

Lesson 1

Water Limits

How much water is available for human consumption?
What are five important uses of water?
What can you do to use less water?

GOAL To understand that water is a finite resource and that 1% is available for human consumption.

OBJECTIVES Students will:

- ✓ identify words associated with water
- ✓ chart personal, family, school and community uses of water
- ✓ understand that water is a finite resource to be protected
- ✓ describe the effects of lack of water

MATERIALS listing paper, pencils, 10 gallon container with water, 3 empty 5 gallon containers, clear containers, measuring cups, eyedropper

CORE CURRICULUM CONTENT STANDARDS

- Language Arts 1(2,4)
- Math 1(4), 2(3), 4(1)
- Science 1(2, 3, 7,11), 8(1-8), 9(8), 11(10), 14(8)
- Social Studies 13(1)

VOCABULARY water (hydrologic) cycle, finite, resource

PROCEDURES

1. Students will develop a list of words associated with water and its uses. Students will discuss ways water nourishes (*drink on a hot day*), cleans (*washing hands, clothes*) and destroys (*floods*). Examples will be given if the students do not elicit the responses from their own discussions.
2. Students will answer the following questions:
“How do your bodies use water to survive?”
“How do you use water to play?”
Students will create a list or chart of words. This activity may be conducted collectively as a class, in groups, or individually.
3. Ask students to think of how they used water during the last 24 hours. (*Students may keep a log of activities from the day before as a homework assignment*) Students may list on a piece of paper. (*showering, brushing teeth, washing hands*). Have students walk around schoolyard (this will extend the time frame of the lesson) or think of how their school might use water. Have them list on paper (*watering plants around building, washing floors, water fountains, preparation of lunches*).

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4. In a larger group or as a whole class the students will discuss how their families and community might use water. Each student will add to their existing list (*washing clothes, swimming, watering gardens, irrigating, washing windows, putting out fires*).
5. Consider using a beach ball that is a globe of the Earth. Have the children toss it from person to person and record where their right or left thumb lands. Is it on Water or on land? Tally responses on the chart paper. They will be able to see that the world is mostly made of water.
6. Read the quote: "There is approximately the same amount of water on Earth today as when the Earth was formed. Water is continually recycled in the Earth's hydrologic cycle (*water cycle*). The dinosaurs once drank the same water molecules that you are drinking today!" Ask students if they believe that statement.
7. Discuss the distribution of water in the world (*refer to amounts provided in background information*). Explain to students that even though they are able to drink and have water each day, there is a limited amount for all of us to share.
8. Present a container filled with 5 gallons of water. This container represents all the water on Earth. Explain to students that most (97.2%) of all the water is contained in the oceans. You may wish to use paper clips or another familiar item that you have 100 of. This is salt water and unsuitable for drinking or irrigating crops, etc. Leave 97.2% of the water in the 5 gallon container by pouring out approximately 2 ¼ cups of water. Place the 2 ¼ cups of water in another five gallon clear container or have a student conduct this part of the activity. This amount represents the total amount of fresh water. However, most of this water is frozen in glaciers and ice caps and is not available to us. Place ½ cup into another five gallon clear container. This is what is left for us to use. Explain that part of this water is trapped underground or is polluted and is therefore unsuitable for drinking. That leaves approximately 5 drops of water for us to use. Place 5 drops of water in another container with a dropper. Have students think of all the ways they used water and refer back to their lists. The five drops represent the water available for all those uses.
9. Now that students are aware of how much water is available to them, have them think of how their day would be without water. What could they not do?

EXTENSIONS

- 1) Students may use other items to represent different water sources in lesson one. Using 100 as the beginning number, examples of items that could be counted include tooth-picks, pennies, pebbles, candy pieces, etc.
- 2) Have students think about where their own drinking water comes from. (Refer to background information.) Examples include wells, reservoirs, etc. Can also be a "take home" lesson.
- 3) Read the following statement: "Farmington River Watershed provides 100% of drinking water to 600,000 people in the Greater Hartford area." How would they think or react differently knowing that how they protect or take care of their water and land could affect the water they drink? Have students discuss in groups and present to class.
- 4) Is water a renewable or non-renewable resource? Discuss terms.

RESOURCES

Farmington River Watershed Association, August 2003, *State of the Farmington River Watershed Report*, Farmington River Association, Inc.

Haskin, Kathleen M. Claryville, 1995, *The Ways of the Watersheds: An Educators Guide to the Environmental and Cultural Dynamics of New York City's Water Supplies*, NY: The Frost Valley YMCA.

GLOSSARY

finite - having bounds; limited

resource - something that can be used for support or help

water (hydrologic) cycle - the cycle of evaporation and condensation that controls the distribution of the earth's water as it evaporates from bodies of water, condenses, precipitates, and returns to those bodies of water