TRB 4:1 - Investigation 6 - Water on the Move

Summary

Students will play a "Water on the Move" game to deepen their understanding of the water cycle.

Group Size

Small Groups

Materials

- two dice per group
- Worksheet: "Water on the Move" (pdf)
- Worksheet: "Travel Log" (pdf)

Background for Teachers

This activity requires students to have a basic understanding of the following science language and processes:

- Condensation occurs when water vapor in the air turns into liquid water, as on the outside of a cold glass of water.
- Evaporation is the opposite of condensation in that liquid water turns into water vapor. How fast water evaporates depends on the amount of water vapor already in the air (humidity), the temperature, the amount of surface area exposed to the air, and air movement over the surface of the water.
- Groundwater is the water beneath Earth's surface often found in saturated soil and rock. Groundwater supplies wells and springs.
- Water that falls to Earth in the form of rain, snow, hail, or sleet is called precipitation.
- The process of water going from a solid such as snow or ice to vapor gas is sublimation.
- Plants absorb water usually through their roots. This water is eventually evaporated into the atmosphere from the plant surface such as leaf spores through a process called transpiration.
- Water in a gas form is called water vapor.

Intended Learning Outcomes

3. Understand science concepts and principles
4. Communicate effectively using science language and reasoning

Instructional Procedures

Pre-Assessment/Invitation to Learn

Brainstorm with the students different places where water is found on Earth. (You may want them to write them in a journal.) Tell them to be very specific (e.g., water falls, humidity, in the soil, groundwater, on leaves, etc.) Go over the words on the worksheet, "Water on the Move." As these words are defined, tell where the water lists they have brainstormed fit in the vocabulary list.

As a class, fill in the location blanks on the student worksheet below the big picture. Below are the various locations that your class will want to use. Be creative and think of specific locations in your region. For example, use a particular tree species found in your area for number 3, name a lake or reservoir in your region for number 4, etc. Have fun and write specific locations on 2, 3, 4, 5, 6 and 10. Use the general terms listed below for the other locations-- 2: waterfall, 3: tree, 4: lake/puddle, 5: river, 6: snowy mountain, 7: groundwater, 8: cloud, 9: ocean, 10: animal, 11: air, and 12: iceberg.

Instructional Procedures

Divide the class into teams of two, and give each team a pair of dice.

To play this game:

Each player rolls the dice to determine his or her starting location using the Travel Key. This location should be written of #1 of the Travel Log on the worksheet.

Each player then takes his or her turn by rolling the dice to determine the new location. The player then records his new location on his Travel Log and tells this teammate how water can move from the previous location to the new location, in addition to writing a description of the movement. A player should use at least one of the words from the "Words to Use" box.

For example, if the previous location is tree and the next location is air, a player could say that the water in the tree moves to the air through transpiration when the water is evaporated into the atmosphere from the leaves of the tree.

If a player lands on the same location, he or she should roll again until a new location is determined.

The game ends when the Travel Log is completely filled in. Awards may be given as motivation.

Extensions

Fine Arts/Visual Arts-

Have the students get into groups of two. Have them create a three dimensional model of the water cycle by using supplies they can get from school and home. Label all the components listed below. One student explains the role streams play in the water cycle. The other explains the role clouds play in the water cycle. The model must include all components of the water cycle including condensation, evaporation, mountains, oceans, surface runoff, ground water, and precipitation. *(Standard III, Objective 2)*

Homework & Family Connections

Have students explain the water cycle to their families. Use any activities from this unit.

Assessment Plan

Check for the students' understanding of the water cycle by reading what they recorded in their Travel Log and verifying their use of water cycle vocabulary.

Check the students understanding of the water cycle by listening to their explanations of their 3-D water cycle.

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