

Understanding Water in Your Own Region: Auditing Your Water Use

Grade Level: 5-12

Subject Areas: Mathematics, Earth Science

Duration: 20 minutes of classtime, handout assignment 2 days prior to class

Setting: classroom, home

Skills: calculating, organizing, analyzing information, and applying lessons learned in personal life

Related State Content Benchmark Objectives

- Write and follow procedures in the form of step-by-step instructions, recipes, formulas, flow diagrams, and sketches.
- Describe how people use the environment to meet human needs and wants.

Objectives

Students will be able to:

- calculate the amount of water used in their home
- identify where they use the most water
- determine concrete ways to conserve water

Materials

- one copy of the “Audit Your Water Use” sheet per student
- one copy of “Water Conservation in your Everyday Life” per student

Background

Experiments like this one help illustrate concepts that are essential to understanding the water use in your own region. Water conservation is important for several reasons. In addition to the ecological benefits of water conservation, the more water we conserve, the more we have for other uses and the less money we spend on treatment and treatment facilities. The following survey is designed to increase your student’s awareness of the water they use, help them identify how water is wasted, and to help them conserve water.

The Activity

1. Pass out copies of the “Audit Your Water Use” worksheet to each student. Give them enough time to measure and complete their study at home.
2. Ask all the students to provide you with their water use totals and calculate a class average.
3. Use the wrap-up questions to debrief the activity. Handout copies of the “Water Conservation in your Everyday Life” for students to post at home.
4. This is a great introduction activity before completing the “Global Water Distribution” activity on page 73.

Wrap-up Questions

1. In which category is the most water used?
2. Discuss ways to decrease water use.
Examples:
 - a. Spend less time in the shower
 - b. Take a shower instead of a bath
 - c. Run the clothes washer and dishwasher with full loads
 - d. Turn off the water while brushing your teeth
3. Determine a plan to improve daily use of water and try to implement some parts at school.

Additional Resources

<http://cf.uwex.edu/ces/erc/ey paw/search.cfm>

Educating Young People About Water lists 140 different water-related curricula on all topics ranging from ecosystems to sources of pollution to protection and the role of government. For all age groups.

Audit Your Water Use

Name: _____

A. Bath

- Volume of water used (circle one): *(Use answer in A3)*
1/3 of tub = 57 liters 1/2 of tub = 76 liters 2/3 of tub = 106 liters
- Number of baths taken daily: _____ . *(Use answer in A3)*
- Daily water usage for bathtub: $A1 \times A2 =$ _____ liters per day.**

B. Toilet

- Liters per flush _____ liters. *(Use answer in B3)*
(26 liters per flush, or 13 liters for low-volume models)
- Count the number of times you flush the toilet in one day: _____. *(Use answer in B3)*
- Daily water usage from toilet: $B1 \times B2 =$ _____ liter per day.**

C. Shower

- Average length of shower: _____ minutes. *(Use answer in C3)*
- Flow rate of water used in shower: _____ liters per minute *(Use answer in C3)*
To measure flow rate of water:
 - Adjust the shower's water flow as you would normally.
 - Record the time it takes to collect 4 cups of water using household measuring cups.
4 cups = approximately 1L
 - Convert your measurements to liters per minute:
1L / seconds to get 4 cups of water \times 60 seconds / 1 minute
- Average amount of water used per shower: _____ liters. *(Use answer in C5)*
- Number of showers taken daily: _____ per day. *(Use answer in C5)*
- Daily water use for showers $C3 \times C4 =$ _____ liter per day.**

D. Faucet

- Use the procedure described in the "Shower" section to measure your flow of water from faucets in liters per minute. *(Use answer in D3)*
- Determine the time you spend running water during the day for the following:
Tooth brushing _____ minutes per day
Drinking _____ minutes per day
TOTAL _____ minutes per day *(Use answer in D3)*
- Daily water use for faucet: $D1 \times D2$ (total) = _____ liters per day.**

E. Dishwasher

- Loads done for your whole family each week _____ loads per week.
- Divide E1 by the numbers of members in your family _____. *(Use answer in E3)*
- E2 divided by 7 = _____ loads per day. *(Use answer in E4)*
- Daily water used for Dish washing: $E3 \times 60$ liters per load = _____ liters per day**

F. Clothes washer

- Loads done for your whole family each week: _____ loads per week
- F1 divided by number of members in your family _____. *(Use answer in F3)*
- F2 divided by 7 = _____ loads per day. *(Use answer in F4)*
- Daily water used for clothes washing: = $F2 \times 144$ liters per load = _____ liters per day**

TOTAL DAILY WATER USE = _____ liters per day (A+B+C+D+E+F)



Water Conservation in your Everyday Life



Everything relates to water. Be conscious on a daily basis how important water is in all elements of your life. About 65% of your body is made of water and water even makes up many of your fruits and vegetables. According to the World Health Organization, less than 1% of the world's freshwater, or 0.007% of all the water on Earth, is readily available for human consumption. Another reason not to waste, pollute or misuse the planet's water!



Keep your community clean. Recycle and do not litter. You will actually save water!



Make environmentally smart food choices in your daily life. Eat products that come from agriculture that respects the environment, using less water and fewer pesticides, chemicals, herbicides, and fertilizers than intensive agriculture.



When washing dishes by hand, don't let the water run while rinsing. Fill one sink with wash water and the other with rinse water.



Only run your washing machine and dishwasher when they are full.



Keep a pitcher of water in the refrigerator or in the freezer to keep it cold. This is better than keeping the tap running until the water gets cold.



In many countries the water is of excellent quality and hence there is no need to drink bottled water. Drink water from the tap and save our environment from plastic bottles. If you do buy bottled water, reuse the bottles or buy bigger bottles.



Never throw away water that could be used for something else. When you clean your fish tank, use the water you've drained on your plants. The water is rich in nitrogen and phosphorus, providing you with a free and effective fertilizer.



Take short showers! Before you take your next shower, install a low-flow showerhead. They aren't expensive and can make a huge difference in your water consumption.



Turn off the water while you brush your teeth, shave, etc.



Repair leaky faucets immediately. We're more likely to notice leaky faucets indoors, but don't forget to check outdoor faucets, pipes, and hoses for leaks.



Capture rainwater to water your plants.



Always water your plants during the early morning hours, when temperatures are cooler, to minimize evaporation. Keep in mind that in some families, lawn and garden irrigation represents 50 percent of their total water use.



Place a brick or a milk bottle with water in your toilet tank – this reduces the volume of water used for flushing by 45 liters every day!



Add your own idea here: _____



**Protect the Great Lakes. Fill out a Great Lakes Pledge Card and send it to
Inland Seas Education Association!**



Great Lakes Stewardship Pledge Card

Stewards Name, School, and Age

Description of Pledge



Instructor's Signature

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