60-Minute Data Literacy Workshop Using the Junk Charts Trifecta Checkup

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Introduction

Data literacy is "the ability to ask and answer real-world questions from large and small data sets through an inquiry process, with consideration of ethical use of data."[1] Data literacy skills are increasingly important for graduates entering the workforce, "beyond the specialized positions of data scientists or data analysts."[2] Business librarians have a role to play in supporting students' acquisition of data literacy skills, as explored by Pothier and Condon in their 2019 article. They lay out seven data literacy competencies for undergraduate business students:

1. Data organization and storage
2. Understanding data used in business contexts
3. Evaluating the quality of data sources
4. Interpreting data
5. Data-driven decision making
6. Communicating and presenting effectively with data
7. Data ethics and security[3]

The following lesson plan for a 60-minute workshop addresses aspects of two of these competencies: communicating and presenting effectively with data, and evaluating the quality of data sources. Using this lesson plan can help all librarians feel confident in implementing a workshop that facilitates conversation about the use of data and data visualizations in business media. Content from Kaiser Fung's *Junk Charts* blog is adapted into an interactive discussion-based workshop. In small and large group discussions, students

analyze the use of data and data visualizations in a business article, thereby growing their awareness of what questions to ask when consuming media that include data.

Key principles from feminist pedagogy and critical business information literacy (CBIL) underlie the lesson plan. CBIL seeks to empower students "to think critically about business information through social justice frameworks."[4] Time constraints of one-shot sessions and workshops mean CBIL often looks like strategically choosing discussion topics or sample database searches. In this case, the lesson plan focuses on the use of data in a *Business Insider* article about gender wage inequality. Feminist pedagogy informs the discussion-oriented structure of the workshop, particularly the principles of centering learners and creating space to co-construct knowledge.

Planning

Number of participants

15–40

Audience

Undergraduate and graduate students

Preparation and Resources

1. Your favorite online polling tool, such as PollEverywhere (http://www.polleverywhere.com) or Mentimeter (http://mentimeter.com) (both have free account options) or your institution's polling tool.
2. *Junk Charts*, "Women workers taken for a loop or four."[5]

    Junk Charts Trifecta Checkup (see figure 31.1 Junk Charts Trifecta Checkup). Kaiser Fung created the Trifecta Checkup as a framework for data visualization criticism. In brief: "The Trifecta Checkup involves only three investigations:

    • What is the QUESTION?
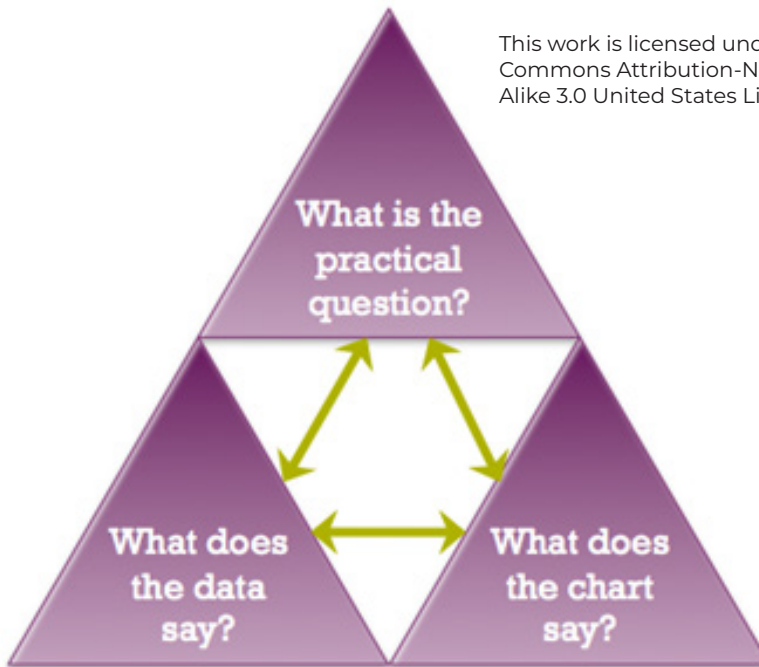   • What does the DATA say?
    • What does the VISUAL say?"

The blog post contains Fung's full description.[6]

1. K. Fung, "Wage inequality and its sources," *Numbers Rule Your World*.[7]
2. A. Kiersz and S. Gould, "Equal pay day gender pay gap calendar," *Business Insider*.[8]
3. Equipment for facilitator: projector screen and laptop.
4. Equipment for students. Computer or smartphone to read web articles and submit Minute Paper assessment form.

(For low-tech in-person, print copies of the article and have notecards for the wrap-up assessment.)

Facilitator preparation:

5. Content. Be sufficiently comfortable with the data analysis content from Fung's blog to guide class discussion.
6. Technology. A shareable slide deck is recommended, such as Google Slides. Include links for the exercise (article, Trifecta Checkup), source content (e.g., *Junk Charts* blog posts), the wrap-up Minute Paper assessment, and any additional resources.

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Figure 31.1
Junk Charts Trifecta Checkup
by Kaiser Fung. Used with permission.
(https://junkcharts.typepad.com/junk_charts/junk-charts-trifecta-checkup-the-definitive-guide.html)

Description of Lesson/Activity

Goals/learning outcomes

Students will
   1. understand that data literacy has many components and
   2. practice interpreting and evaluating the uses of data in a business media article.

Time required

60 minutes

Teaching Outline

1. Introduction (5–10 minutes)

Introduce yourself and the workshop agenda/learning goals. If the class is small enough, ask students to introduce themselves by name and an easy icebreaker question (e.g., what's your favorite ice cream or frozen treat flavor?).

2. Large group discussion (10 minutes)

Discuss the question "What is data literacy?" Use your favorite online polling tool to solicit answers. After students respond, ask for a volunteer or two to explain their response to the class.

3. Analysis exercise (25–35 minutes)

Analyze the use of data in a *Business Insider* article about the gender pay gap in a modified think-pair-share

      a.   Introduce analysis framework: Junk Charts Trifecta Checkup (5 minutes)

            ▪ Provide a link to the *Business Insider* article.

            ▪ Divide students into groups of 3–4. One student from each group should be prepared to share with the class.

      b.   Individually, students read and analyze the article using the Trifecta Checkup and guiding questions, such as: What story is being told? How are the data/charts used in this article? Where does the data come from? Who did the counting? What did they count and why? How did they go about it? What assumptions are being made? (10 minutes)

      c.   In the small groups, students discuss the article and their individual analyses. (5–10 minutes)

      d.   Bring the class back together for a group debrief. Ask students to summarize their small group conversations. Use the Trifecta Checkup and guiding questions to facilitate conversation. (5–10 minutes)

4. Wrap-up: Minute paper assessment (2–3 minutes)

Create a web form or pass around index cards to collect student responses to the questions:

      a.   What's the most important thing you learned today?

      b.   What's an important question you still have?

Transferability

Substitute articles

Adapt this lesson plan to use content relevant to your audience. You can browse *Junk Charts* for inspiration or use other source material, such as the following books and websites:

- *FRED Classroom Newsletter*. Federal Reserve Bank of St. Louis (https://news.research.stlouisfed.org/category/fred-classroom-newsletter)
- "What's going on in this graph?" *The New York Times* (https://www.nytimes.com/column/whats-going-on-in-this-graph)
- Alberto Cairo, *How Charts Lie: Getting Smarter About Visual Information* (W.W. Norton & Company, 2019)

Ability to transfer to online or to in-person

Though this lesson plan was first designed for an in-person workshop, it is easily adapted to an online format such as Zoom. For the opening discussion on defining data literacy,

you can still use your favorite online polling tool or ask participants to respond in the chat. If using Zoom, divide participants into groups in breakout rooms for the article analysis exercise. In addition to providing links in the slide deck, create a shareable doc with links, clear instructions for the exercise, and space for collaborative notes. Share the doc with participants before the session begins.

Endnotes

1. Annika Wolff, Daniel Gooch, Jose J. Montaner, Umar Rashid, and Gerd Kortuem, "Creating an Understanding of Data Literacy for a Data-driven Society," *The Journal of Community Informatics* 12(3): 23, quoted in Wendy Girven Pothier and Patricia B. Condon, "Towards Data Literacy Competencies," *Journal of Business & Finance Librarianship* (October 21, 2019): 2.
2. Pothier and Condon, "Towards Data Literacy Competencies," 2.
3. Ibid., 12.
4. Ilana Stonebraker, Caitlan Maxwell, Kenny Garcia, and Jessica Jerrit, "Realizing Critical Business Information Literacy," *Journal of Business and Finance Librarianship* (January 25, 2017): 136.
5. Kaiser Fung, "Women workers taken for a loop or four," *Junk Charts* (blog), 2019, https://junkcharts.typepad.com/junk_charts/2019/08/women-workers-taken-for-a-loop-or-four.html.
6. Kaiser Fung, "Junk Charts Trifecta Checkup: The Definitive Guide," *Junk Charts* (blog), https://junkcharts.typepad.com/junk_charts/junk-charts-trifecta-checkup-the-definitive-guide.html.
7. Kaiser Fung, "Wage inequality and its sources," *Numbers Rule Your World* (blog), 2019, https://junkcharts.typepad.com/numbersruleyourworld/2019/08/wage-inequality-and-its-sources.html.
8. Andy Kiersz and Skye Gould, "Equal pay day gender pay gap calendar," *Business Insider* (2019), https://web.archive.org/web/20190826234816/https://www.businessinsider.com/equal-pay-day-gender-pay-gap-calendar-2019-8.

Bibliography

Fung, Kaiser. "Junk Charts Trifecta Checkup: The Definitive Guide," *Junk Charts* (blog). https://junkcharts.typepad.com/junk_charts/junk-charts-trifecta-checkup-the-definitive-guide.html.

———. "Wage inequality and its sources." *Numbers Rule Your World* (blog), August 2019. https://junkcharts.typepad.com/numbersruleyourworld/2019/08/wage-inequality-and-its-sources.html

———. "Women workers taken for a loop or four." *Junk Charts* (blog), August 2019. https://junkcharts.typepad.com/junk_charts/2019/08/women-workers-taken-for-a-loop-or-four.html.

Kiersz, Andy, and Skye Gould. "Equal Pay Day Gender Pay Gap Calendar." *Business Insider* (August 2019). https://web.archive.org/web/20190826234816/https://www.businessinsider.com/equal-pay-day-gender-pay-gap-calendar-2019-8.

Pothier, Wendy Girven, and Patricia B. Condon. "Towards Data Literacy Competencies: Business Students, Workforce Needs, and the Role of the Librarian." *Journal of Business & Finance Librarianship* (October 21, 2019): 1–24. https://doi.org/10.1080/08963568.2019.1680189.

Stonebraker, Ilana, Caitlan Maxwell, Kenny Garcia, and Jessica Jerrit. "Realizing Critical Business Information Literacy: Opportunities, Definitions, and Best Practices." *Journal of Business and Finance Librarianship* (January 25, 2017). http://dx.doi.org/10.1080/08963568.2017.1288519.

Wolff, Annika, Daniel Gooch, Jose J. Montaner, Umar Rashid, and Gerd Kortuem. "Creating an understanding of data literacy for a data-driven society." *The Journal of Community Informatics* 12(3), 9–26.