Thinking With Data Unit Overview

This sheet provides a brief description of the individual modules in the Thinking With Data unit. The modules are listed in the order they should be taught. The descriptions below illustrate how each module fits into the unit as a whole.

Social Studies

In the Social Studies module students investigate water issues in the Tigris-Euphrates watershed, specifically as these issues relate to the countries of Turkey, Syria, and Iraq. Students use their understanding of the water cycle to study issues of water access and availability in the region. By analyzing a variety of data, students will come to understand that not everybody in the region has fair and equitable access to water as proposed by the U.N. Convention on the Law of the Non-Navigational Uses of International Watercourses. Student groups will create water profiles for individual countries, and negotiate a water treaty between the three countries that is "reasonable and equitable".

Math

The Math module uses the context of *fairness* of water distribution in the Tigris/Euphrates watershed to engage students in thinking about data literacy and proportionality. Students first engage in a hands-on activity to set the stage for learning about proportional reasoning. They then investigate per capita, unit rate (in the form of salinity), and percents. This culminates in an investigation into mathematical arguments that use proportional reasoning. Students are prepared for the Science and English Language Arts modules through exposure to the idea of salinity, and also by learning to evaluate and form mathematical arguments.

Science

The Science module addresses the science behind world water issues – in particular, ways in which the water cycle and man-made technologies affect water availability and use. The first part of the science module consists of three, two-day, mini-PFL type explorations of where the water in the Tigris/Euphrates watershed comes from, the effects of open-ditch irrigation on water quality, and the effects of water salinity on plant growth. In these exercises, small groups of students first attempt to use data to support a hypothesis or a particular explanation. The groups then share and discuss their arguments with the class, with the teacher stepping in at the end to make the science clear. This first part of the module also includes an interactive PowerPoint lecture on the water cycle, water technologies, and water pollution. The second part of the Science module engages student groups in guided Internet research on similar issues of water availability, quality, and use in selected US watersheds in preparation for the development of persuasive arguments on these topics in English Language Arts.

English Language Arts

The English language arts module provides an opportunity for students to transfer the skills they have learned in the previous three modules to communicate what they have learned regarding the water crisis. Building on the research they conduct in science on U.S. watersheds, students will develop reports on water-related issues and present possible solutions to them as persuasive arguments, in multimedia formats supported by data-based evidence, and present these to a larger audience.