Storytelling Using Data: Determining the Authority of Data and Applied Interpretations

Data **LITERACY**

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Framework Alignment (see page 10)

Activity Rationale

Students will encounter data in various formats throughout a research process and throughout their lives. Data are often presented as part of a narrative story, where the author uses data as a piece of evidence in their argument or presentation. As students are learning to determine the authority of data sources, it is important for them to distinguish between the authority of the dataset and the separate authority of the interpreter of the data.

Activity Description

In this activity, students learn to identify and evaluate the authority of data and the authors who publish interpretations of data. The students review a dataset from FRED® and determine the authority of the dataset based on shared criteria. They also review that same dataset in several interpretations published in blogs and articles, applying the criteria to analyze the authority. They discuss how they determined authority in pairs and share back their thoughts to the class (think-pair-share).

Grade Level

High School, College

Objectives

Students will be able to

- identify important criteria to consider when evaluating sources of data and information;

- explain what is meant by accuracy, authority, objectivity, currency, and coverage; and

- distinguish between a published dataset and an author's interpretation of the dataset to tell a research story.

Compelling Question

Why is it important to differentiate between the authority of data and the authority of the authors/storytellers who interpret data?

Time Required

60 minutes

Materials

- Handouts 1 and 2, one copy of each for each student plus a projected copy of each
- Handout 2 Answer Key, one copy for the teacher
- Computer, tablet, or phone for each student and instructor
- Projector and screen
- Internet access
- Links to the data sources
- Paper for writing (one sheet per student)
- Writing utensil (one per student)

Procedure

1. Divide the class into student pairs or allow them to select partners.

2. Explain that today's activity involves learning about the authority of data sources. Discuss the following:

   - What does the term authority mean? (*Answers will vary but may include the power to give orders, make decisions, or enforce obedience; or a person or organization that has power or control in some area.*)

   - What does authority mean in terms of a data source? (*Answers will vary but may include that the person created or owns the data; the methods used to produce the data are robust, credible, and reliable; and the source has expertise on the topic of the data.*)

   - What criteria would you use to determine the authority of a data source? (*Answers will vary but may include the authority of the author based on their position or expertise, or the authority of the organization that published the data.*)

3. Tell the students they will participate in a two-part activity to develop their understanding of the authority of data and the authority of individuals or organizations who interpret data to tell a story. Discuss the following (Objectives and Compelling Question):

- Students will be able to identify important criteria to consider when evaluating sources of data and information.

- Students will be able to explain what is meant by accuracy, authority, objectivity, currency, and coverage.

- Students will be able to distinguish between a published dataset and an author's interpretation of the dataset to tell a research story.

- Compelling Question: Why is it important to differentiate between the authority of data and the authority of the authors/storytellers who interprets data?

4. Discuss the following:

    - How do you determine credibility when you make an online purchase? (*Answers will vary but may include product ratings, number of reviews, price, who the seller is, and whether they are familiar with the brand.*)

    Point out that these are criteria they apply when making a purchasing decision.

5. Explain that just as products are not all the same, information and data are not all the same. When we want information and data to inform a decision or a project, we need criteria to evaluate the information and data.

6. Distribute a copy of *Handout 1: Criteria for Evaluating Data and Information* and a copy of *Handout 2: Evaluating Authority Activity* to each student, and display Handout 1 on the classroom projector.

7. Explain that the American Library Association mentions useful criteria for evaluating information. Describe the criteria as follows:

    - **Accuracy:** Consider whether the source presents accurate information. Are you able to verify that the information is correct/accurate?

        o Is the information reliable?

        o Is the information error free?

        o Is the information based on proven facts?

        o Can the information be verified against other reliable sources?

        o Are there conclusions offered by the information? If so, what evidence supports the idea?

    - **Authority/Credibility of the Author:** Determine the credentials of the author of the source and their level of expertise and knowledge about the subject.

        o Who is the author?

        o Do they have the qualifications to speak/write on that topic?

        o Is the author affiliated with a reputable university or organization in this subject field?

        o Is there contact information listed?

- **Objectivity:** Think about the author's purpose in creating the source. Has the author created the information to support a particular position or idea?

    ○ What is the intended purpose of the information?

    ○ Is the information fact or opinion based?

    ○ Is the information biased?

    ○ What are the potential biases of the author?

- **Currency:** Check the publication date and determine whether it is sufficient. That is, is the date current? Are appropriate citations included?

    ○ When was the information published? Is the date listed?

    ○ Is the information current or out of date?

    ○ Is the information updated on a regular schedule?

    ○ Does currency matter for this topic?

- **Coverage:** Determine whether the information meets your needs. Do you need additional information?

    ○ Does it provide basic or in-depth coverage?

    ○ Is the information unique?

8. Tell the class that each student pair is invited to share their work with the class following the activity.

9. Show the FRED® dataset https://fred.stlouisfed.org/series/TOTALSA. Tell students that they have five minutes to work with their partners to evaluate the data based on the questions/criteria from Handout 1. Ask students to determine if they think the FRED® dataset is a credible source and to provide a brief explanation using the five basic criteria. Discuss the following:

- Who is the author of this information? (*U.S. Bureau of Economic Analysis*)

- Is this an authority? (*Answers will vary. The BEA is a governmental organization that provides accurate data and information.*)

- Are there ways we could verify these data? (*Answers will vary but may include going back to the source of the data—it is linked on the FRED® series page—or checking to see if there were reports from credible news organizations reporting on the data.*)

- Are the data objective? (*Yes, they are based on data collected for calculating gross domestic product, which is an authoritative measure of overall economic activity.*)

- Are the data current? Are appropriate citations provided? (*Yes, the data are current and appropriate citations are provided.*)

- Does the information meet our needs? (*FRED® provides basic information about the source, the release of data, and so on.*)

- What role does FRED® play here? (*FRED® distributes data published by other sources.*)

- Are the data more credible because they are distributed by FRED®? (*FRED® has distributed data since 1991, and because it is a product of the Research Division of the St. Louis Fed it is trusted by millions of users every year. FRED® publishes data that are created by government agencies, central banks, and commercial entities, and in peer-reviewed publications.*)

10. Explain that other authors could use the dataset to tell further research stories. Even though the dataset is authoritative, readers should still evaluate any material using the dataset for credibility.

11. Explain that in the next activity the students will look at this dataset in three applied scenarios and evaluate the potential authority of each piece using the five criteria from Handout 1.

12. Display Handout 2 on the classroom projector. Tell the students they will conduct an evaluation on authority for three blogs/articles that use the BEA dataset from FRED® to tell a story. Explain that they will have 15-20 minutes to work on this activity and that Handout 2 will be collected at the end of the class. Students may continue to work in pairs, but each student should turn in their own copy of the handout. Ask student pairs to evaluate the authority of the author in each of the following:

    Article A: Is the Recession Over?

    Article B: Riding the Macroeconomic Fluctuations

    Article C: Will Consumer Spending Drive Economic Recovery?

    Tell the students to provide answers to the questions on Handout 2. Each article has some strengths and weaknesses based on the five criteria from Handout 1.

13. Allow time for students to work. As they work, circulate around the room and check in on students. Note the remaining time regularly to help students pace their work on the questions. After completion of time, ask several students to share their findings from the handout with the class.

14. Use *Handout 2: Evaluating Authority Activity—Answer Key* to recap the important points from the activity. Discuss the following:

    - Why does the authority of a source of data or information matter? (*Authority speaks to the reputation, reliability, and accuracy of data provided.*)

    - What attributes or criteria should we consider when determining the authority of sources? (*Accuracy, author's authority, objectivity, currency, and coverage*)

    - What does the criterion accuracy mean? (*Accuracy means that the data/information are reliable, free of errors, and based on fact.*)

    - What does author's authority mean? (*The author has expertise in the area/topic. The author is associated with a reputable organization.*)

- What does objectivity mean? (*The data/information provided are without bias.*)

- What does currency mean? (*Currency means that the information is current/up to date/regularly updated. The reader/user should also consider whether currency matters in each case.*)

- What does coverage mean? (*Coverage refers to whether the information is in-depth or the analysis is unique.*)

- What is the difference between the authority of a data source and the authority of an author who interprets the data? (*Data may come from a reputable source: The data provider may meet criteria such as accuracy, objectivity, and so on. But others can use the data to support specific ideas, so the reader/user must evaluate whether the author has authority in the way they've used the data.*)

- Why is it important to differentiate between the authority of data and the authority of those interpreting the data? (*It is important to understand this difference because data can be used to provide a particular argument or viewpoint. The data may have authority; but, it can be used in a biased way.*)

15. Collect Handout 2 from students to review their answers for an assessment of their learning.

Assessment

16. Handout 2 will be used for an assessment at the end of the session. Student answers to the questions will indicate their understanding of the evaluation criteria and of the importance of distinguishing between author authority and source authority.

17. If possible, follow up with students in a later session or during office hours to review their work.

Handout 1: Criteria for Evaluating Data and Information

These are five basic criteria for evaluating information from any source: accuracy, authority, objectivity, currency, and coverage. The accompanying questions help to determine the credibility of the author and the relevance of the source.

	Questions to ask when evaluating the authority of a resource
Accuracy (What?)	Is the information reliable? Is the information error free? Is the information based on proven facts? Can the information be verified against other reliable sources? Are there conclusions offered by the information? If so, what evidence supports the idea?
Authority (Who?)	Who is the author? Do they have the qualifications to speak/write on that topic? Is the author affiliated with a reputable university or organization in this subject field? Is there contact information listed?
Objectivity (Why?)	What is the intended purpose of the information? Is the information fact or opinion based? Is the information biased? What are the potential biases of the author?
Currency (When?)	When was the information published? Is the date listed? Is the information current or out of date? Is the information updated on a regular schedule? Does currency matter for this topic?
Coverage (Where?)	Does it provide basic or in-depth coverage? Is the information unique?

Handout 2: Evaluating Authority Activity

Name: _____   Date:_____

Using the questions on Handout 1 as a guide, please fill out each column for the three articles below.

    A. Is the Recession Over?

    B. Riding the Macroeconomic Fluctuations

    C. Will Consumer Spending Drive Economic Recovery?

	Article A	**Article B**	**Article C**
Accuracy (What?)			
Authority (Who?)			
Objectivity (Why?)			
Currency (When?)			
Coverage (Where?)			

Handout 2: Evaluating Authority Activity—Answer Key

Using the questions on Handout 1 as a guide, please fill out each column for the three articles below.

A. Is the Recession Over?

B. Riding the Macroeconomic Fluctuations

C. Will Consumer Spending Drive Economic Recovery?

	Article A	Article B	Article C
Accuracy (What?)	Cites several sources from reputable sources (e.g., FRED®, *New York Times*, *Wall Street Journal*, etc.)	Based on facts. The data tie back to verified sources. The article explains how the analysis was created.	The article cites sources from FRED® (reputable) and uses charts/graphs. The conclusions are brief but seem to match the data in a logical way.
Authority (Who?)	Tim Philipps, CEO is the listed author. His email and social media contacts are included. CEO of company publishes website; no other credentials listed.	Official *FRED® Blog* post by economist author Alexander Monge-Naranjo. He is a research officer with the St. Louis Fed and has expertise in analyzing/interpreting data. He has several publications listed under his name.	Mitch (Zacks) is listed as the author. No contact information is presented. Academic credentials are listed. Mitch is the CEO of the company publishing the article.
Objectivity (Why?)	Fact based, but it mentions prior publications (not linked) that indicate this story is a continuation. May be biased toward financial gain for the company.	Fact based, but some bias might exist, as it was produced by an employee of the organization that aggregated the data.	Fact based. The author could be biased toward creating authority to gain more customers (author appears to be an investment firm selling services).
Currency (When?)	No date listed.	December 21, 2015. Currency matters as it is a snapshot of data that are part of an ongoing dataset. The dataset that is referenced has been updated beyond this reference to it.	June 25, 2020. Currency matters because it is speaking about a current topic related to current events, which could fluctuate after publication.
Coverage (Where?)	Fairly in depth, but brief in explanation. Provides summaries of the linked data and graphs, with some analysis.	Brief, but fairly in depth and specific to a certain topic. Unique analysis of several datasets combined.	Basic analysis of a recent topic. It compiles several unique sources into one analysis.

Framework Alignment

ACRL Framework: Authority is Constructed and Contextual

Information resources reflect their creators' expertise and credibility and are evaluated based on the information needed and the context in which the information will be used. Authority is constructed in that various communities may recognize different types of authority. It is contextual in that the information needed may help to determine the level of authority required.

Knowledge Practices

- Define different types of authority, such as subject expertise (e.g., scholarship), societal position (e.g., public office or title), or special experience (e.g., participating in a historic event).