Climate Tweets: Examining Global Climate Change

GRADE LEVEL: 6 – 8

MATERIALS: Internet access, computer

OBJECTIVE: Critically interpret public opinion of climate change, provide an accurate analysis for review by researchers

SKILLS: Develop data analysis skills, critically evaluate opinion vs. fact

VOCABULARY: (global) climate change, global warming

OVERVIEW (for students): The advent of social media has provided the general populace with the opportunity to voice their opinions in a much more public way than ever before. One of the most prodigious social media outlets is Twitter. It provides an author the opportunity to state a feeling, "fact", or other piece of information in 140 characters or less. The tweets can be viewed and shared among followers.

Although social media is most often viewed as a source of entertainment, it can be a much more powerful tool to gain information about the world around us. Utilizing social media as a source of information or data is called "crowdsourcing". In crowdsourcing, the *crowds* (general public) become the *source* of information. A demonstration of the power and potential importance of crowdsourcing can be seen in a series of videos produced by Penn State called the Geospatial Revolution.

(for teachers) This is the link to the Geospatial Revolution videos. The link should load Episode 1, Chapter 4: Why We Need It, from Penn State Public Broadcasting. The video clip is 5:18 minutes long. http://geospatialrevolution.psu.edu/episode1/chapter4

Throughout this lesson, document the process through photos, short video clips, and by collecting the "drafts" of data and analysis along the way. This will be important to review with the students prior to their documentation phase. This will also be submitted to UND to use when reviewing the students' findings.

PART I: Data Collection/Analysis

INTRODUCTION (for students): Tweets and posts collected by Ushahidi volunteers were in what's called a "raw" format. As described in the video, much of it wasn't even in English! Volunteers had to first sift through tweets and other posts, translate them, and spatially organize them, before they could use it to help people. This is the most important job because finding the person most in need of help using the raw, unorganized data is like trying to find one missing sock in 5 buckets of laundry. You may miss it on your first, third, or even sixth time through!

We can use tweets to develop an understanding about how people view climate change in much the same way as aid workers used tweets and Facebook updates to collect

information about people in need in Haiti. You are going act like the volunteers for this assignment, sifting through several climate change tweets. You will decide what categories your tweets belong to, and how the author feels overall about climate change. You will decide how to organize your final data, and determine what, if any patterns there are. In addition, your findings will be sent to UND to be reviewed for larger climate change tweet studies.

DIRECTIONS (for teachers): Sign in and access the "Climate Tweets" website according to the instruction page provided with this lesson plan. Discuss the "Instructions" link at the top of the "Climate Tweets" website making sure the students have a clear understanding of what kinds of tweets to assign to each classification category or attitude. Encourage students to refer to it if they are unsure how to classify a tweet. Have each student read at least 50 tweets, marking the appropriate radio button and check boxes. For each tweet classification to be valid, students must select an attitude, and can select only up to **3** category check boxes.

Assign the students into groups of 4. Have each group discuss the tweets and their results using the questions below. One student from each group will record their results, including what criteria (aim for 3) they used to organize their tweets and find their patterns.

1. How easy/difficult was it to classify the tweets? What made a tweet easy/difficult to classify? How do you think your personal background, attitude, or experiences influenced your tweet classification?
2. Were there any tweets you particularly remember and why?
3. How well do you think your personal feedback pie chart and bar graph compares to the rest of the class?
4. What patterns do you notice between your results, other students' results, and the class results? (i.e., female classification charts show more tweets classified scientific but male classification charts show more tweets classified as emotional?) How did you determine those patterns?
5. Do you think there a "magic number" of tweets about where the percentages in the pie chart, or relative sizes of the bars in the bar graph wouldn't seem to change much for your classification data and/or the class cumulative data?

Lastly, regroup the entire class to compare and discuss their findings. The students will decide what the final data set patterns are, the best methods used for analysis, and why. These are the results that will be passed on to UND.

PART II: Evaluation

INTRODUCTION (for students): The video you watched was made in 2010. However, Ushahidi still exists today. Much like Xbox, Facebook, or the iPhone, it has gone through several updates to improve their product. They study not only the data they gather, but also the interpretation process. If a catastrophe happens, they want to be as ready as possible so things run smoothly, and get help to people that need it quickly.

You are going to evaluate your own project by answering some questions about how you did what you did.

DIRECTIONS (for teachers): Students will complete this portion of the project individually. Review with students the documentation you have been collecting (i.e., photos, video clips, etc.) to refresh their memories prior to writing. Have the students answer each of the following questions based on the work they completed in class.

(for students)
1. What process did you use to organize your data and find patterns?
   Clearly define the criteria you used to organize/sort your data sets. Your description should be clear enough to allow someone else to duplicate what you did. You should also include WHY you used that process.

2. How do you think you could improve the process you used given the data you had?
   The key here is that no process is perfect the first time around. You have to learn to walk before you can run! If you had known when you first started what you know now, what would you do differently?

3. What data do you think would have been useful to you to help improve your process?
   This is the thing you wished you knew, or puzzle piece you feel is missing. Describe how you think having that piece of data would have helped you in your organization process and analysis.

4. What was the most surprising thing you discovered during the data organizing and analysis process?
   Sometimes, the best discoveries, like wheat flakes, are accidents. The important part is recognizing these amazing accidents, and seeing how you could use them to alter your process and build something bigger and better. It worked for William and John Kellogg.

5. How has this project changed your views about the use of social media/Twitter?
   Knowing that tweets, Instagram pictures, or Facebook posts might be accessed by people around the world as a source of important information rather than simply entertainment is a powerful thing. How has this knowledge changed your opinion about social media?

(for teachers) Select the best student answers for submittal to UND along with the photos/video documenting the process. Consider including students interviews about the process for the video.

ADDITIONAL RESOURCES:

Natural Inquirer: Middle School Science Education Journal. You can order or download copies of "Climate Change Edition" Number 14, for middle and high school students. You can also access other issues of "the Investigator" here. http://www.naturalinquirer.org/Climate-Change-Edition-i-29.html

Earth Day Network: Climate Education Week. This site contains links to other lesson plans at multiple grade levels to help understand how a changing climate can have far-reaching effects. http://www.earthday.org/climateeducationweek/itextbook-apple-store-release-on-april-18th/

Communicating Climate Change: NASA Climate Change Education Program. 2 CD-ROM's available at the Grand Forks Public Library Children's Reference (J 551.5 NASA) for STEM use