A Lot or a Little?

Why can't I leave the water running when I brush my teeth?

Purpose: Students participate in a representation of how much of Earth's water is drinkable.
Length: 15 minutes
Materials: For group

- 20-liter container (for example, your class trash can or ten 2-liter bottles or a 5-gallon water cooler bottle)
- 1-liter container
- 500-ml beakers
- Pipette
- Clear plastic cup
- Six labels
- Blue coloring (optional)
- Data sheet

As students look at a map or globe, encourage them to make good guesses about the percentage of Earth that is covered by water. Then pass out students' data sheets.

What follows is text from your students' data sheet. The blue areas are additional notes for you, including answers and discussion points.

Wow, 70% of Earth is covered by water! That's a lot of water. So what's the big deal about conserving water? The catch is: What percentage of it is drinkable?

Make a prediction and record it: _____%

Divide into five teams: Total Water, Fresh Water, Unavailable Water, Unusable Water, and Drinkable Water

TOTAL WATER TEAM: Make a label for the 20-liter container that reads *Total Water on Earth*. This container doesn't have to be filled with water—use your imagination.

FRESH WATER TEAM: Either remove 500 milliliters (1/2 liter) of water from the large container, or if it's empty, fill a liter bottle half full. It's easier for the whole group to see if you put some blue coloring in the water. What do you think this represents? Remember your team's name. Make a label for the bottle.

(The label should read: *FRESH WATER*.)

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A Lot or a Little? (continued)

TOTAL WATER TEAM: Now that you've removed (or pretended to remove) the 500 milliliters from your container, that container no longer represents the total water on the planet. After the fresh water was removed, what's left? Think about and discuss it. You'll need to change the label on your 20 liter container—what will you write on your new label?

(The new label should read: *OCEAN WATER*.)

Now that you know this, do you want to change your prediction for the percentage of Earth's total water that's drinkable? If so, change it to _____%.

UNAVAILABLE WATER TEAM: You'll need the beaker and the Fresh Water container. Pour 375 milliliters from the 500 milliliters (½ liter) of fresh water into the beaker. What does the water in the beaker represent? Think about your team name and make your label. So, what do you think "unavailable water" means?

(The label should read *UNAVAILABLE WATER*. What's that? It's water in glaciers, ice caps, soil and the in the atmosphere—none is available for human use.)

UNUSABLE WATER TEAM: Using a pipette, remove 0.6 milliliters (5 drops!) from the Fresh Water liter bottle and put it in a plastic cup. Set it aside. This leaves 124.4 milliliters of the 125 milliliters of water remaining in the Fresh Water liter bottle. What do you think the water remaining in the liter bottle represents? Think about your team name and make your label. So, what do you think "unusable water" means?

Chat Time

- How did your predictions compare to the result?
- How could people affect the amount of usable water?

(Their label should read *UNUSABLE WATER*. What's that? It's water that's too deep in the ground, is in remote places, or is polluted.)

DRINKABLE WATER TEAM: The plastic cup set aside by the Unusable Water Team belongs to your team. How are you going to label this cup?

(The label should read *DRINKABLE WATER.)*

Now, here's one more chance to change your prediction of the percentage of Earth's total water that's drinkable. _____%

Of all the water on Earth, approximately 97% is salt water and 3% is fresh water. Less than 1% of all water is drinkable.

A Lot or a Little? Data Sheet

Name _____

Why can't I leave the water running when I brush my teeth?

Wow, 70% of Earth is covered by water. That's a lot of water! So what's the big deal about conserving water? The catch is: What percentage of it is drinkable?

Make a prediction and record it: _____ **%**

Here's What You'll Need

20-liter container (for example, your class trash can or ten 2-liter bottles or a 5-gallon water cooler bottle)

1-liter container

500-ml beaker

Pipette

Clear plastic cup

Six labels

Blue coloring (optional)

Divide into five teams: Total Water, Fresh Water, Unavailable Water, Unusable Water, Drinkable Water

TOTAL WATER TEAM: Make a label for the 20-liter container that reads "Total Water on Earth." This container doesn't have to be filled with water—use your imagination.

Now that you know this, do you want to change your prediction for the percentage of Earth's total water that's drinkable? If so, change it to

_____ %

FRESH WATER TEAM: Either remove 500 milliliters (½ liter) of water from the large container, or if it's empty, fill a liter bottle half full. It's easier for the whole group to see if you put some blue coloring in the water. What do you think this represents? Remember your team's name. Make a label for the bottle.

TOTAL WATER TEAM: Now that you've removed (or pretended to remove) the 500 milliliters from your container, that container no longer represents the total water on the planet. After the fresh water was removed, what's left? Think about and discuss it. You'll need to change the label on your 20-liter container—what will you write on your new label?

UNAVAILABLE WATER TEAM: You'll need the beaker and the Fresh Water container. Pour 375 milliliters from the 500 milliliters (½ liter) of fresh water into the beaker. What does the water in the beaker represent? Think about your team name and make your label. So, what do you think "unavailable water" means?

UNUSABLE WATER TEAM: Using a pipette, remove 0.6 milliliters (5 drops!) from what's left in the Fresh Water liter bottle. Put the water from the pipette in a plastic cup. Set it aside. This leaves 124.4 milliliters of the 125 milliliters of water remaining in the Fresh Water liter bottle. What do you think the water remaining in the liter bottle represents? Think about your team name and make your label. So, what do you think "unusable water" means?

DRINKABLE WATER TEAM: The plastic cup set aside by the Unusable Water Team belongs to your team. How are you going to label this cup?

Can you believe it?

Now, here's one more chance to change your prediction of the percentage of Earth's total water that's drinkable.

_____ %