

How Much H₂O?

Post-Visit Lesson Plan

Overview

Investigate how water impacts your daily life and how you impact water on this planet, Earth's most precious resource. After a visit to the Museum of Natural and Cultural History to explore the Smithsonian's *H₂O Today* exhibit.

Objectives

Students will:

- Learn about the relationship between water and human activity
- Have a better understanding of the role water plays in the production of food and other resources.
- Have a chance to review what they learned at their visit to the museum.

Vocabulary

- **Water:** the clear liquid that has no color, taste, or smell, that falls from clouds as rain, that forms streams, lakes, and seas, and that is used for drinking, washing, etc.
- **Environment:** the surroundings or conditions in which a person, animal, or plant lives or operates.
- **Scientist:** a person who is studying or has expert knowledge of one or more of the natural or physical sciences.

Background Information

Water is a limited resource. The water we use today has existed on the planet for thousands of years! It gets recycled through the water cycle and because of that it is a limited resource.

Everything requires water. Most people in the United States use at least 50 gallons of water per day. That includes only direct water uses, such as flushing the toilet, drinking water, showering, bathing, washing dishes, and watering the lawn. This number does not include water needed to make the energy we use or the clothes we wear. It does not account for the water that goes into the food we eat and the paper we write on. For example, when we produce eggs, not only do the chickens that lay the eggs need water to drink, water is also needed to grow the food they eat. To make a cotton shirt, we need water to grow the cotton, and also for the process to make it into fabric. These are

Subject

Science & Math



Grade

3rd – 8th

Time

30 – 45 minutes

Materials

- Gallon milk jug (life-size photo or actual item)
- Resource cards
- Worksheets
- Pencils
- Calculators (optional)

Set Up

Worksheets, pencils, and calculators, on each table. Resource cards and milk jug staged off to the side.

Standards

NGSS:

- 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- 5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

examples of indirect uses of water. These water uses occur without even knowing about them. But by using products that contain or require water, we are using water indirectly. If we added in all those indirect uses, most people in the United States use about 370 gallons of water per person per day.

Activity

Intro: Ask the students “What is water?” “What do you know about water?” “What do you remember about water from our visit to the museum?” Discuss what water is used for. Write their answers up on the board.

Tell the students they will be scientists today. What is that? They will be learning about water and the impact humans have on it.

Introduce activity by telling students that most everything we use and eat every day takes a certain amount of water to **produce**. Give them the example of one egg takes 50 gallons of water. Explain that they do not need 50 gallons of water to eat an egg, but the farmer that produced the egg had to use that much water to feed the chickens.

Show students what one gallon looks like (or talk about a gallon of milk from the store). Lead a quick discussion with students about what that means to use 50 gallons to **produce/consume** something – where is the 50 gallons going?

Tell the students they have a budget of 400 gallons of water to “spend” on items they typically use in a day. Why a water budget? Because water is a limited resource!

- Students will need to pick what products or activities they consume in one day.
- Have students work alone or in pairs to select what they use in a day from the cards. Then have them write down which items they picked and how much water it takes to produce it.
- Have them add up how much water they used. If they go over their budget have them brainstorm ways they might be able to lower their total number of gallons used (i.e. take a shower instead of a bath).

At the end have the students share out what they discovered about their water uses and any other things they found interesting. Suggested questions for the discussion

- Were there any surprises in how much water it takes to produce things?
- How can you make an impact on the environment through your use of water?
- What jobs can you have in the future that would help you make a change in the world (like save water)?
- What can you do at home or in your lifestyle to reduce your water usage?
- How might your water use habits change if you had to carry all the water you use into your home?

Extension Ideas

- Have the students graph their results to see how much water the entire class uses on a typical day.
- Have the students calculate the average number of gallons used per student in the class.
- Have the students convert the number of gallons into liters or another unit of measurement.

Resources

USGS “Water Content of Things”:

<https://water.usgs.gov/edu/activity-watercontent.php>

Water Education Foundation:

<http://www.watereducation.org/post/food-facts-how-much-water-does-it-take-produce>