



SEDONA RECYCLES

KEEPING THE RED ROCKS GREEN SINCE 1989

Direct and Virtual Water Footprint

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Overview

Less than 1% of all the water on Earth is available for human consumption so it is necessary to conserve it. In this lesson, students check their direct water use from faucets, baths, etc., as well as their indirect water use from the products and food they buy. They learn how to use a water footprint calculator and think about ways to reduce their water usage.

Objectives

- Understand that water conservation extends beyond the direct use from faucets; there is also indirect or “virtual” water use.
- Learn what a water footprint is and how to check yours.
- Explore how much water is required to create everyday commodities.
- Compare what commodities require more water and strategize ways to reduce this consumption.

Grade Level: 4-8

Suggested Time: 1 hour

Multimedia Resources

- <http://environment.nationalgeographic.com/environment/freshwater/change-the-course/water-footprint-calculator/>
- <http://graphics.latimes.com/food-water-footprint/>
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Materials

- Computer with internet connection that feeds to a large screen.
- “How Much Water Do I Need?” PowerPoint (Note: this can be printed and used as a hands-on matching game. It works well in 5 stations according to category and rotating groups of students.)

- http://www.bu.edu/gk12/llene/Human_Effects_on_the_Environment/wateruse.pdf (optional worksheet)

Before the Lesson

- Have the water footprint calculator ready: <http://www.watercalculator.org>
- Have the PowerPoint ready, available at sedonarecycles.org.

The Lesson

Part I: How Much Water Do We Really Use?

1. Tell students that you would like them to think about the answer to this question: How many gallons of water per day does it take to support your lifestyle?
2. Is there a way you could add up all the water you use?
3. Make a list (either on the worksheet or in your head) of all the places you use water and make a guess how many gallons in a day it might add up to.
4. Trying to measure all the water from our activities may be difficult so we are going to use a tool called a water calculator that will help us estimate our water use.
5. Pull up the Water Calculator on the screen and choose a volunteer to give answers for the Water Calculator. Remind students everyone is different and there is no laughing or criticizing the volunteer's answers.
6. Was the water per day use higher or lower than what you estimated?

Part II: How Much Water is Needed to Make...?

1. Name some things we use water for: (cooking, cleaning, washing, drinking)
2. This is water use that we can see.
3. How many have a vegetable garden at home?
4. Do some plants like more water than others?
5. That's water use you can see as well, but what if you bought all of your vegetables at the store? You can't see the water use, it is now virtual.

Part III: Explain the "How Much Water do I Need?" PowerPoint

1. This is a guessing game to explore our virtual water use. Look at each picture and try to guess how many gallons of water it takes to produce the item from start to finish. The answer is on the following slide.
2. The products are divided into 5 categories: plant based food, animal based food, electronics, retail items, and recyclables. Start the PP. (Note: the answers were taken from a variety of sources and are estimates only.)

Factors include water used for production, shipping, storage, and packaging.)

3. Plan how to reduce your virtual water use.
 - a. Was there a big difference in how much water each item required to make?
 - b. What categories seemed to need the most water?
 - c. Divide the class into small groups to brainstorm some changes they and their families can make to reduce their virtual water footprint. Then ask each group to share their top three ideas with the class. Examples: eating fewer animal products, not wasting food, saving leftovers for later, not updating electronics as often, buying clothes from second hand stores, recycling.

Check for Understanding

- Who can explain the importance of conserving water?
- What does your water footprint mean?
- What is virtual water use?
- Can someone describe the difference between direct and indirect water use?
- How do eating habits affect water use?
- How does consumerism affect water use?