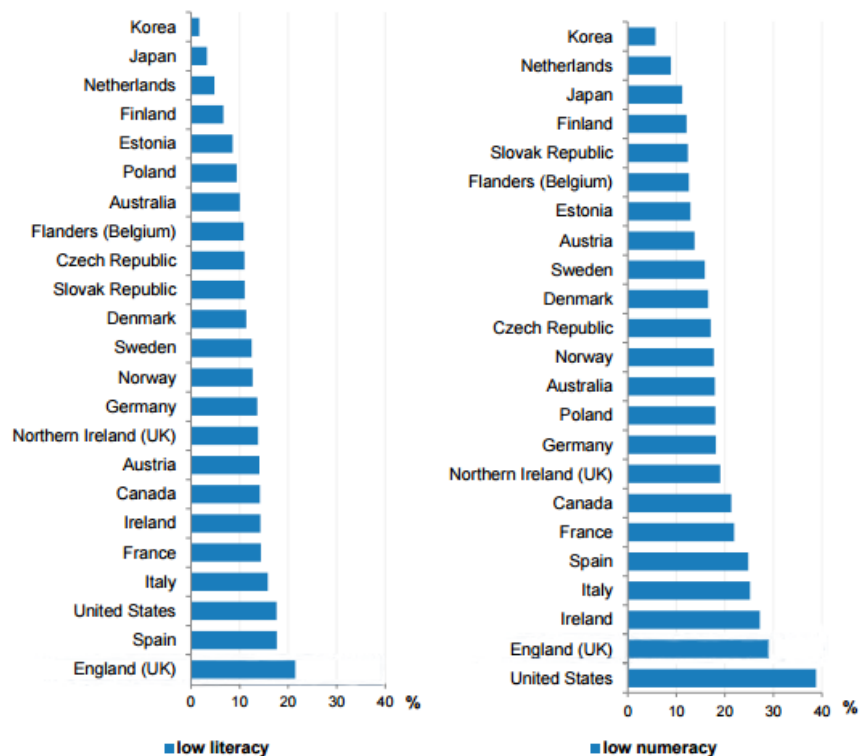
Agenda for the session

- Data literacy—evidence for the need
- Library Instruction: Need for data literacy support
- ACRL Information Literacy Framework & Data Literacy
- Our approach:
 - Use FRED as the tool for our data literacy project
 - Provide an outline of a specific process and format for writing lessons
 - Offer librarians opportunities to participate in the work

Data Literacy

- What is it?
- Part of a broader effort
 - Numeracy
 - Quantitative literacy
 - Statistical literacy
 - Information literacy

Percentage of 16-19 year-olds with low literacy and numeracy (below level 2)



Note: Adults who obtained their highest qualification outside the host country: those with foreign qualifications and 1st generation migrants, who obtained their highest qualification prior to entering the host country, are excluded.

Source: OECD calculations based on the Survey of Adult Skills (PIAAC) (2012) (database).

If the chance of getting a disease is 10 percent, how many people out of 1,000 would be expected to get the disease?

80% got this question correct

If 5 people all have the winning number in the lottery and the prize is 2 million dollars, how much will each of them get?

Roughly half got this question correct

Let's say you have 200 dollars in a savings account. The account earns 10 percent interest per year. How much would you have in the account at the end of two years?

18% got this question correct

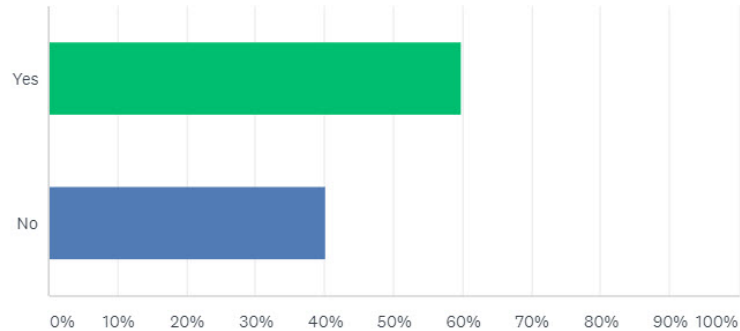
A quick survey of the current state

- Charissa Jefferson surveyed librarians
- 2 questions:
 - Are you teaching with data?
 - Are you interested in learning about teaching with data
- Survey sent to Professional Listservs
 - Community College, university, instruction, data, and business librarians
- Received 142 responses

Teaching with Data

Do you teach with data?

Answered: 142 Skipped: 0

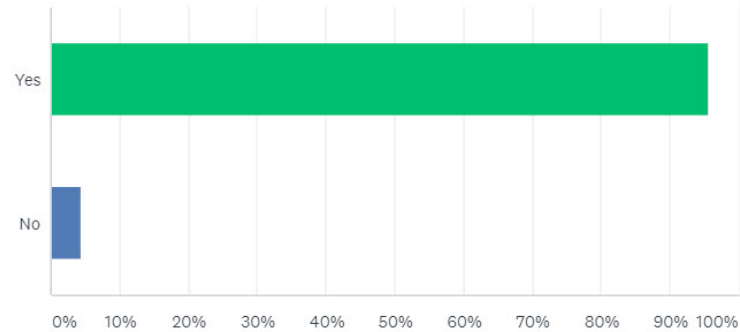


ANSWER CHOICES	RESPONSES
▼ Yes	59.86% 85
▼ No	40.14% 57
Total Respondents: 142	

Learning about Teaching with Data

Are you interested in learning about teaching with data?

Answered: 139 Skipped: 3



ANSWER CHOICES	RESPONSES
▼ Yes	95.68% 133
▼ No	4.32% 6
TOTAL	139

Possible Conclusions

- Some librarians are teaching with data, but nearly all who responded were interested in learning about how to teach with data
 - Perhaps the tools and resources are needed such as
 - Readymade lesson plans
 - Toolkits with interactive content
 - Workshops for professional development on teaching with data

How can we contribute?

- Focus on economic data (stick to our knitting) and use FRED
- Draft sample lessons
 - Base lessons on the ACRL Information Literacy framework
 - Use the model taught by Mary Suiter and Bonnie Mezaros (to be discussed in a few slides)
- Solicit help from librarians to develop more instructional support

About FRED

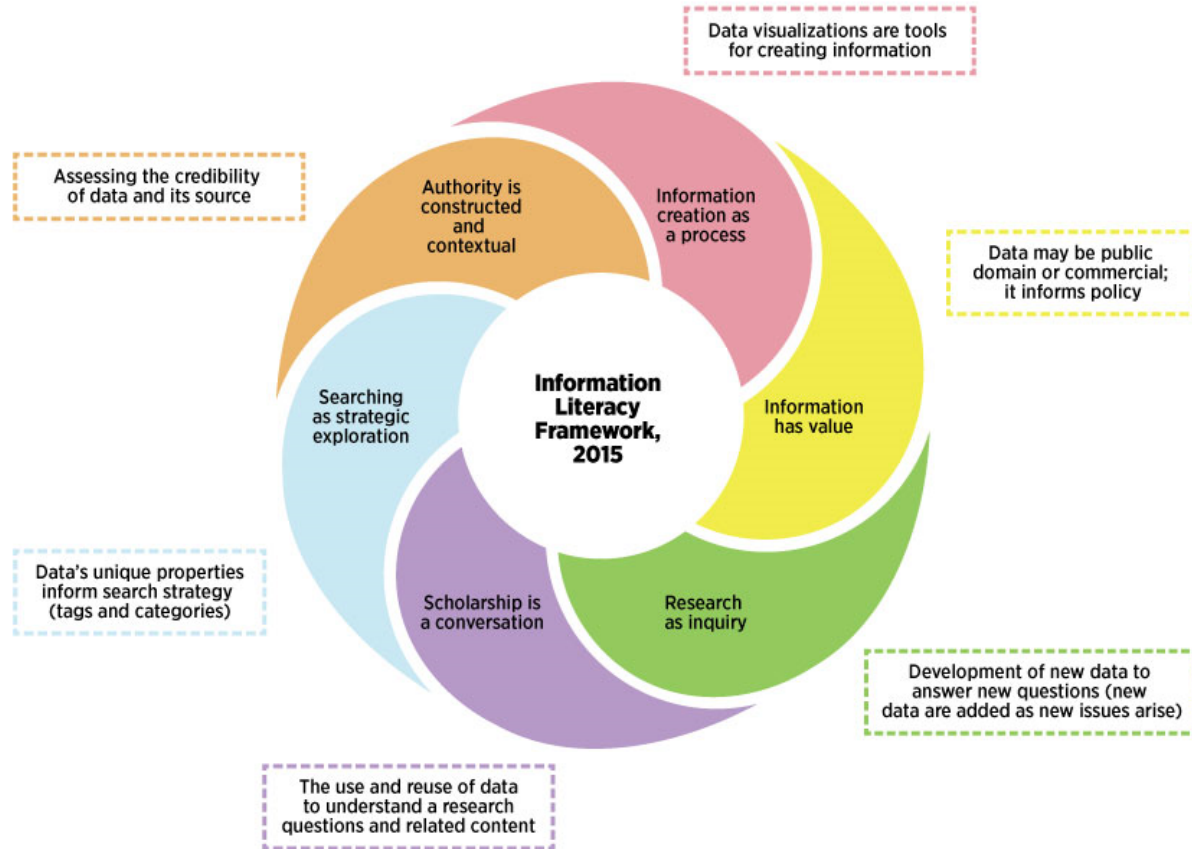
- **FRED** is the St. Louis Fed's online tool for economic data
 - Over 500,000 time series in economics, finance, and well-being
 - Data are at state, local, US national, and international level
 - 87 different sources—one stop shop
- Offers visualization tools
- Spend your time teaching about data, not how to use the tool

Economic Education @ The St. Louis Fed

- Well-used and highly respected resources
- K-14 focus
- Over 1 million student enrollments in online courses every year
- Staff also produce written lessons for face-to-face instruction: 1 million downloads a year
- Mary Suiter & Bonnie Mezaros—provide curriculum writing workshop

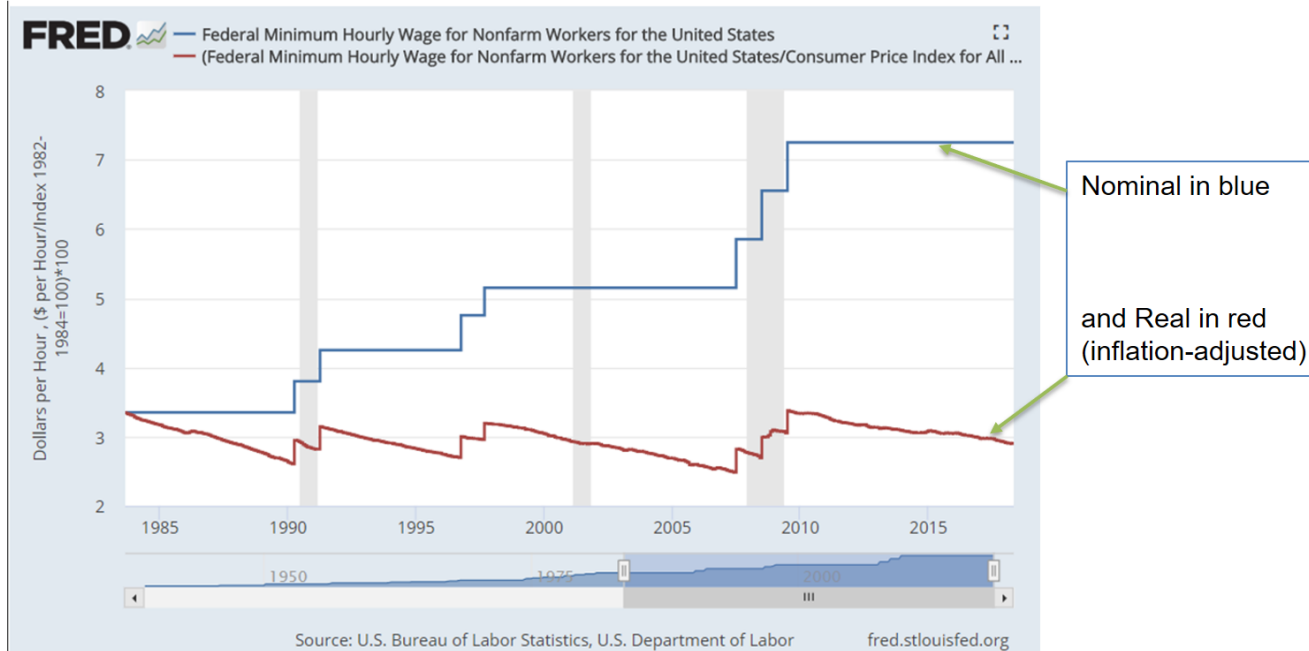
ACRL's Framework for Information Literacy in Higher Education

- Adopted in 2016; replaced a set of competencies adopted fifteen years prior
- Designed for academic librarians & used extensively
- High level concepts to develop information literacy skills
- Widespread interest and support for it—recent publication of a 6 volume set of lessons; each frame had a volume
 - But out of that, only one lesson using data



First lesson: Minimum Wage & Inflation

Graph of the Federal Hourly Wage in nominal and real values. This graph is created by students during the “Keeping It Real” lesson



Two different sources

Lesson at: <https://www.stlouisfed.org/education/keeping-it-real>

Lesson plan roadmap



- Backward Design: Set goals first and then design educational curriculum choose activities or content to teach. Backward design begins with goals, then assessments, and finally lesson plans.

Model lesson plan core elements

- **Standards and Benchmarks:** *ACRL Framework for Information Literacy for Higher Education*
- **Objectives:** What will the students learn?
- **Essential Question:** Overarching question that students should be able to answer at the end of the lesson.
- **Procedure:** The lesson
- **Assessment:** Did they learn what we taught and apply it in a new situation?

Workshop timeline

Before workshop: Focused on specific standards, frames and benchmarks

Day 1: Developed Essential Question(s), Assessments, and Concepts

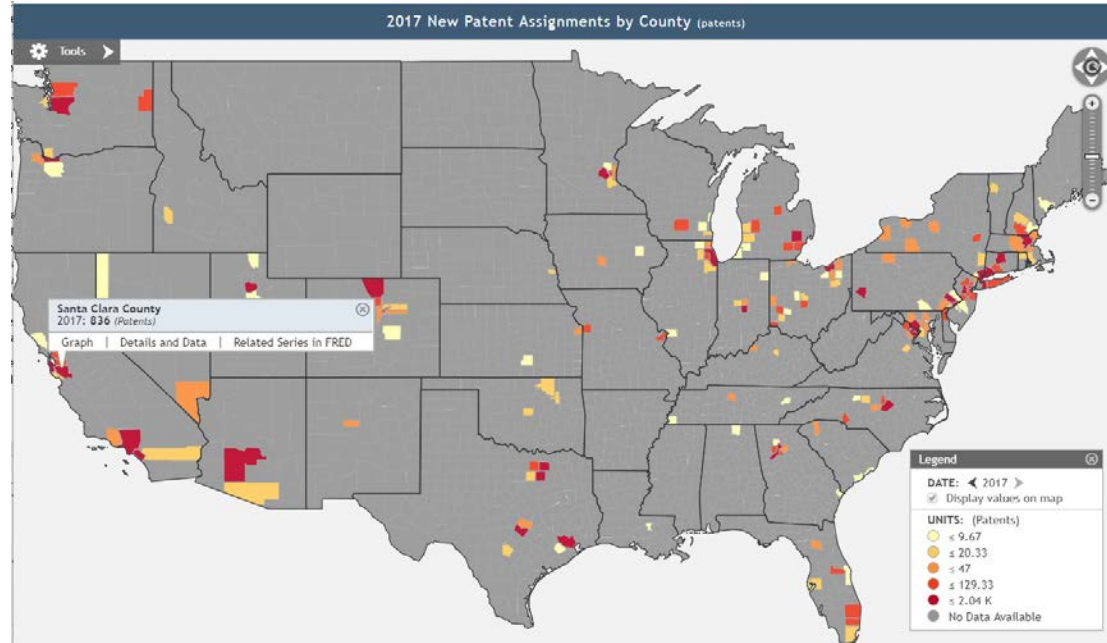
Day 2: Wrote draft of lesson

Day 3: Revised lesson after initial feedback from Trainers

After workshop: Received peer-review and feedback from practitioners

Our second lesson: Patents & Intellectual Property

- IL Frame: Information has Value
- Uses Google Patents and GeoFRED
- First one developed using model lesson plan
- Mapping the data



United States Constitution: Article 1, Section 8, Clause 8

“The Congress shall have Power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries;”

Hands-on activities

- **Handout 1** (*omitted today*)
 - URLs for patents accessible online
 - Asks recognition and analysis questions
- **Handout 2** (*get one or work with a partner*)
 - Data-map building instructions
 - Asks recognition and analysis questions

How can you learn more?

- Explore data lessons
 - Katrina's favorites
www.stlouisfed.org/education/favorites/katrina
 - The effects of inflation (mapped to IL Frames)
www.stlouisfed.org/education/keeping-it-real
 - Patents and innovation (mapped to IL Frames)
www.stlouisfed.org/education/distribution-of-innovation
- **Come to a 3-day workshop in late 2019 and 2020!**

Recap

- Data literacy is important for navigating life choices (and many don't have it)
- ACRL Information Literacy Framework is useful when developing data literacy material
- We are starting to develop data literacy activities and lessons and would like your feedback & help
 - Come to a workshop, learn the method, and add to this important body of work!