Lesson Plan for Cosee West Workshop

Carol Sayers 12/2/08

Topic: Factors Affecting Ocean Currents

Objectives: Students will design an experiment to study how changing salinity in ocean water affects the movement of currents.

Students will design an experiment to study how changing temperature in ocean water affects the movement of currents.

Students will present analysis and conclusions to class and compile findings of other groups to form a class consensus on findings.

Students will apply the concepts of their experiments to explain the affects of changes in salinity and temperature on our planet.

Introduction: Students are presented with brief video clip to engage them in the lesson, followed by a brief discussion of what they already know of the topic. A map of the ocean currents will be discussed.

Demonstration: Students will participate in discussion of how water masses mix in the ocean due to temperature differences while viewing demonstration. The apparatus used in the demonstration is a device which separates two bodies of water at different temperatures. Cold water is dyed blue, warm water is dyed red. When the separating panel is removed, the two bodies of water mix due to the differences in temperature. A similar demonstration is presented using salt water,(colored red), and fresh water, (colored blue). The red portion will flow towards the bottom, while the blue portion flows towards the top.

Activity: Class will be divided into two main groups of students, A and B.

Group A: Students will work in small groups of 3-4 students to design an experiment to explore the effects of salinity changes on ocean currents.

Materials available for the study include, (but aren't limited to):

Salt, water, graduated cylinders, food dye, beakers, small jars, plastic cards.

Group B: Students will work in small groups of 3-4 students to design an experiment to explore how changing temperature in ocean water affects the movement of currents.

Hot plates, thermometers, water, graduated cylinders, food dye, beakers, small jars, plastic cards.

Experimental Design is to be reviewed with instructor for approval prior to performing the experiment. Key elements must be included, such as hypothesis,

safety, procedure, data table, analysis and conclusion. Improvements and further experimentation must be included.

Conclusion: Students will present their groups findings to the class. When all students have shared, a consensus will be formed based on the experiments. Students should find from the temperature study that cold water sinks. Students should find from the salinity study that salty water sinks in fresh water.

Assignment: Students will use the concepts learned in this small activity and apply them to the nature of ocean currents at a global level. Students will complete the "Moving Waters" worksheet, working with a partner. (linked file from Keynote #1 Resources)