Water Inside and Out

Objective

Students will understand the finite nature of water in the water cycle and learn ways to use water efficiently at home.

Curriculum Focus

Language Arts
Science
Social Studies

Materials (per team or for demonstration)

- Copies of "The Green Patrol" and "Get a Load of This"

Key Vocabulary

Efficiency
Evaporation
Condensation
Precipitation
Hydrologic cycle

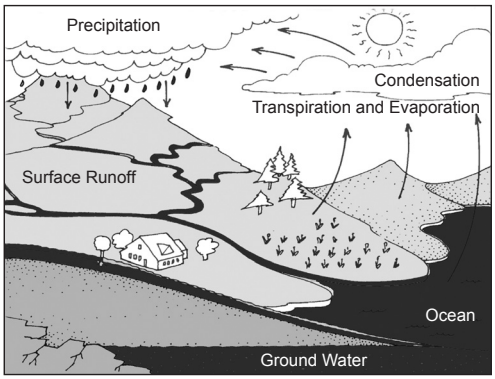
Next Generation Science Correlations

Science
4-ESS3 - 1
4-ETS1 - 2
5-ESS2 - 1
5-ESS3 - 1
5-ETS1 - 2
MS-ESS3 - 3

Introduction

Water moves continuously between the sky and earth. Moisture falls, evaporates, rises, then condenses and falls again in the form of precipitation. The water cycle, or hydrologic cycle, is a marvelous phenomenon of nature. You are drinking, bathing, swimming and making snowballs from the same water Columbus sailed to America on and the same water dinosaurs drank.

Water is one of our most valuable resources. We need it to stay alive, to produce our food, to keep us clean and to do many other things. We want to be wise stewards of such a vital resource by keeping our water supply clean and using it wisely. There are many easy things we can do to use water more efficiently at home.



Procedure

1. Discuss with students the ways they keep their yards beautiful. Do they prune their bushes and trees? Do they plant flowers? All of these things are important, but if they do not water the plants, all of the landscaping in their yards will die.
2. Pass out "The Green Patrol." Have each student take the activity home and complete it with their family. Discuss their findings in class.
3. Water can also be wasted in the kitchen and laundry room. Pass out "Get a Load of This." Have students complete the activity and then discuss their findings in class.

Discussion

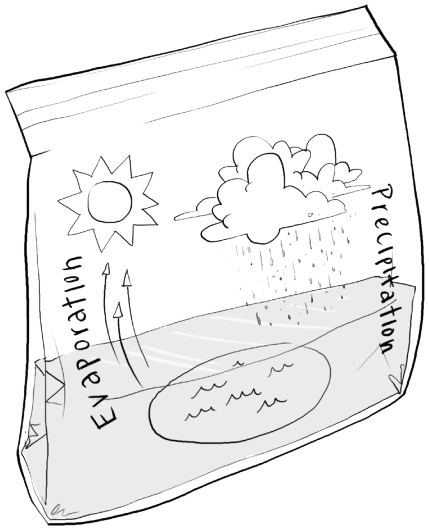
List the changes or adjustments that the students have made concerning their water use.

To Know and Do More

Have students create their own mini water cycle in a quart sized bag.

Draw and label the major processes of the water cycle: precipitation, condensation, evaporation and transpiration. Pour 2 ounces of water (60mL) into the bag. Mark the water line using a permanent marker. Tightly seal the bag and tape it to a wall or window in a sunny, hot area.

Observe the water level for 3 to 5 days and record how energy transforms water in the water cycle. Ask students to hypothesize what will happen to the water level in the bag over time.



Student Sheet: The Green Patrol

In the summer, how is most household water used? Do you think it is for:

a. Washing clothes
b. Watering the lawn
c. Washing the dishes

If you guessed "b" you are right! During the summer, most household water is used to keep the grass green and our plants growing. The trouble is we often use more water than necessary! This is a problem when we do not have enough water. Wasting water also wastes energy because it takes energy to clean, transport and heat water.

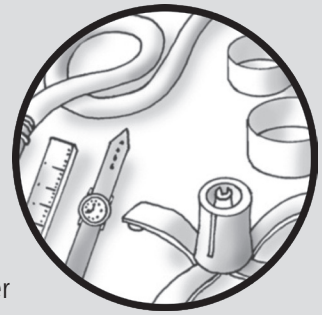
Water-saving Tips in the Yard

- Water your lawn early in the morning or late in the evening to avoid loss of water due to evaporation.
- Have your parents set the mower blades at a 2 to 3 inch (5 to 8 cm) height. The ground beneath taller grass does not dry out as fast as the ground beneath shorter grass.
- Plant native trees and shrubs that do not require a lot of water and need a minimal amount of care.
- Spread fine mulch over your flower beds to help keep the ground moist.

Here is an interesting way to determine the length of time you need to water your lawn:

You will need:

- A hose
- Three short cans (tuna or pet food)
- A ruler
- A sprinkler
- A watch or timer



1. Set the hose and sprinkler in the yard, then set the cans around the sprinkler. Set one close to it, one far away and the third at a medium distance.
2. Now, turn the sprinkler on and note the time. Every few minutes, use the ruler to measure how much water is in each can. When a can fills with an inch (2.5 cm) of water, note the time. Write down how long it takes for each can to fill with an inch (2.5 cm) of water.
3. Add the measured times together and divide by three to get an average. That average time is how long you need to water your lawn each week.

4. Discuss your findings with your parents. What do your results mean for your home?

Student Sheet: Get a Load of This

Take the quiz to see how your family could save loads of water and energy!

Do you wash full loads of dishes or clothes? Y N

Do you use shorter cycles with the dishwasher, clothes washer and dryer? Y N

Do you use the air dry setting on your dishwasher or hang laundry to dry? Y N

When hand washing dishes, do you not let the water run? Y N

When shopping for fixtures and appliances that use water, do you look for those that are efficient? Y N

Do you wash clothes in cold water when possible to save the energy that heats water? Y N

Do you clean the lint filter on your clothes drier after each load? Y N

Total Points _____

(Score 5 points for each Yes)

How did you score?

30 and above: Dishwasher dynamo!

25 to 30: You have room to save.

20 and below: Keep trying!

Did you know that water leaks in your home can waste enough water to fill a backyard swimming pool in just one year? Fixing these leaks can save your family more than 10 percent on water bills. Let's go on a leak hunt!

- Walk through your home listening for drips. They usually mean leaks.
- If you think you hear a leak, ask your parents to help you find the water meter. The numbers in the box represent gallons or cubic feet of water used in your home. Look at this number before a time when you will not be using any water. At least two hours later, check the number again. If it has changed, you probably have a leak somewhere in your home.