

All the Water in the World

A lesson from the New Jersey Agricultural Society Learning Through Gardening program

OVERVIEW: This simple activity will give your students a striking picture of how little water on Earth is available for humans, animals, and plants to use. Get your students talking about why it's important to conserve the Earth's water and how they can help.

OBJECTIVES: The student will be able to:

- Explain why even though almost three-quarters of Earth is covered with water, a very small amount of this water can be used by people, plants, and animals.
- Describe ways people can conserve water on Earth.

GRADES: 1-5

MATERIALS:

Globe or world map
1 gallon water container
Blue food coloring (*optional*)
1 tablespoon measuring spoon
3 clear plastic cups
Cotton ball
Eye dropper
Water labels (included)
Chalkboard or whiteboard
Water



PREPARATION:

Fill the gallon container with water and add blue food coloring if desired. (The food coloring will make the water more visible.) Cut out the water labels and fold them into 'tents' so they stand up on the table. (*You can laminate them for future use.*) Lay out all materials on a table visible to everyone.

PROCEDURE:

Show students a globe or world map. Ask them how much of the surface of the earth is covered with water. (The answer is approximately 72%. or almost three-quarters.) Ask students if we can use all the water in the world for drinking, cooking, cleaning, bathing, and all our other needs. Ask: How much of the water on the earth is available to people, animals, and plants?

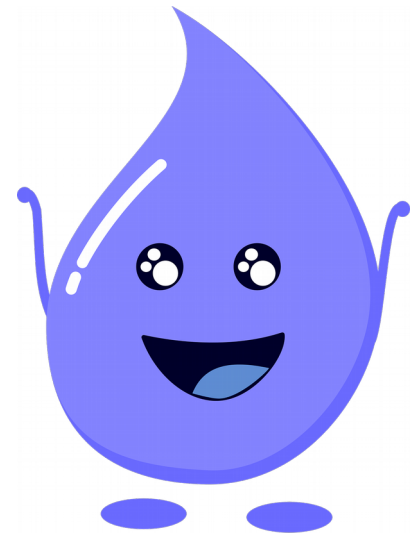
Hold up the gallon jug filled with water. Explain that the water in the gallon container is a model to represent all the water on Earth.

Use the eye dropper to take one drop of water out of the gallon. Put the drop onto the cotton ball, which represents the atmosphere (water in clouds). This is 1/1000 of 1% of the total (a very tiny amount). Label the cotton ball (atmosphere).

Show how much water is potentially available for humans to use by taking 7 tablespoons (3.2 oz.) out of the gallon of water and placing them in a plastic cup. The 7 tablespoons represent all the 2.5% of fresh water on the earth, while the remaining water in the jug (125 oz.) represents the 97.5% of salt water in the oceans. Label the gallon container *Oceans* and the plastic cup *Fresh Water*

Take 5 tablespoons out of the cup labeled *Fresh Water* and place them in a second plastic cup. This is the amount of all fresh water on Earth - 79% - that is frozen in polar ice caps and glaciers. Label the cup *Glaciers/Ice Caps*.

The remaining 2 tablespoons in the *Fresh Water* cup represent groundwater and surface water on the planet. Use the eye dropper to put 2 drops into the last plastic cup. This is the amount of fresh water found in lakes, rivers, and streams. Label the cup *Lakes and Rivers*. Show the students the two drops of water in the *Lakes and River* cup (the surface fresh water). This is all of the fresh water that is readily available to people on Earth.



Cover the label *Fresh Water* with the label *Groundwater*. Hold up the cup representing groundwater. Explain to students that this is the amount of groundwater available to people on Earth. Groundwater is water that is trapped underground and must be pumped up using wells. In dry areas of the world where there is little surface water, people must rely exclusively on groundwater.

For older students, write the information in the table below on a chalkboard or whiteboard to emphasize the limited fresh water available.

<u>Amount of Water on Earth</u>		<u>Amount of Fresh Water on Earth</u>	
Oceans	97.5%	Glaciers / Polar Ice Caps	79%
Fresh Water	2.5%	Groundwater	20%
Atmosphere	0.001%	Lakes, Rivers, Streams	1%

Divide students into small groups of four or five and ask them to discuss and list ways to preserve the limited amount of fresh water in the ground and on the surface of Earth.

EVALUATION:

Younger students draw a picture showing ways people can conserve water.

Students make posters to display around the school on the importance of water conservation.

Students write sentences, a paragraph, or essay explaining how little fresh water is available on Earth for people, plants, and animals to use, and include ideas about how to conserve water.

EXTENSIONS:

Students research ways in which countries around the world are attempting to conserve water.

Students write a piece for the school newsletter or website suggesting ways students and staff can conserve water at school and ways families can conserve water at home.

New Jersey Learning Standards

Science: 1:LS1A 2:ESS2.C 3:LS2.C, LS4.C 4:ESS2.A
5:ESS2.C, ESS3.C

English Language Arts: 1:W.1.2,7 2:W.2.2,4,8 3:W.3.2.A-D, W.3.4,8
4:W.4.2.A-E, W.4.4,8 5: W.5.2.A-E; W.5.4,8

ATMOSPHERE

GLACIERS/
ICE CAPS

GROUND
WATER

LAKES/
RIVERS

OCEANS

FRESH
WATER

