

Misinformation and Misleading Graphs Assignment

EDN 322/LIC 522

Part I: Analyzing graphs and charts in the Media

Activity #1:

Find a chart, graph or table in a magazine, newspaper or on social media that is misleading. USA Today is well known for publishing graphs that mislead. Their USA Today “Snapshots” include easy-to-read statistical graphics that present information on various issues and trends in a visually appealing way. Go to the USA Today website at <https://www.usatoday.com/picture-gallery/news/2015/04/07/usa-today-snapshots/6340793/> to see a collection of these “Snapshots.” Find a misleading graph and complete the following;

1. If the graph is online, copy the image and paste it into a Word document. If it is in a newspaper or print magazine, take a picture of the table or graph and insert it into the document.
2. Describe what information the graph conveys. Consider the following:
 - a. Authority: Who is the author? What are their qualifications?
 - b. Audience: Who is the intended audience?
 - c. Content: Are they accurate? Can they be verified?
 - d. Coverage: What is the population or sample size?
 - e. Currency: What is the date of the data? Purpose: Why was the information collected?
3. Identify any misleading techniques used to create the graph such as:
 - a. Omitting the Baseline
 - b. Manipulating the Y-Axis
 - c. Cherry Picking Data
 - d. Using the Wrong Graph
 - e. Going Against Conventions

The following two resources might be a helpful starting point in considering ways that graphs can mislead.

- Michael Finan course notes on Misleading Graphs and Statistics available at <https://faculty.atu.edu/mfinan/2043/section31.pdf>
- “5 Ways Writers Use Graphs to Mislead You” Infographic (attached)

4. Using the information from the graph, design a new graph that is *not* misleading. You can produce your new graph by hand or it can be computer-generated, but make it visually appealing.
5. Describe what changes you made to create the non-misleading graph.
6. Create a document that displays the two graphs side by side. Give the document a catchy title that suggests the different impressions the two graphs make.

Activity #2:

Look through magazines, newspapers or social media to find a bar graph, pie chart or other type of graph that does NOT appear to be misleading. For the graph you select do the following:

1. If the graph is online, copy the image and paste it into a document. If it is in a newspaper or print magazine, take a picture of the table or graph and insert it into a document.
2. Describe what information the graph conveys. Consider the following:
 - a. Authority: Who is the author? What are their qualifications?
 - b. Audience: Who is the intended audience?
 - c. Content: Are they accurate? Can they be verified?
 - d. Coverage: What is the population or sample size?
 - e. Currency: What is the date of the data? Purpose: Why was the information collected?
3. Using the information from the graph, design a new and very misleading graph that uses at least two misleading features discussed in class. You can produce your new graph by hand or it can be computer-generated, but make it visually appealing.
4. Describe which misleading features you incorporated into your new graph.
5. Describe the effect you expect the misleading features to have on the reader.
6. Create a document that displays the two graphs side by side. Give the document a catchy title that suggests the different impressions the two graphs make.

Part I, Activities #1 and 2 modified from:

Maurer, V. (2020). Linn-Benton Community College. Available online:

<http://cf.linnbenton.edu/mathsci/math/maurerv/upload/Project%201%20-%20Misleading%20Graphs.pdf>

Part II: Creating a Lesson Plan for K-5 Learners on Misinformation and/or Misleading Graphs

Construct a lesson plan for one elementary grade level that is designed to introduce students to misinformation in the media. Your lesson should be tied to the mathematics curriculum at the grade level you select. The lesson plan should include each of the following components:

Lesson Overview:

- Lesson Title (Include an original title that captures the essence of your lesson plan.)
- Grade Level (Please select from Kindergarten through Grade 5)
- North Carolina Mathematics Standards (Please copy the standards from the NC Standard Course of Study and underline the parts of the standard that are addressed in your lesson plan.)
- Learning Objective(s) (The specific, observable learning outcomes to be achieved by the end of the lesson or learning segment.)
- Assessment (What evidence will you collect to demonstrate students' achievement of the learning objectives?)
- Prerequisite Knowledge (Tell what concepts, skills, and/or values students should have prior to participating in this lesson. Describe how you will ensure your students know the prerequisite knowledge prior to proceeding with your lesson.)
- Central Focus (Describe the overarching, understandings/big idea(s) or central focus of the learning segment.)
- Essential Question(s) (Identify 1-3 key questions that will provoke inquiry and guide student learning.)
- Academic Language (What is the language of the discipline you will be teaching? (For literacy, please include the language demands, such as language functions, vocabulary, discourse, and syntax).)
- Resources (List any materials or technology necessary to complete your lesson. Include copies of any handouts.)
- Lesson Overview (Describe briefly the instructional purpose, learning task(s), planned supports (instructional strategies, learning tasks and materials, and other resources), and formative assessment(s).)
- Classroom Description (Describe the student population of your field placement classroom including the make-up of culture, gender and other socially relevant

factors. Your population should include typically developing students and students who will need additional accommodations and interventions.)

Lesson Procedures

- Introduction/Hook (Using knowledge of students (their personal, cultural, and community assets), describe how the teacher will introduce and establish the lesson purpose. Include a relevant and engaging hook, assessment of students' prior knowledge, and activation of learning.)
- Instruction and Guided Practice (Explain how the teacher will engage students in learning key concepts, ideas, and skills. Specify the instructional strategies to include modeling, scaffolding, student grouping and interactions, planned supports, and the use of resources and materials. Incorporate student feedback and checks for understanding throughout.)
- Closure/Summary (Close the lesson by restating the purpose and central focus(es). How will the teacher engage students in demonstrating and reflecting upon their learning? How will they connect their new learning to future learning?)
- Differentiation and Accommodation (Consider the variety of learners in your class who may require different strategies or support. Specify how teaching and learning will be differentiated and/or specific accommodations you will make.)
- Extension (How might you extend this lesson to further student learning?)

Do not use or download problem solving tasks or lessons from the internet, curriculum or other teacher created materials. The purpose of this assignment is to create your own ORIGINAL problem task and lesson plan.