

Title: Water, Water Everywhere

Source: The Water Sourcebook Series, U.S. Environmental Protection Agency

Subject(s): Social Studies, Language Arts, Science

Grade(s): 3-5

Objectives: Students will be able to illustrate the quantity and distribution of water on the earth, recognize the amounts of water used in daily activities, and compare the amounts of water used by different groups such as agriculture and industry.

Summary: The activity begins with a discussion of the relative amount of water on Earth. Student will think about the many different uses of water. Students will then break into groups and work on illustrating a water fact for a page of a “Big Book” about water. As a follow-up students can share their pages with the rest of the class. Students should then think of other water questions and research the answers to the questions they come up with.

Modifications: For more water facts in English and Spanish, visit www.eeweek.org/water_wise/facts.

Standards: S3L2. Students will recognize the effects of pollution and humans on the environment.

S4E3. Students will differentiate between the states of water and how they relate to the water cycle and weather.

SS3E1. The student will describe the four types of productive resources.

ELA3R2. The student acquires and uses grade-level words to communicate effectively.

ELA4R3. ELA5R3. The student understands and acquires new vocabulary and uses it correctly in reading and writing.

WATER, WATER EVERYWHERE!

OBJECTIVES

The student will do the following:

1. Illustrate the quantity and distribution of water on the earth.
2. Recognize the amounts of water used in daily activities such as bathing.
3. Compare the amounts of water used by different groups such as farming and manufacturing.

BACKGROUND INFORMATION

Water is one of our most important resources. We use water to produce food, provide energy, and manufacture and transport goods. Water is also essential for the life of every organism on our planet.

Because water covers three-quarters of the earth's surface, it is easy to think of it as an endless resource. Of all water, more than 97 percent is found in the oceans as salt water. Of the remaining 3 percent that is fresh water, two-thirds is frozen in ice caps, glaciers, and on snowy mountain ranges. Only about one-half of one percent of all the water on the earth is usable fresh water. Of this amount, experts estimate that there is 30 to 50 times more water found in aquifers (underground), than in all the lakes, rivers, and streams on the surface. Most of the water we use (78 percent), however, comes from these surface waters.

We use fresh water for a variety of purposes. About 11 percent is used in urban and rural homes, offices, and hotels. Another 8 percent is used in manufacturing goods and mining. The production of electricity accounts for almost 39 percent of water usage, although using water to cool power plants and to turn turbines in hydroelectric power plants does not consume the water. The largest consumer of water is agriculture, which uses about 42 percent.

As individuals, we use large amounts of water. An average American uses around 150 gallons (over 570 L) a day. We are even composed of water; our bodies are about 75 percent water.

ADVANCE PREPARATION

- A. Gather enough large sheets of paper and art supplies for students in teams of 2 or 3.
- B. Copy teacher sheet "Water Fact Cards" and cut into individual cards. (NOTE: These would be more durable if pasted to 3 x 5 inch [7.5 x 12.5 cm] index cards or construction paper.)

SUBJECTS:

Geography, Social Studies, Language Arts, Science

TIME:

50 minutes

MATERIALS:

large sheets of paper (construction, newsprint, or posterboard)
art supplies
index cards (optional)
paste or glue stick
globe or map of the world
hole punch
ring binders or yarn
teacher sheet (included)
gallon jug of water (optional)

PROCEDURE

I. Setting the stage

- A. Show the class a globe or map of the world.
 - 1. Ask students which there is more of: water or land? (water)
 - 2. Explain that water covers more than three-fourths of the earth's surface.
- B. Instruct the students to think of as many different uses of water as possible in three minutes.
 - 1. Briefly review their answers, noting unique responses.
 - 2. Explain that everyone uses water for a variety of purposes. Today's lesson will illustrate the quantity of water in the world and how much is used for different purposes.

II. Activity

- A. Have the class construct a "Big Book."
 - 1. Divide the students into teams of two or three.
 - 2. Pass out art supplies and large sheets of paper or posterboard.
 - 3. Distribute one "Water Fact" card to each group.
 - 4. Instruct the students to use the information on the card to make an illustrated page for the classroom big book on water facts. Each page should have:
 - a. The fact given on the card
 - b. An illustration of the fact (NOTE: Remind students to think about symbols that would help illustrate their fact. For example, a salt shaker may be a good symbol for salt water, especially if it is filled to the level noted on the card.)
 - c. The names of the illustrators.
 - 5. Monitor and make suggestions to each team as they work.
- B. Upon the teams' completion of the pages, punch three or four holes on the left-hand side and connect them together with loose-leaf rings or yarn.

III. Follow-Up

- A. Allow each group to read and share their page with the class. (NOTE: Provide students with a gallon [4 L] jug of water to compare the amounts given in the book.)
- B. Have the students write other questions about water quantities they think would be interesting to know.

IV. Extensions

- A. Have the students find answers to their water quantity questions from III. B.
- B. Assign groups to design a bulletin board or door covering to present information out of their “Big Book.”
- C. Have the students make charts or graphs of all the different percentages out of the book.
- D. Present copies of the book to other classes or to the school library.

RESOURCES

Debnam, Betty, “Treat Water Well” (from “The Mini-Page” educational activities), Knoxville News-Sentinel, October 30, 1990, p. B6.

Namowitz, S., and N. Spaulding, Earth Science, D.C. Heath and Company, Lexington, Massachusetts, 1989.

Pringle, L., Water: The Next Great Resource Battle, Macmillan Publishing, New York, 1982.

“Water: Essential to Life (1992 Utah’s Young Artist’s Water Education Classroom Calendar),” International Office for Water Education, Utah State University, Logan, Utah.

WATER FACT CARDS

<p>Water Fact Three-fourths of the earth's surface is covered with water.</p>	<p>The largest user of water is agriculture, for growing crops and raising livestock. This uses 42% of our fresh water.</p>
<p>Water Fact 97% of our water is salt water found in the ocean.</p>	<p>Water Fact Our bodies are made of 75% water.</p>
<p>Water Fact While 3% of our water is fresh, 2% is trapped in ice caps, glaciers, and on snowy mountain ranges.</p>	<p>Water Fact It takes 1,400 gallons of water to produce a meal of a burger, fries, and a soft drink.</p>
<p>Water Fact Most of the fresh water we use comes from lakes, rivers, and streams (surface waters).</p>	<p>Water Fact The average American uses 150 gallons of water a day.</p>
<p>Water Fact There is about 40 times more fresh water in the ground than found in rivers, lakes, and streams.</p>	<p>Water Fact A person can use up to 50 gallons of water taking a bath.</p>
<p>Water Fact Homes, hotels, and offices use about 11% of our fresh water.</p>	<p>Water Fact For every inch of rain in a square mile, there will be more than 17 million gallons of water. (For every centimeter of rain in a square kilometer, there will be 10 million liters of water.)</p>
<p>Water Fact 8% of the fresh water we use goes to making goods and mining.</p>	<p>Water Fact A tree is 75% water.</p>
<p>Water Fact 39% of the fresh water we use helps us make electricity. Water Fact</p>	<p>Water Fact If you leave the water running while brushing your teeth, as much as 10 gallons (40 L) of water can go down the drain.</p>
<p>Complete a title page with the following: 1) A catchy title about water facts, 2) An illustration about water, 3) The name of the grade, school, and teacher working on the book.</p>	<p>Title Page Group</p>