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The Use of Concept Mapping in a Global Climate Change Course

As part of my NAS 352 Global Climate Change course at Flagler College during the Spring 2014 semester, I introduced the use of concept mapping to my students. I have tried numerous times over the semester to emphasize to my students the importance of effective science communication, particularly when it comes to communicating what they are learning in class to people in their lives that might not come from a science background. I often posed them with the question of how they might take complex topics such as ocean acidification, the Earth's radiation budget, the role of the oceans in a changing climate, etc., and explain them on a level that their parents, partner, or siblings could understand. After participating in the COSEE GEARS science communication workshop at the February 2014 Ocean Sciences meeting, I decided I would use concept mapping as part of a final project I had assigned to each of the students in my Global Climate Change course.

In order to introduce concept mapping to my students, I had them read the deCharon et al. (2013) article from *Oceanography* (vol.26,1,98-105) on concept mapping within a broader context of emphasizing effective science communication. The students took about 15-20 minutes in class to read the article and then we had a group discussion on the importance of concept maps and what good concept maps could add to a presentation, lecture, workshop, etc., particularly when communicating with general society. I then introduced my students to the COSEE CLIMB Concept Mapping website where we spent time looking at examples of concept maps that graduate students and researchers had configured, starting with simple concepts such as how ocean salinity is affected by evaporation and precipitation to looking at more complex topics such as the ocean's role in influencing climate. Finally, I introduced my students to the COSEE CLIMB Map Builder website. We spent the last 20 minutes of class learning how to build concept maps using the features within the Map Builder website. The students remarked on how user-friendly the site actually was.

As part of leading a class period that that involved the synthesis and discussion of a number of peer-reviewed articles relating to a specific aspect of climate change of their choosing, each of my students was responsible for building and presenting, as part of their discussion, a concept map that introduced their topic. Three examples of topics selected included the Role of the Gulf Stream in Affecting Climate, The Effect of Climate Change on Trout Species in the Northwest US, and the Effects of Climate Change on Health and Society. Most of the students chose to present their concept maps first in their leading of the discussion/presentations. The students got far more out of this exercise than I thought they would. Most of them commented on how making the maps not only helped orient the audience to the information being presented, but provided an effective method of visualizing theoretical effects and interconnecting concepts that would otherwise get very complicated and perhaps be very difficult. It was also remarkable from an instructor's point of view how the students got excited and involved with the explanation of each others concept maps. Students really got into providing feedback and constructive criticisms on how to improve each other's concept maps.

Four of my students uploaded their maps in the Public Maps list on the COSEE CLIMB site—these students are Kelsey Monahan, Mitchell Jabs, Chelsea Spieth, and Rhiana Rolland.