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Earth Science
Grade: 1

Moving Water

Objective/Purpose: This activity helps students visualize the pattern of the water cycle and apply this to everyday events. The demonstration shows the four stages of the water cycle, and the worksheet allows students to make connections between the demonstration and the real water cycle.

QCC:
16. Earth Processes: Weather and Climate

Materials:
1. Hot plate or crock pot
2. Beaker or tea kettle – if hot plate used
3. Large metal bowl
4. Ice
5. Moving Water worksheet
6. Scissors
7. Crayons

Time required:
I did this activity in stations lasting 15-20 minutes each. The demonstration took about 5 minutes, and I used the rest of the time for the worksheet.

Background Information: This activity was adapted from a similar activity by the AIMS Education Foundation. Prior to the activity, explain the four stages of the water cycle: evaporation, condensation, precipitation, and accumulation. Drawing a picture helps illustrate this. Although the students may not master these terms, they can understand what generally happens. Also explain the three phases of water.

Preparation: Find a device that can be used to boil water. A hot plate was suggested in the original lesson, but I used a crock pot which worked just fine. If an ice maker is not available, remember to fill ice trays in advance. The worksheet works best if copied on card stock, so it is helpful to cut the slits for the precipitation strips with a razor blade before class. Also prepare a sample worksheet so for the students to see.

Safety Issues: Boiling water is a safety hazard, as well as the heating device. Be sure to demonstrate proper safety techniques when handling these items, and warn students that they are hot. Make sure that students are not too close to the hot items.

Procedure:
1. Begin the activity by relating the simulated water cycle to the real water cycle. Show the boiling water and steam, and ask the students what the hot plate/crock
pot represents. Explain that it represents the sun heating a body of water, which causes the water to evaporate and turn into steam or water vapor. Show the ice in the metal bowl and explain that this represents a cloud, the source of cool air. Hold the bowl over the boiling water, and watch for drops of water to form on the bottom of the bowl. Ask the students how they think the water vapor has been turned back into liquid. Explain that the cool ice causes condensation. After a few minutes, precipitation will occur as drops of water fall from the bottom of the bowl like rain. Ask the students what the falling drops remind them of.

2. After the demonstration, show the sample Moving Water worksheet and explain how it works. Have the students cut out the precipitation strips. They should also cut along the middle dotted line, but it is not necessary to cut out the cloud and the mountain. Have the students insert the strips into the correct slits and pull in the appropriate direction. They should do this for both the real and simulated water cycles. If the students are having trouble inserting the strips correctly, try to help them by recalling the demonstration. Let them color the worksheet as well.

Possible Questions:
1. What does the hot plate/crock pot do?
2. What does the ice do?
3. How did the liquid water turn into water vapor?
4. How did the water vapor turn back into liquid water?
5. What happens to water after the sun heats it?
6. What happens to water once it is in a cloud?

Assessment: This activity works best in small groups, so assessment can be done verbally by asking questions during the demonstration. The worksheet will also indicate how well the students understand the concepts. Ask them to demonstrate the flow of water using the worksheet.