Idea Bank

OUR EARTH'S ADDRESS

Considering the current expectations of science instruction and knowledge, teachers are faced with a dilemma: Which activity is best or can intensify the learning process and cover the in-depth skills necessary for scientific discovery? Scientific concepts taught through hands-on experimental guidance can challenge students to think for themselves.

The following activity was designed for middle school students and can easily be adapted for higher grade levels. At present, I use the activity as a foundation for 15 other topics I must address under the *National Science Education Standards* and the West Virginia Science Standards. These topics include world wind patterns, climate zones by latitude, climate vegetation zones, world biomes, biodiversity by latitude, topographic maps (reading and constructing), plate tectonics, and constellation and continent locations. As I introduce new ideas and information, my students find it helpful to reflect on the principal concepts covered in this activity.

The goal of the activity is to increase students' knowledge and retention of coordinate systems, specifically latitude and longitude. By the time they complete the activity, I expect students to be able to differentiate between lines of latitude and longitude and to demonstrate why and how coordinate systems are useful.

For the activity, the class needs two skeins of different colored yarn, one roll of masking tape, eight sheets of construction paper, scissors, a globe, and flat maps of the Earth and the United States. The maps are essential for introducing the activity and for future reference. I begin the activity early in the fall.

First we locate the center of the room. Next, students determine where north, south, east, and west are located. At this point, I introduce the compass. After verifying our directions, each wall of the classroom is labeled to represent its correct direction. This process makes the abstract concept more concrete for students.

Next, I arrange the class into heterogeneous groups of four. One group measures and cuts a piece of yarn that will reach across the room. Using masking tape, students attach the yarn to the walls so that it falls across the center of the room, east to west, about 2 meters off the floor. The students label this line as the equator. At this point, we discuss characteristics of the equator, and I ask students to list everything they know about the equator.

Another group has the responsibility of establishing the prime meridian. Using a different color of yarn, they string it across the center of the room, perpendicular to the equator. As with the equator, I ask students to list everything they know about the prime meridian.

Once the equator and the prime meridian are in place, the remaining lines of longitude and latitude can be attached. A math connection is made as students measure the walls of the classroom and divide them into eight equal parts. Some of the students can measure latitude walls while others measure longitude walls. Once the walls are measured and marked, students attach the lines of longitude make the prime meridian. After the lines are in place, we discuss the measurements of degrees, minutes, and seconds. Then students label the lines, starting with 0 degrees and working east and west in 15-degree increments. At this time, the discussion can be expanded to include the concept of world time zones. Next, students construct latitude lines using the same color yarn as the equator.

When the grid system is complete, the students hang cardboard degree signs on each line. After the model is complete, each student must stand under a grid square and, using the grid measurements, describe the location as accurately as possible. Then I initiate a discussion of latitude and world climatic zones. For example, I will ask what climate changes students would see if they moved north or south, which leads to a discussion of climate, weather, habitats, ecosystems, and so forth.

Students learn science by doing science. Whenever possible, I use an experiment as a modality of instruction. What better place to start the study of Earth science than with the Earth?

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NOTE

This activity was developed as part of the author's participation in RockCamp, a teacher-enhancement project now funded by the West Virginia Geological and Economic Survey.

WRITING FOR UNDERSTANDING

As the teacher of a Science, Technology, and Society class, I found myself on the first day of class facing 28 students who were not interested in science. They had all failed some sort