# WATER CONSERVATION

## Narrative

**BIG IDEAS:**

- Technology has changed how we use and transport water.
- Easy access to water makes it easier to waste water.
- Technology can help us use water more efficiently.

**MATERIALS:**

6 20-gallon drums
3 2½ gallon buckets
1 hose with running water
1 white board and markers
1 gallon jug filled with water
Technology trunk items

**Q & A –** 2 Min. **1**

Hold up a cup. **Do you think this cup is considered technology?** Answers may vary. **Here is a hint. Technology is any tool, machine, or object that helps us do something easier or faster or that helps us solve a problem. Think about what life would be like without a cup. How would you drink water?** We would have to use our hands. **Does the cup help us drink water more easily? Why?** If we used our hands, we couldn't hold as much water and it'd be easier to spill water. **So, now do you think that a cup is a piece of technology?** Yes.

**EXPLORATION — Early Water Technology –** 4 Min. **2**

**What do you think people, 100 years ago, had to do to get their water?** They had to haul it from a well, lake, or river. **What technology did they use to haul water?** Buckets or containers. Introduce at least two different buckets/containers: (a plastic bucket, water bag, or a metal bucket). **What differences do you notice between these water hauling tools?** Talk about the differences. **There are people in different parts of the world (even other parts of Arizona) that still use buckets or containers to get water into their homes.** Show pictures of people hauling water, including pictures of how people used the technology that is available to them. Discuss why these different water hauling technologies are used in those settings.

**How much does water weigh? Do you know how much this gallon of water weighs?** Try to predict how much it weighs. Pass around the gallon jug of water. **Did you figure out how much the gallon of water weighs?** 8.34 pounds. **Do you know how many gallons the average person in Arizona uses per day?** 100 gallons per day per person and over 800 lbs! **Can you imagine hauling 100 of these just for yourself every day? Wow, maybe hauling all the water you need wouldn't have been so fun!**

## ENGAGE—<u>Water Relay</u> – No more than 10 Min.

3

Before the class arrives, have the starting barrels filled to the same level.

**Well that's exactly what we're going to do today - haul some water! In Arizona we each use about 100 gallons a day per person. As a team, we are going to haul only 20 gallons of water (1/5 of what the average person in Arizona uses in a day and less than the amount that it takes to fill a bathtub!).**

Count off by threes to divide into three teams. Each team will have two 20 gallon drums about 100 feet apart from one another. One 20 gallon drum will be full of water. Each team will be given a 2 ½ gallon plastic bucket. Their job will be to haul the water from the full drum to the empty drum in relay fashion. The bucket or container does not have to be full for each run. The goal is to <u>not waste</u> any water!

Have each team predict how many trips it will take them to move all the water.

Their objective is **not** to haul all the water as fast as they can, but to try to end up with the same amount that they started with. If the spilling is getting out of control, you can institute a new rule: ***Every time a student spills water, s/he is required to step to the side (with the bucket - after emptying it!) and do 10 jumping jacks or count to 20 before being allowed back in the game. They cannot carry the first barrel to pour into the second barrel, but they can pour the first barrel into their bucket.***

They should try to fill the bucket as fast as they can without spilling it. Make sure they know how precious water is.

## EXPLANATION — <u>Debrief the Activity</u> – 2 Min.

4

*If short on time, move the debrief to the end of the lesson.

- **Which team got the most water in to the opposing drum? Was that team also the fastest? How many trips did it take to move all of the water?**
- **Were the gallon buckets heavy?**
- **How much does a gallon of water weigh?** Just over 8 lbs (8.34 lbs)
- **How many gallons did we just haul? How many did I tell you each person uses in Arizona?** Wow! It would take a long time to haul the amount water that our whole class would use in a day! (100 x # students in class).
- **If you had to haul water every day, do you think you'd still use 100 gallons per day?**

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## **Q & A –** 3 Min.

Have students talk to someone next to them about the following questions:

- **How does water get into your home?**
- **What technologies are used to get it there?**

Discuss their answers as a group. Show them pictures of pipes. If possible, show them a wooden pipe with wire holding it in shape. Discuss how water engineers (also called civil engineers) help design pipes to meet water needs while also working with the natural water system. **How did pipes improve our water use?** They transport water for us, saving us time. Less water is spilled because we don't have to carry it. Pipes can move water over a long distance faster than people could.

**Is it easier now to waste water when all you have to do is just turn on the tap?** Yes. Discuss how technology makes it easier to live our lives and use water, but it can also make it easier to waste water because we don't have to think about it.

## **Engage — Water Wise Technology –** 8 Min.


**Can technology help us use water more wisely?** Organize students into small groups of four. Give each group one of the following items from the technology trunk: high-efficiency showerhead, toilet flapper and dye, water meter, aerator, WaterSense labeled irrigation controllers, reusable water bottle, dual-flush retrofit, and drip irrigation system. Each item has a laminated card attached with a description. Have each group discuss how these technologies can improve how we use water: they use *less water* while still providing us with a great shower, strong flush, etc. Collect the cards and have the students report their information to the group.

## **EXPLANATION –** 1 Min.


- **What is technology?** Any tool, machine, or object that helps us do something better or faster or that helps us solve a problem
- **How does technology help us use water?** Some technology, such as pipes and faucets, help us save time.
- **How does technology help us use water more wisely?** Plumbing fixtures have been engineered to produce the same or better results while using less water. Some technology, such as water meters, helps us figure out exactly how much water we're using.
- **What will you do to use water more wisely? What message can you tell your parents when you get home?** Install technology that can help use water more efficiently. Also be mindful and change wasteful water habits.