

Lesson 3

How Can We Save Water?

Key Idea

Since there is only so much water to go around, we must learn and practice ways to use it efficiently.

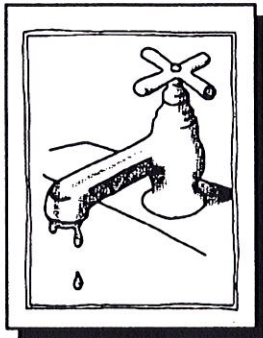
Activity

Students will learn ways to save water at home and school.

Materials

A gallon jug of water
A 5-foot piece of yarn or string for each child
Drawing paper for each child

Procedure



- 1** As the children sit in a circle on the floor, explain: We are going to pretend each of us is a house with people inside. Can you imagine your people, their pets, and their home? How many people are inside you? How many rooms? Which rooms have water outlets? What kind?
- 2** Place a gallon jug in the center of the circle. Run a piece of yarn from the container to each child. Explain: We are going to pretend that the gallon jug is our town's water supply for one year. Imagine that the pieces of yarn are water pipes to your house. Imagine the different outlets in your "house."
 - Which one might use the most water? (toilet)
 - Which outlet is most apt to waste it? (toilet or leaky faucet)
- 3** With the children's help make a chalkboard list of all the ways you use and save water in your "house." A list of household water consumption activities is enclosed.
- 4** Encourage the children to practice water conservation. Here are a few "starter" ideas:

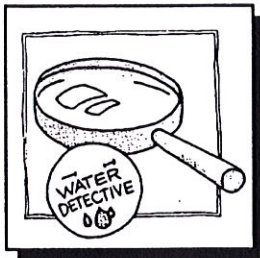
Water Consumption

(based on averages of 1 gallon/minute from the tap;
7 gallons per minute from the shower)

Activity	Conventional Use	Water-Thrifty Use	Your Use
Brushing Teeth	2 or more gallons (tap running)	¼ gallon or less (tap off; use glass)	
Shaving	20 gallons (tap running)	1 gallon or less (fill sink)	
Showering	50 gallons (conventional showerhead, 5 gallons/minute; 10-minute shower)	12.5 gallons (water- saving showerhead, 2.5 gallons/minute; 5-minute shower)	
Bathing	36 gallons (full tub)	18 gallons (half-full tub)	
Washing Hands	2 gallons (tap running)	1 gallon (fill basin)	
Flushing Toilet	3.5 - 5 gallons/flush (conventional toilet)	1.6 gallons/flush (ultra-low- consumption toilet)	Use tank displacement; 4 gallons/flush
Washing Dishes by Hand	30 gallons (tap running; 3.5 gallons/minute, conventional faucet)	5 gallons (wash and rinse in filled sink or dishpan)	
Washing Dishes by Machine	16 gallons/load (full or pot-scrubber cycle; partially loaded)	9 gallons/load (light wash or short cycle; fully loaded)	
Washing Clothes	35 gallons/load (highest water level; partially loaded)	25 gallons/load (lowest water level adjusted to size of load)	

Procedure (cont.)

- a *Brushing teeth***
Use water only to wet the brush and for rinsing. Don't let the water run while brushing.
- b *Bathing***
Use a timer for a short shower.
- c *Toilet***
Flush only as required. (Try placing a one liter plastic container filled with small stones in the tank to displace water. Do not reduce the volume of water so much that you must flush twice to clear the bowl. The latter is not water efficient!)
- d *Tub Bath***
Use no more water than actually needed.
- e *Leaky Faucet***
Tighten fittings; replace washer.
- f *Hand Laundry***
Do not fill the sink or tub in excess of what is necessary for rinsing. (Don't use running water.)
- g *Car Washing***
Use bucket and sponge; hose only to rinse. Make sure the hose has a shut-off valve so that you use the water only when you need it.
- h *Yard***
Don't water the lawn in the heat of the day. (Decrease evaporation.) Water only as much as needed. Don't water sidewalks and driveways.



- 5** From the list on the board, have the children choose a water saving idea for a water poster to take home. Some of the children may choose a school water saving idea for a poster (e.g., person fixing a leaky faucet).
- 6** After discussing ways to save water, pair up the children to act out a water use. One partner is to show water saving, the other water wasting. The class tries to guess which is which.

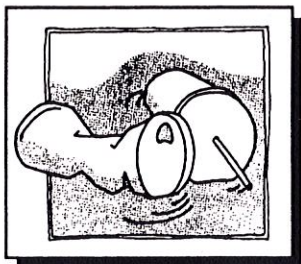
Procedure
(cont.)

7 Ask: How can you be a water "detective"?

Encourage the children to find water leaks at school and at home. For example, a few drops of food coloring in the toilet tank will show up in the bowl if the toilet is leaky. Water "detectives" can listen and look for dripping faucets. Collect and measure the water loss overnight and report to adults. Make water detective badges and give each student a badge to wear for one day.

Extension

1 Students will understand that the quality of water is important.



Ask: How can we reclaim and reuse water?

Read aloud: "Let's Stop Water Pollution" by Michael Chester, 1969, Putnam, or a similar picture storybook.

If available, books on water treatment and pollution could prepare children for the valuable experience of visiting a local water treatment plant. Explain: Water treatment may involve local water purification and/or water recycling for reuse in lawn watering, play fields, parks, golf courses, and industry.

Water coming into homes and schools must be purified. People responsible for our water supplies are constantly checking to be sure the water is not contaminated before it reaches us.

Water going out of school and home drains may be reused for non-human consumption. Less extensive treatment is needed for water to be used for non-human consumption than water to be used for human consumption.

In either case, the first step is clearing the water of some pollution by filtering. Ask:

- What is pollution?
- How did we pollute the water we used for painting when we cleaned our brushes?

Extension (cont.)

- How else do we pollute water at school and at home? (by washing, bathing, using the toilet)
- When you and your family have gone swimming or picnicking beside a stream or lake, what kind of water pollution have you seen? (empty cans, trash, picnic wastes, leftover food, etc.)
- If you have ever been in a boat or on a ship, have you seen people pollute the water by dumping or dropping things overboard?

2 Students will understand how water is filtered and reused.

Ask: How could we filter some good water from water polluted with paint, mud, or "junk"? Give the children some background on sewage treatment plants before proceeding with this activity:

In a sewage treatment plant, dirty (polluted) water may go through the following steps: In the primary settling tank, some floating material and most heavier solids are removed. Next, the water goes to the aeration tank where it is sprayed into the air to remove tiny invisible organisms and toxic gases. Next, carbon filters remove pollutants such as pesticides. The now clear water moves to a chamber containing chlorine gas. (The children will recall the strong odor and cautions when household Clorox is used.) Even after all of these steps, water is considered ready for reuse, but not ready or safe for drinking. Its uses are limited to those that will not result in human consumption - such as watering parks or creating riparian (vegetated watercourse) areas for wildlife.

Materials needed: quart of water, empty quart jar, medium or large funnel, 1/2 cup sand, wad of cotton (absorbent)

After the children have mixed paint or mud in the quart of water to pollute it, they can filter and clear it as follows:

Extension
(cont.)

Place a wad of cotton in the bottom of the funnel. Cover the cotton with an inch of sand. Set the funnel in the empty jar and gently pour in the "dirty" water. Filtering is the first step to cleaning water for reuse.

To continue your students' study of water filtration, review the "Taking the Swamp Out of Swamp Water" Activity in Book Two. To continue their study of conservation and water consumption, review "Who Uses H₂O?", "Drought Days" and "Water Down the Drain" activities also in Book Two.