

A Drop in the Bucket

GRADE LEVEL:
2-8

SUBJECT AREAS:
Science

DURATION:
15-20 minutes

SETTING:
Classroom
Outdoors

**LINK TO THE UTAH
CORE CURRICULUM:**
Science –

4th Grade:
Standard 1



PURPOSE: To demonstrate the sources of freshwater and just how little drinking water we have on earth.

SUMMARY: Through a visual presentation, the students will learn the sources of freshwater, and the relative ratios of these water sources on the earth.

BACKGROUND: Approximately 72% of the earth is covered with water. Sources of water are the oceans, icecaps and glaciers, groundwater, freshwater lakes, inland seas and salt lakes, the atmosphere and rivers. In this activity, a 5 gallon bucket is used to represent all the water on the earth. See the table below for the percentage of each water source in relation to the total amount, and the appropriate measurement for each source.

WATER SOURCE	% OF THE TOTAL AMOUNT	MEASUREMENT
Oceans	97.2	All water left in bucket
Icecaps/Glaciers	2.0	1 cup
Groundwater	0.62	1/3 cup
Freshwater Lakes	0.009	1/8 teaspoon
Inland Seas/Salt Lakes	0.008	1/8 teaspoon
Atmosphere	0.001	One Drop
Rivers	0.0001	One Flick

The percentage of usable freshwater is reduced by pollution and contamination. Therefore, the actual amount of water that is useable by humans is very small (approximately 0.00003 percent).

MATERIALS:

- Map of world or globe
- 5 gallon water container
- Measuring cups
- Eye Dropper
- 5 gallons of water
- Small clear container

PROCEDURE:

1. Show the students the map of the world or the globe. Ask them what the color blue represents (water). Ask them what

percentage of the globe/earth is covered in water (72%). Is it all useable by humans?

2. Show the students the five gallons of water in the container. Explain that the five gallons is going to represent all the water on the earth.

3. Ask the students to think about the different places that we find water. In what area do we find the majority of the water on earth (oceans, 97.2%)? Tell them that because the majority of the water is in the ocean, that we will leave that water in the bucket. Tell the students that you will be taking all the water out of the bucket that is from a source other than the ocean.

4. Ask the students to tell you the different areas/sources in which we find water (rivers, glaciers, atmosphere, etc.). As they give you answers, remove the correct amount of water for the area (refer to the chart in the background section), and place it into the small clear container.

5. After you have removed all the different water sources (other than oceans), ask the students if all the water you have removed is usable by humans.

6. Discuss the sources, and put the water back into the bucket with the oceans if it is not useable by humans (icecaps/glaciers, some of the groundwater, inland seas/salt lakes and the atmosphere).

7. Show the students the small amount of water that is left for humans to use.

EXTENSIONS:

- Have the students consider how fragile the freshwater supply is here on earth.
- Ask the students if we can make more water. Discuss the water cycle.
- Talk about how pollutants or contaminants would affect our water supply.

WRAP-UP: Review the sources of freshwater on the earth, and how little water is available for human use. Discuss ways students can conserve water in their homes, schools, and communities.

Adapted from Activity D-1:
Sources of Drinking Water in
the manual Water
Conservation and Nonpoint
Source Pollution by Dr. Kitt
Farrell-Poe.