Diving Into Data Literacy Instruction

Andrew Battista
Katherine Boss
Marybeth McCartin

LOEX 2019
How librarians can learn data literacy basics by teaching them to undergrads

Describe module for introducing data literacy basics into a core course

- Module content
- Scaling instruction
- Training the trainers

Mention the push for data literacy in the undergraduate curriculum

Discuss learning-by-teaching as a strategy for deeper understanding
Undergraduate

**MCC-UE 0014 - Media and Cultural Analysis**

An introduction to the theoretical approaches and methods used to analyze the content, structure, and contexts of media in society. Students will develop a familiarity with concepts, themes, and approaches in media criticism, and they will develop an ability to adopt, adapt, and employ a variety of methodologies for the analysis of mediated communication.
MCCUE 14 Media and Culture Analysis
Unit - Data Visualization and Political Economy Assignment

In her article, “Digital Occupation: Gaza’s High-Tech Enclosure,” Helga Tawil-Souri argues that even as Israel disengaged from military occupation of the Gaza strip in 2005, it has escalated a digital occupation of Gaza in which cell phone towers, internet connections, and other technological infrastructure solidified under Israeli control. The article asks, what is the relationship between technology, media, access to information and ideas, and the political or economic stability of a country? Does a limited access to diverse information or technology produce societies that lag behind in health, education, and other indicators of well-being?

In this assignment, your group will create a data visualization that offers an answer to these questions regarding the relationship between political economy and access to media. Using either Google Sheets or Carto, select one of the datasets available at
Request for participation:
teaching data viz to undergrads

Katherine E Boss <kat...
Tue, Dec

to Reference-Services

Hi all,

You are receiving this message because we think you might be interested in becoming a teaching partner with an established program, the undergraduate "Media and Culture Analysis" instruction session. We are looking to develop a group of people in the library who can teach an out-of-the-box lesson on data literacy and data visualization. If you're familiar with IUG’s method for supporting the college cohorts sections at scale, the idea here is very similar.

What is the MCC-UE 14 data visualization session?

We have developed a semi-scripted lesson plan for working with this class. Before arriving to the class, students are introduced to their assignment and general ideas of effective visualization principles. During the class, they apply some of this knowledge. Library instructors show students how to take a dataset, evaluate it, perform simple manipulations on it that correspond to the larger themes of political economy they’re concerned with, and then create interactive visualizations. All of the materials are located on this LibGuide.

What will your commitment be?

If you want to begin teaching a section of this class, the first step is to come to the instructor training session. We will be offering one on Wednesday, January 16 from 3-4:30pm in room 743. This session will give you time to practice working through the lesson, become familiar with Google Sheets, and connect teaching ideas to the concepts of the class. It will also review any
MODULE CONTENT

HOW TO THINK VISUALLY

What Makes a Good Visualization?

- story (concept)
- goal (message)
- information (data)
- visual form (medium)

Content  Structure  Purpose  Formatting

SECTION 1: UN Internet, and Cell Phones

File  Edit  View  Insert  Format  Data  Tools  Add-ons

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SCHEDULE & EXECUTE CLASS SESSIONS

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“[It is] incumbent on faculty to develop new kinds of assignments which give students substantive, contextualized experience in using such skills as analyzing quantitative information, representing quantitative information in appropriate forms…”
Information Creation as a Process

Information in any format is produced to convey a message and is shared via a selected delivery method. The iterative processes of researching, creating, revising, and disseminating information vary, and the resulting product reflects these differences.

KNOWLEDGE PRACTICES

Learners who are developing their information literate abilities

- articulate the capabilities and constraints of information developed through various creation processes;
- assess the fit between an information product’s creation process and a particular information need;
- articulate the traditional and emerging processes of information creation and dissemination in a particular discipline;
- recognize that information may be perceived differently based on the format in which it is packaged;
- recognize the implications of information formats that contain static or dynamic information;
- monitor the value that is placed upon different types of information products in varying contexts;
By teaching we are learning. --Seneca

To teach is to learn twice. --Joseph Joubert
Learning Strategy
Promotes learning.

Generative Learning Strategy
Promotes learning for understanding by priming learner to:
• organize the material into a coherent structure
• integrate it with relevant prior knowledge
MCC-UE 0014 - Media and Cultural Analysis

An introduction to the theoretical approaches and methods used to analyze the content, structure, and contexts of media in society. Students will develop a familiarity with concepts, themes, and approaches in media criticism, and they will develop an ability to adopt, adapt, and employ a variety of methodologies for the analysis of mediated communication.
Please contact support.
In small groups, discuss the three sample visualizations below (this is all the same data; it’s just visualized differently). In your group, ask any of the following questions:

- What information do these visualizations show? What information is missing or unclear?
- What questions do these maps or visualizations lead you to ask?
- What would make these maps more interesting? Better colors? More information, effects, or animations?
- What other information might back these visualizations more effective?
- What are the qualities of a good data visualization?
- How do these maps show how the same core data can be visualized differently?
Learning objectives:

- Become familiar with the principles, concepts, and language related to data visualization
- Investigate the context and creation of a given dataset, and think critically about the process of creating data
- Emphasize how online visualization platforms allow users to make aesthetic choices, which are part and parcel of the rhetoric of visualization
Spring 2019 MCA+ Data Visualization Assignment Libary of Data

Open the Google Chrome browser (if you do not have Chrome installed on your device, you can install it here: https://chrome.google.com/intl/en-us/) and then open the Google Sheets document.

Select a dataset from the list below to work on a visualization. These datasets have been structured and cleaned by CARTO. Once you open a dataset, go to File > Make a copy... to add your own data. Then you can add it to Google Sheets, or export as a .CSV and load into CARTO.

UN Millennium Development Goals Indicators: Education, Internet Users, and Cell Phone Subscriptions

This data presents indicators of progress toward making available the benefits of new technologies and related infrastructure, in cooperation with the private sector. Indicators include the number of fixed telephone lines per 100 households, and internet users per 100 inhabitants. Data available varies by country. Source: United Nations.

Fixed Monthly Cost of Broadband Internet, TV, and Phone, 2007-2014

This dataset represents the monthly price (in Euros, corrected according to Purchasing Power Parity terms) of packages advertised to be between 30 and 100 mbps download speed. Source: The European Commission.

Freedom of the Press 2016-2017 World Rankings

This data provides press freedom rankings for world countries and territories. Each country and territory is ranked from 1 (most free) to 100 (worst) on the basis of 23 methodology questions divided into three subcategories. The total score is between 0 and 100, with scores of 70 or more indicating Not Free. The scores and reports included in Freedom of the Press 2016 cover events that took place during 2016. Source: Freedom House.

World Opinions of Press Freedom, 2010-2018

This data presents the Gallup World Poll results for the question, “Do the media in this country have a lot of freedom or not?” National government and leadership. For more information, refer to the Gallup documentation. Source: Gallup Analytics.

Media Ownership of Daily Newspapers and Local TV Affiliates in the US

(Note: a little extra work is required for this dataset to display in Carto. Here are the steps: after importing the .csv file containing the data ("newspapers_and_parent_companies_in_the_US"), then click on the "Analysis" tab, then "Add analysis," tell Carto to display the results on a map.)
Third iteration
(where we are now)

- Strengthen partnership w/ MCC admins
- Provide better prep support to MCC instructors
- Enlist more librarians to teach
- Standardize lesson plan
DIGITAL OCCUPATION: GAZA’S HIGH-TECH ENCLOSURE

HELGA TAWIL-SOURI

In disengaging from the Gaza Strip in 2005, Israel did not end the occupation but technologized it through purportedly “frictionless” high-technology mechanisms. The telecommunications sector was turned over to the Palestinian Authority under Oslo II and subcontracted to Palestine Telecommunications Company (Paltel), furthering a neoliberal economic agenda that privately “enclosed” digital space. Coming on top of Israel’s ongoing limitations on Palestinian land-meres, cellular, and Internet infrastructures, the result is a “digital occupation” of Gaza characterized by increasing privatization, surveillance, and control. While deepening Palestinian economic reliance on Israel and making Palestinian high-tech firms into dependent agents, digital occupation also enhances Israel’s territorial containment of the Strip.

As Israel was preparing to disengage from the Gaza Strip in summer 2005, the Israeli Ministry of Foreign Affairs claimed that “the relocation from the Gaza Strip... will reduce friction with the Palestinian population,” further contending that the unilateral move would “serve to dispel claims regarding Israel’s responsibility for the Palestinians in the Gaza Strip.” Yet the shift to less military manpower, less direct contact with civilians, and subsequently less negative publicity has gone hand in hand with a tighter seal around Gaza. Gaza has since become an “airborne-occupied enclave,” an open-air prison, and a testing-ground for the latest military technologies. Disengagement has not meant the end of Israeli occupation. Rather, Israel’s balancing act of maximum control and minimum responsibility has meant that the occupation of Gaza has become increasingly technologized. Unmanned aerial reconnaissance and attack drones, remote-controlled machine guns,
Pair & Share: asking questions of data  |  5 min.

Have students look at the **UN Millennium Development data set** and brainstorm a question to ask of the data. What are some questions they might ask of this data? Have each group share their most promising question. This is a good time to highlight that asking questions about data is a circular process that is wrapped up in the task of manipulating it. The first question they ask of the data might not necessarily be the most compelling, but that's ok.

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- Create new variables to show context
- Learn how to work with Sheets
## Introduction and session goals | 10 min.

### 1. Introduce yourself
Take 2-3 minutes to share who you are.

### 2. Highlight the learning outcomes of the session
The goals of the session will be to:
1. Evaluate the context and quality of data in order to begin developing an intellectual question.
2. Use data to formulate a research question related to media, access to information, and socio-political development.
3. Develop proficiency in Google Sheets in order to create a clear, concise data visualization.

### 3. Introduce the core idea of the assignment
Mention that students are already thinking about the idea of political economy, and that the Tawil-Souri article they read and discussed in their previous class makes a bold claim: Israel increased its suppression of Palestine in 2005 and onward. Can we use data to test this claim? Note that you may want to use the slides provided to introduce this assignment.

## Pair & Share: compare the example visualizations | 10 min.

### 1. Introduce example visualizations
Introduce the students to the four example visualizations on the homepage of the [libguide](#). It’s important to explain that the visualizations are all created from the same dataset, "UN Millennium Development Goals Indicators," which is also a dataset they might use in their projects.

### 2. Pair & share: 5 min
Turn the students loose to compare and contrast in a small group for five minutes. You can prompt them to think about any of the following discussion questions:
- What information do these visualizations show? What information is missing or unclear?
- What questions do these maps or visualizations lead you to ask?
- What would make these maps more interesting? Better colors? More information, effects, or animations?
- What other information might make these visualizations more effective?
- What are the qualities of a good data visualization?
- How do these maps show how the same core data can be visualized differently?

### 3. Discuss strengths / limitations of sample visualizations
Return to a classwide discussion and have students report back on their findings.

**Commentary:** Each of these visualizations was made deliberately to contain some strong visualizations that can be easily compared or contrasted.
Takeaways

Keep module content streamlined and assignment specific

- Develop reasonable learning objectives, fit content to data novices
- Design precise assignment with clear-cut parameters
- Provide content for course instructors’ lead-in class
Takeaways

When recruiting library instructors, emphasize benefits:

- Reinforce how data literacy directly intersects with ACRL IL Framework
- Characterize participation as a way to show service (promotion & tenure)
- Indicate the ways they’ll learn and grow:
  - Learn data literacy fundamentals
  - Enhance pedagogical knowledge
  - Expand teaching range
Takeaways

Build in strong support for volunteer library instructors

• Provide fail-safe lesson plan
• Conduct intensive training session
• Offer opportunities to observe and team-teach before going solo
• Assign a point person to contact with questions and concerns
COURSE LIBGUIDE

LESSON PLAN & INSTRUCTOR GUIDE

INTSTRUCTOR RECRUITMENT & TRAINING

SCHEDULE & EXECUTE CLASS SESSIONS


