



ALTERNATIVE FACTS & DATA ASSESSMENT

*Students will learn how to assess data.
They will be given one of two graphs that
are misleading when viewed separately.
They will see the full dataset at the end.*

LESSON LENGTH:

- 1 hour

GOALS:

- Learn how to identify incomplete information and question the validity of news sources.

OBJECTIVES:

Students will be able to:

- Explain the importance of evaluating information
- Interpret meaning from a graph
- Give examples of strategies to determine the accuracy of information

Note: Page 5 should be printed single-sided.

NATIONAL, STATE, LOCAL STANDARDS

- North Carolina Standard Course of Study HS.SI.1:
Evaluate resources needed to solve a given problem
 - HS.SI.1.1 Evaluate resources of reliability
 - HS.SI.1.2 Evaluate resources for point of view, bias, values, or intent of information

STUDENT TAKEAWAYS FROM LESSON:

- Essential question / theme
 - It is important to have complete information when interpreting data so that we are able to infer the right conclusions.
- Key concepts and vocabulary
 - Validity
 - Reliability

ASSESSMENTS:

- Reading and analyzing the graphs provided
- Writing/acting out a press release
- Journaling about experience

DIVERSITY (REACHING STUDENTS OF ALL LEVELS/ABILITIES):

- The students are working in groups.
- The students are able to use kinesthetics if acting out the press release.

MATERIALS & EQUIPMENT:

- One copy of the three graphs
- Pencil
- Paper

LOCATION:

- No specific location

RISK MANAGEMENT & SAFETY CONCERNS:

- Ensure that the students trust the instructors so that the students do not feel as if they were tricked.

BAD WEATHER ALTERNATIVE:

- This activity could be done during bad weather since it does not require being outside. The entirety of the lesson can be carried out inside.

PRE-LESSON PREPARATION:

- Read through the lesson in advance.

LESSON:

Note: Instructor prompts are in italics.

ENGAGE

- Begin by dividing the students into 2 groups.
- Explain the scenario to them: *You are part of a team charged with deciding if global temperatures are rising.*
- Give each group one graph plotting global temperatures over time (tell them not to show their graph to the other group). Graphs are attached below; print these pages single-sided.
 - Note for teacher: Graph 1 (2005-2015) shows global surface temperatures remaining constant
 - Note for teacher: Graph 2 (1988-1993) shows global land temperatures decreasing

EXPLORE

- Tell each group to interpret the graph. Prompt the groups as needed.
 - Ask: *What information does the graph tell them?*
 - Instruct students to create a 2-3 sentence press release about the changes in global temperature
 - In creating their press release, the students can either act out a public service announcement commercial or read it as a reporter.
 - Provide a time limit for sharing the press release (eg, 2-3 minutes; this is dependent on how much time is allotted or available).
- Then have each group share their press release with the other group
 - Each group should have come to different conclusions because the two graphs do not show the entire picture.
 - Ask each group of students why they had different conclusions.

EXPLAIN

- The instructors should show the students the full graphs of global surface temperatures from 1970-2015, and global land temperatures from 1973-2013.
 - When they see these full graphs, ask the students: *what do you conclude?*
 - They should conclude that global temperatures are rising. Have a student draw a line showing the overall trend of the graphs.
 - Discuss consequences of global climate change: reduction of habitats for animals, increased droughts/wildfires/flooding/extreme weather in different parts of the world, disruption of agricultural practices (with the possibility of future global food insecurity), rising sea level (displacement of people living on the coast and the possibility of future climate refugees), etc.
- Ask the students: *what does this mean about how to interpret data?*



- It is important to have complete information when interpreting data. With just a subset of the data, it is easy to draw the wrong conclusion.
- Ask students: *what happens if people in power use incomplete data to draw conclusions, especially regarding climate change?* (Example: legislation that deregulates businesses' and cars' carbon emissions, campaigns to influence public opinion, etc.)
- The instructor should ask the students: *How can they avoid being "tricked"?* Facilitate a discussion about information validity and strategies for evaluating information. Write ideas on the whiteboard.
 - *What are strategies for evaluating information?*
 - We need to evaluate information and sources carefully to ensure that we have all the information.
 - Talk about validity. *What does the word valid mean?*
 - Validity (of an argument or point): having a sound basis in logic or fact; reasonable or cogent.
 - *What information sources are valid? How do you know that a website is valid?*
 - Look at the author – is the person reputable?
 - Do they cite reputable sources?
 - If you google the website, what comes up about it?
 - **Note that anyone can buy a .org URL.**
 - *Can you believe all images?*
 - It is easy to Photoshop images.
 - There are websites that can find the source of a photo
 - *Can you believe all quotes?*
 - Context matters – if a quote is taken out of context, its meaning may change.
 - *What about social media posts?*
 - Anyone can post anything on social media.
 - The instructor should inform the students about questions to ask when evaluating information: Who made this? How was it made? Why was this made? When was this made? Where do I go from here?
 - Sites to check if information is correct
 - FactCheck.org
 - Snopes.org
- Conclusion: In today's world of social media, students receive their information from a variety of sources, some more reputable than others. Sometimes the information they receive has been manipulated in some way so that the message has been altered, while other times the news is completely "fake news." Too often, students just accept the information they are given, without questioning it. This can lead them to draw incorrect conclusions and to form beliefs based upon misinformation.

EVALUATE

- The students should write a personal reflection in their journals about their experience. Ask the students questions about what their initial feeling/reaction was when realizing they only had partial information. In



addition, reflect on misconceptions and bias related to “non-environmentally friendly” practices (logging, hunting, carbon emissions, etc.).

- During future lessons, the students should use the questions mentioned above when reading future articles or when provided other information.

REFERENCEMATERIALS/RESOURCES:

- For more background on fake news, alternative facts, and the importance of educating students about this, visit: <http://ufsociaj.jou.ufl.edu/2017/01/teaching-aid-educators-fake-news-alternative-facts/>







