



## **VIRTUAL Water Drop Watchers Curriculum**

**GRADE:** 3

**TIME:** 45-60 minutes

**SETTING:** Virtual

### **PURPOSE:**

Learning how much freshwater is available on Earth and how it is commonly used, we can understand how to reduce our personal water use by using water more efficiently.

### **OBJECTIVES:**

- Students will estimate how much of the earth is covered with water.
- Students will state different places where water can be found on planet earth.
- Students will state land areas where water is abundant and where it is scarce.
- Students will state how much fresh water is available on earth.
- Students will state four methods for conserving water / reducing water use at home.

### **BACKGROUND:**

Earth is often referred to as “the blue planet,” because, when viewed from space, you can see that most of the planet consists of water. Earth is made up of approximately 70% water, most of which is found in oceans that are salt rich. After oceans, the next most common place water is found is glaciers and ice, followed by groundwater and then fresh surface water (lakes, ponds, rivers, etc). Water is essential to all life on our planet and many species – humans included – depend on clean, fresh water for survival. Unfortunately, fresh water is scarce and it is distributed unevenly around the globe; some regions are hot, dry deserts while others are damp and lush with vegetation. Even in water-rich environments, it is important to conserve water so there is enough clean water to meet the needs of humans and wildlife alike.

### **ACKNOWLEDGEMENTS:**

The activities in this program combine elements adapted from the following lesson plans published in *Project WET Curriculum and Activity Guide, Generation 2.0* (2011): "Blue Planet" (page 125); "Incredible Journey" (page 155); "A Drop in the Bucket" (page 257); and "My Water Footprint" (page 441).

### **CURRICULUM CONNECTIONS**

#### **Next Generation Science Standards (NGSS)**

- 3-ESS2-2. Weather and Climate. “Obtain and combine information to describe climates in different regions of the world.”
- 3-ESS3-1. Earth and Human Activity. “Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.”
- 3-5-ETS1-2. Engineering Design. “Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.”

### **Common Core - Mathematics**

- 3.MD.A.2 “Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.”

### **CLOSURE/ASSESSMENT:**

- Students can name at least at least four places that water is found on earth.
- Students can explain that water is not distributed evenly on earth, and that freshwater is the least abundant water resource.
- Students can describe different ways they use water every day, and explain that some things use a lot more water than others.
- Students can brainstorm ways to reduce their daily water use. Students may be able to calculate how much water they can save each day with the choices they make.

## Part 1 - The Blue Planet

**Time:** 15 minutes

**Objective:** Students will estimate how much of the earth is covered with water. Students will state different places where water can be found on planet earth. Students will state land areas where water is abundant and where it is scarce.

**Weblinks:**

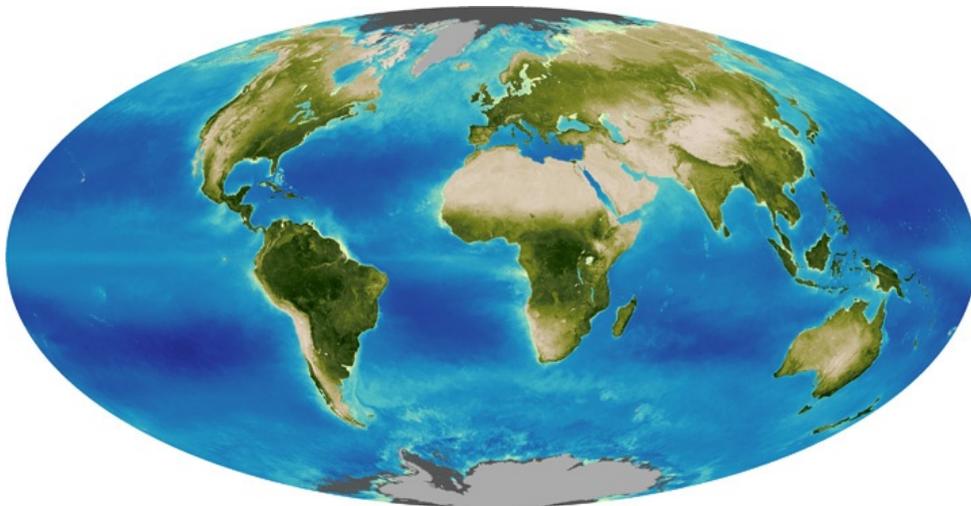
- Ball Toss Video: <https://youtu.be/R3HQord1GQ8>
- [Online Spin Globe](#) (select terrain globe)

**Materials:** N/A

**Overview:** In this part of the lesson, students will watch the video of a beach ball toss to learn how much of our planet is covered in water. They will then use an online spinning globe to replicate the ball toss game.

**The Activity:**

1. Show the ball toss video. The results of the ball toss to show the planet is covered with more water than land (~70% water).
2. Share your screen to show the spinning globe (select the "terrain" globe). Use the cursor to spin the globe showing the north and south poles. Ask the students to state different places where water can be found on earth that you can see on a globe (ocean, river, lake, glacier).
3. Introduce the concept that most of our water is located in the oceans, followed by ice caps (glaciers), and then lakes, rivers, and streams.



**Water = 71%**

**Land = 29%**

## Part 2 - The Incredible Journey

**Time:** 15 minutes

**Objective:** Students will state different places where water can be found on planet earth.

### **Materials:**

The teacher should provide these materials to the students prior to the class.

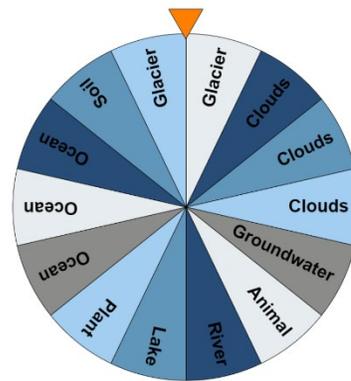
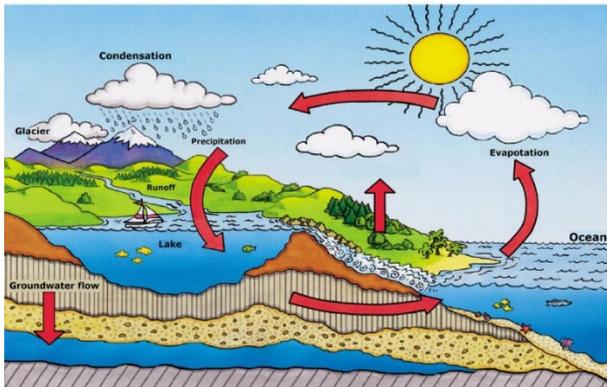
1. One black and white [Water Cycle Worksheet](#) for each student ([optional: answer key](#))
2. One colored marker/crayon for each student

**Online Link:** [WaterDropSpinner](#)

**Overview:** In this part of the activity, students draw the path of the water drop as it makes its way around the planet - moving between different places where water can be found.

### **The Activity:**

1. Ask the students to look at their Water Cycle Worksheet (hold your worksheet up to the camera) and identify various places water can be found: oceans, lakes, streams, groundwater, soil, glaciers, clouds, plants, and animals. Instruct the students label each place water can be found using the word bank on the worksheet. Tell the class to imagine a droplet of water and explain that the water drop is about to go on an “incredible journey” around the planet.



2. Share your screen with students and use the online spinner to begin the journey: [WaterDropSpinner](#). (Note that ocean, cloud, and glacier are weighted to demonstrate that a water drop can get “stuck” in these locations since they are so vast). *Tip: Once the spinner is in view, click “Ctrl +” to expand the view so the spinner takes up the whole screen.*
3. Instruct the students draw an X for the water droplet’s starting point (demonstrate with your own worksheet). Continue to spin the spinner (about 10 times) while the students follow along by tracking the journey of the waterdrop on their worksheets with a series of numbers and arrows.
4. Ask students to make observations about the journey. Where there any surprises? Did the student get stuck in the ocean the entire time? Or stuck in the glacier? Ask students to share ideas about why that might be; make connections back to the ball toss and the distribution of water around the planet. If time allows, briefly discuss the how water would move from one place to another (precipitation, condensation, evaporation, etc).

## Part 3 - A Drop in the Bucket

**Time:** 10 minutes

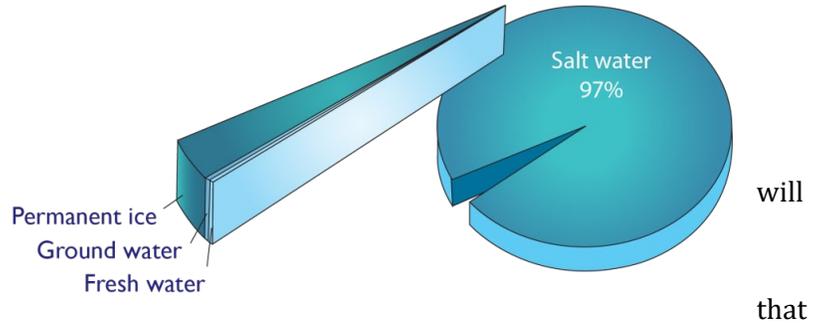
**Objectives:** Students will state different places where water can be found on planet earth. Students will state how much fresh water is available on earth.

**Materials:** N/A

**Drop in the Bucket Video:**

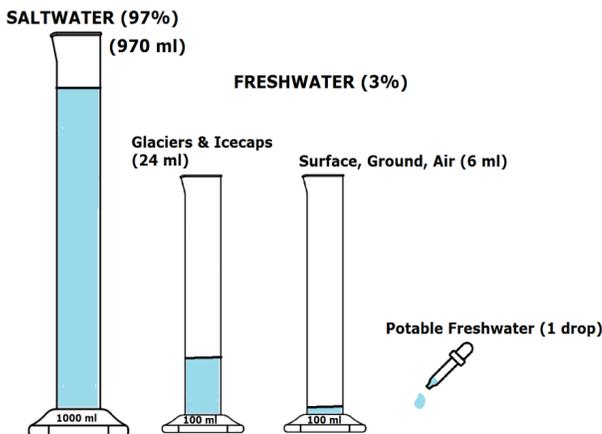
[https://youtu.be/qN071wg\\_FZE](https://youtu.be/qN071wg_FZE)

**Overview:** In this part of the activity, students watch a video to give them a visual of where water is found on the planet and how freshwater makes up a very small percentage of water.



**The Activity:**

1. Ask students where most of our planet's water is found. 97% of our water is located in the oceans (as observed in the ball toss and water cycle game). Ask the students where our drinking water comes from. Ask students to guess what percent of water on earth is available to drink? Explain that you will show a video explaining how much water on earth is available to drink.
2. Show the video.
3. After the video, emphasize that about 3% of water on earth is freshwater and only about 1.2% is available to drink; the rest is locked up in glaciers/deep in the ground or not safe to drink (polluted).



<u>Earth's Total Water Supply</u>	<u>(100%)</u>
Oceans	97.25%
Glacial and Other Land Ice	2.051%
Groundwater	0.68%
Rivers & Lakes	0.0101%
Atmosphere/Soil Moisture/Biosphere	0.00604%

## Part 4 – My Water Footprint

**Time: 15 minutes**

**Objectives:** Students will identify varying volumes of water they use in common, daily activities. Students will state methods for conserving water or reducing water use at home.

**Materials:**

The teacher should provide these materials to the students prior to the class.

1. One My Water Footprint Worksheet for each student
2. Water Drop Watchers Pledge for each student
3. Pencil for each student

**Online Link:**

1. Introduction Video: <https://youtu.be/6gmXwqpr70g>
2. [Online PDF Fillable Worksheet](#) (for WDW teacher to access and share)
3. [Online Water Drop Watchers Pledge](#) (for WDW teacher to access and share)

**Overview:** In this part of the activity, students will get a sense for the volume of their daily water usage and explore engineering solutions for using less water and/or using it more efficiently.

**The Activity:**

1. Show Introduction Video. Ask a few students to share one way they used water today. Ask the students, by a show of hands, how many people flushed the toilet today? How many brushed their teeth? Washed their face? Put on clean clothes? Ate off clean plates? Discuss how all of these activities require us to use water, and some activities more water is used than others.
2. Now, using the worksheet, have students add up their water use. Share your screen showing the online fillable PDF so that students can follow along.

Water Use Activity	Number of Times in One Day		Amount of Water Used Each Time		Total Water Used SHOWER DAY	Total Water Used BATH DAY
Brushing Teeth (30 sec)	2	X	1 gallon	=	2	2
Washing Hands (30 sec)	6	X	1 gallon	=	6	6
Flushing a Toilet	4	X	2 gallons	=	8	8
Taking a Shower (8 min)	1	X	16 gallons	=	16	n/a
Taking a Bath	1	X	70 gallons	=	n/a	70
<b>TOTAL</b>				=	<b>32</b>	<b>86</b>

3. Once the table on the front page of the worksheet is complete, explain to the class that these numbers multiply by how many people are living in their home. Explain that if a person typically uses the toilet about 4 times a day (once in the morning, once at lunchtime, once around dinner, once before bed) that equals 6 gallons each flush x 4 times a day equals 24 gallons for one person per day. Multiply by 4 people in the home equals 24 x 4 = 96 gallons per day.
4. Introduce the Water Conservation Pledge. Have students take turns reading each bullet on the pledge. Ask the students to be a Water Drop Watcher and sign the pledge and bring home.