Infographics in the Classroom: Using Data Visualization to Engage in Scientific Practices

Activity 3: Data Graphic Critique

1. Reflecting on all the graphics seen in Activity 1 and 2, do a quick write about which graphic was their favorite and why? Encourage them to think beyond “I was interested in the subject”
2. In a group, have students share their opinions and create a list of what makes a good graphic.
3. Make master list of the classes ideas.
4. Introduce graphic principles created by Academy experts. How are they similar? How are they different from the class generated list?
5. Using the graphics from Activity 1 and 2, assign each pair of students one of the graphic principles from the Academy list or their own. Give each pair one red post-it and one blue post-it (have them write their principle on each) next have them decide on which graphic successfully uses the principle and which graphic might need some work.
6. Hand out the worksheet and a new graphic. Explain that they will be critiquing this graphic as homework.
7. The next day, have students find 1-2 others who critiqued the same graphic. Have them compare notes on how successfully the graphic met the different principles of what makes a good graphic.
8. Have student pairs/groups put together a small poster (like in Activity 1) to show what the main ideas are and how well they met the graphic principles

Infographics used:

- David MacCandless, Scale of Devestation, from Visual Miscellanuem http://www.informationisbeautiful.net/visualizations/scale-of-devastation/
- Philippe Rekacewicz, World Resources Institute, http://visual.ly/diversity-species

Teacher and Youth Education, 2015
Activity 3
Data Graphic Critique

Name ___________________________________________  Title of Graphic ___________________________________________
Date ___________________________________________  

1. What ideas or pieces of information does the author present?

2. Identify the central idea(s) told in the graphic. What story does it tell?

3. Describe how the author represents data in the graphic? (Ex. Using color to differentiate two things.)

   »
   »
   »
   »

4. What questions do you have about the graphic? What confuses you?

5. Critique the graphic using the list of Graphic Principles for Visualizing Scientific Data.

   » Does this graphic **impert only one to two key messages**? Explain your answer.

   » Does everything on the graphic have a reason for being there? Explain your answer.

   » Does the graphic **keep it accurate**? Explain your answer.

   » Does the graphic **represent the numbers fairly**? Explain your answer.

   » Does the graphic **blow them away**? Explain your answer.
1. **Keep it simple.**

   **A. Aim to impart one or two key messages.**
   » Did you highlight key patterns that seem to have meaning in the real world?
   » Can your viewers summarize your message(s) in a single sentence?
   » Try to impart something your audience will be drawn to, remember, and share. Know your audience.

   **B. Everything on your graphic should have a reason for being there.**
   » Pretend ink is expensive, so use as little as possible to tell your story.
   » Use color to reinforce your message, not solely for design.
   » Use basic, intuitive representations.
   » Don’t include unnecessary dimensions of data (time, space, feature, etc.).

2. **Tell the truth.**

   **A. Keep it accurate.**
   » Did you pull the numbers correctly?
   » Keep in mind where your data came from. How was it collected? Context is essential.
   » Did you cite your data sources?
   » Use labels to eliminate ambiguity.

   **B. Be fair.**
   » Choose your statistics wisely. Mean/averages, medians, and percentages tell different stories.
   » Did you represent the numbers and scale accurately? Make things proportional and appropriate to the numbers.
   » Are you comparing like things (similar attribute, dimension, time scale, etc.)?
   » Dots, lines, area, and volume convey different messages. Consider carefully which you will use.
   » Be aware of ways your graphic could be misinterpreted. Do your graphs show what you think they show? (Challenge yourself to reinterpret your graphic.)

3. **Blow them away.**

   » Draw them in with interesting, innovative design.
   » Shake up traditional charts, graphs, maps, etc.
   » Draw viewers’ attention to the substance of the graphic.
   » Show data variation, not design variation.
## Top 10 Countries with Most Endangered Species

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<th>Country</th>
<th>Mammals</th>
<th>Birds</th>
<th>Reptiles</th>
<th>Amphibians</th>
<th>Fish</th>
<th>Mollusks</th>
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Sources: IUCN Red List of Threatened Species 2020, 2020 State of Birds report, WRI, Bloomberg, NGO

Food for Thought

Number of animals killed for food
Worldwide, 2009

1.7 million camels
24 million water buffalo
293 million cows
366 million goats
518 million sheep
633 million turkeys
1.1 billion rabbits
1.3 billion pigs
2.6 billion ducks
52 billion chickens

*And they're edible. Ants are a good source of protein and are considered a delicacy in many parts of the world.

http://visual.ly/food-thought
Ocean Biodiversity

Note: Data have been modified to show the species diversity of each region as a fraction of the most species-rich region. The maximum number of marine mammals species in a region is 52, sharks 140, molluscs 1114, birds 115, and shrimps and krill 210.

Source: World Resources Institute (WRI), Washington DC, 1990. Based on data from UNEP-WCMC.

Scale of Devastation

square kilometers

David McCandless & Miriam Quick // InformationIsBeautiful.net

Where We Live...

Unlike many developed countries, the U.S. keeps growing. We are also moving south and west. But compared with China or India, the nation is a vast prairie.