

Reading the River, Summer 2006

Preserving Resources: Why Should I Care?

Grade 5

Science

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## Why is water important?

### Objectives:

In this lesson, students will be able to...

- Explain the importance of water
- Analyze their use of water compared to the average Ohioan.

### Program of Studies (OH Standard and Coordinating Benchmark)

- Earth and Space Sciences  
Describe Earth's resources including rocks, soil, water, air, animals and plants and the ways in which they can be conserved.
- Science and Technology  
Describe how technology affects human life.

### Core Content (OH Grade Level Indicators)

Earth and Space Sciences

- Investigate ways Earth's renewable resources (e.g., fresh water, air, wildlife and trees) can be maintained.

Science and Technology

- Investigate positive and negative impacts of human activity and technology on the environment.

### Materials

- Completed water use charts (attached)
- Information regarding water use in gallons
- Background information regarding importance of water (see Definition/Explanation of Concepts).

### Activity Procedure

1. Have students take out their completed water use charts (homework from a previous class period).
2. In their table groups, students should share how many times they completed a water activity for example, how many times they washed their hands.
3. Explain procedure for calculating how many gallons of water they used throughout the day. Post the estimated amount of water used (taken from CIESE web site) on the board for students to refer to.
  - a. Directions for calculating: Multiply the number of times you completed a water activity by the estimated amount of water used.  $A \cdot \text{Gallons} = \text{Number of gallons used}$ . I washed my hands 7 times in a day. About 1 gallon of water is used to wash my hands one time. 7 multiplied by 1 equals 7 so, I used about 7 gallons of water just washing my hands.
4. Students will need to complete all calculations and then find the total gallons of water used in a day.
5. Compare results as a class and discuss the following questions:
  - a. Are you surprised by the amount of water you used each day?
  - b. Only 1 percent of the water on Earth is available for human use. Do you think you are impacting our water supply?

- c. In Ohio, the average person uses 101-150 gallons of water each day. How did you compare?
- d. Do you think we need to worry about how much water we use? Why?
6. Explain to students that we need water to survive, without water we would die. Ask them to list other ways that water is used other than for our survival.
7. Lesson Wrap Up- What did you learn about today? Have students jot down what they learned and turn in their papers. Discuss as a class that water is important because we need it to survive. Without it, we couldn't live and humans can use only 1% of the water on Earth. Tomorrow we will learn more about water as a natural resource and what we need to do to ensure we will have enough clean water for future generations.

### **Definition/Explanation of Concepts**

Awareness is key when teaching about environmental concerns. Many students are not aware of the amount of water they use within a day. Water is a valuable natural resource that is limited in supply. Of Earth's water, only 1% is available for human use. The average American uses approximately 50-200 gallons of water each day. According to the EPA, Ohioans use about 101-150 gallons of water each day. We can conserve water to ensure that future generations have a water supply that is usable.

Water is vital for human survival. We must have fresh water in order to survive. We cannot drink salt water. Over 2/3 of our bodies are water. Our bodies use water for several biological processes. Without clean water, we couldn't survive. More than 2 billion people on earth do not have a safe supply of water. Over use and pollution are major problems for the Earth.

### **Assessment**

1. Monitor students while they analyze their water use charts. Evaluate their ability to calculate their daily water use.
2. Use the 'pull a stick' strategy to allow a variety of students to answer questions during the discussion portion of the lesson. When a student's stick (a Popsicle stick with a student's name on it) is called, they must attempt to answer the question.
3. Collect students writing sample about what they learned from class. Look for the following ideas:
  - Water is necessary for survival; without it we couldn't live.
  - We have a limited supply of water that humans can use. Humans can only use 1% of the water on earth.
  - How to calculate the amount of water that was used each day.

### **References:**

U.S. Geological Survey web site <http://ga.water.usgs.gov/edu/propertyyou.html>

Environmental Protection Agency web site <http://www.epa.gov>

Center for Innovation in Engineering and Science Education web site <http://www.k12science.org/curriculum/drainproj/personalwateruse.html>

Lenntech web site <http://www.lenntech.com/water-trivia-facts.htm>

### Water Use Chart

Name \_\_\_\_\_

Date \_\_\_\_\_

Directions: For one full day from the time you wake up until you go to sleep, tally the number of times you use water for each activity. The last 3 columns will be completed during class – do not write anything in them at home. Bring your chart with tallies to class on \_\_\_\_\_.

Activity	Total Number of Times	Estimated Amount of Water Used (gallons) <small>Information will be given in class</small>	Math Equation <small>Information will be given in class</small>	Total Weekly Water Use (gallons) <small>Will be calculated in class</small>
Washing face				
Washing hands				
Taking a shower				
Taking a bath				
Brushing teeth Water off/Water on		/		
Flushing the toilet				
Getting a drink from faucet				
Washing dishes by hand —no running water				
Washing dishes using dishwasher				
One load of laundry				
Total Weekly Water Use (gallons)				

Teacher Information Needed for Lesson

Activity	Total Number of Times	Estimated Amount of Water Used (gallons) Information will be given in class	Math Equation Information will be given in class	Total Weekly Water Use (gallons) Will be calculated in class
Washing face		1		
Washing hands		1		
Taking a shower		38 Depend on shower head		
Taking a bath		40		
Brushing teeth Water off/Water on		0.25 <hr/>		
Flushing the toilet		2 3 Depends on toilet		
Getting a drink from faucet		0.25		
Washing dishes by hand —no running water		10		
Washing dishes using dishwasher		15		
One load of laundry		30		
Total Weekly Water Use (gallons)				

## Lesson Context

These lessons are part of a larger unit focusing on Earth's resources. In this unit the students will gain an understanding of the importance of using Earth's resources wisely and how that can be accomplished. The students will study non-renewable, renewable and inexhaustible resources found on Earth and will investigate ways to extend or preserve them.

Part 1: Introduction to Earth's resources – a study of renewable, non-renewable and inexhaustible resources.

Lesson 1-Introduction to essential question of the unit, Preserving Resources: Why should I care? Students respond. Introduce performance task.

Lesson 2- Explore Activity: Students determine through logical reasoning if an object is completely used up, replenishes within a lifetime or is never used up. Introduce terms renewable, non-renewable and inexhaustible.

Lesson 3 – Project Learning Tree lesson “Renewable or Not”

Assessment – Quiz

Part 2: Study of Earth's resources and what can be done to preserve them.

Lesson 1 – Reintroduce performance task. This lesson will inform students that we will be studying specific resources and they will be responsible for informing others about these resources and what can be done to preserve them (i.e. water, trees, animals, air, fossil fuels, and bauxite).

Lesson 2 – Reading – Scott Foresman Protecting Earth's Resources

Lesson 3 – Read The Lorax by Dr. Seuss. Follow reading selection with brainstorming ways to reduce, reuse, and recycle. Discuss how the water was polluted in the story.

**Lesson 4 – Why is water important? Water Study – Water Use Charts and discussion on importance of water**

Lesson 5 – Water Study – United Streaming Video (Water Smart: Water as a Natural Resource) Answer True and False Questions then, complete Water Wheel activity.

Lesson 6 – Brain Pop Video and Quiz “Natural Resources”

Lesson 7 – Animals as a resource. Begin Endangered Species Reports

Assessment – Performance Task

Part 3: Energy Resources

Lesson 1- 6 Jigsaw activity on Energy Resources: Research energy source, teach team, plan display boards to inform others, finish boards and display during energy fair where we share our new knowledge of energy resources.

Lesson 7 – Video: Global Warming from Oprah Winfrey Show followed by class discussion.

Assessment – Test - Comprehensive of entire unit.

## Sources For This Unit

Brain Pop. *Natural Resources*. Retrieved October 2005 from [www.brainpop.com](http://www.brainpop.com).

Center for Innovation in Engineering and Science Education web site. Retrieved June 24, 2006 from <http://www.k12science.org/curriculum/drainproj/personalwateruse.html>

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National Forest Foundation. (1997). *Project Learning Tree environmental education activity guide pre K-8 (5<sup>th</sup> ed.)*. Washington, DC: Author.

Scott Foresman Science. (2006). *Chapter 10 Protecting Earth's Resources*.

Seuss, T. G. (1971). *The Lorax*. Random House Children's Books

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Winfrey, O. (2005, October). *Global Warming: 101* [Oprah Winfrey Show Broadcast]. Chicago, IL: Harpo Productions, Inc.