



# WATER CONSERVATION TECHNOLOGY



## Narrative

### BIG IDEAS:

- Technology is anything that helps us do something easier, better, or faster.
- 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 wisely.

### MATERIALS:

- 6 20-gallon drums
- 3 2½ gallon buckets
- 1 hose with running water
- 1 ruler
- 1-gallon jug filled with water
- Technology trunk items with cards
- 1 cup
- Pictures

### Q & A – 2 Min.

Hold up a cup. **Do you think this cup is considered technology?** Answers may vary. **Here is a hint. Technology is anything that helps us do something easier, better, or faster. 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.

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### EXPLORATION — Early Water Technology – 4 Min.

**Where do you think people, 150 years ago, got their water?** They had to haul it from a well, lake, or river. **What technology did they use to haul water?** Buckets or containers. **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.** Pass out the pictures of people hauling water to pairs of students. Ask them: **What technology are people using to haul water? Why do you think they're using that technology?** Discuss why these different water hauling technologies are used in those settings. People use what is available to them.

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**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?** About 8 pounds. **Do you know how many gallons the average person in Arizona uses per day?** 100 gallons per day per person. **How much would that weigh?** Over 800 pounds! **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—Water Relay – No more than 12 Min.



Well that's exactly what we're going to do today - haul some water! In Arizona, how much water did we say the average person used in day? 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 3's to divide into three teams. Each team will have two 20 gallon drums about 20 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 *not waste* any water!

Have the 1's line up behind the first full drum, 2's behind the second, and 3's behind the third. Use a ruler to make sure that the water level in each drum is the same distance from the top.

Ask them: **What's the objective again?** To try to get all of the water in the bucket in front of them to the bucket 20 feet away. **Does the fastest team win?** No, speed doesn't matter. They will still go fast. They cannot carry the first drum to pour into the second drum, but they can pour the first drum into their bucket.

Identify the winning team using the ruler to measure the water level. **Was the team that won the fastest? Why did we care so much about not spilling water?** If it were all the water we had, we would want every drop of it!

After the first round, even out the trash cans. Do the game again and have the students pay special attention to not spilling this time. 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.*

### Q & A – 1 Min.



Bring students back to the sitting area. 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. **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.

**Do you think we waste more water now that water is piped into our homes or less water?** More water. 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 – 10 Min.



**Can technology help us use water more wisely?** Put four students in a group and give each group one of the following items from the technology trunk: high-efficiency showerhead, toilet flapper, aerator, spray nozzle, dual-flush retrofit, and drip irrigation system. Each item has a laminated card attached with a description. Have students read the card together and be ready to summarize what their item is and what it does. Collect the cards and have each group stand up, show their item, and describe how it saves water. You should have read over the cards and be ready to fill in the gaps after their presentation. Each group should report out.

### EXPLANATION – 1 Min.



- **So, can technology help us save water?** Yes
- **What is technology again?** Anything that helps us do something easier, better, or faster.
- **How has technology made it easier for us to use water?** Some technology, such as pipes and faucets, help us save time.
- **How does technology help us use water more wisely?** Technology has been engineered to produce the same or better results while using less water. The technology items we looked at today are not expensive and can be bought at a hardware store.
- **What message can you tell your parents when you get home to help your family use water more wisely?** Install technology that can help use water more wisely. Also, be mindful and change wasteful water habits.



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Cliffs Notes

Min.	ELEMENT:	What You Ask:	Big Ideas:
2	Q AND A:	<ul style="list-style-type: none"><li>• Do you think this <b>cup is considered technology?</b></li><li>• Without a cup, <b>how would you drink water?</b></li><li>• Does the cup help us drink water more <b>easily?</b></li><li>• Now do you <b>think that a cup is a piece of technology?</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Technology is anything that makes our lives easier, better, or faster.</b></li></ul>
4	EXPLORATION: Early Water Technology	<ul style="list-style-type: none"><li>• <b>Where</b> do you think people, <b>150 years ago</b>, got their <b>water?</b></li><li>• What <b>technology</b> did they <b>use to haul water?</b></li><li>• Do you know <b>how much this gallon of water weighs?</b></li><li>• Do you know <b>how many gallons</b> does the average person in Arizona use per day? <b>How much would that weigh?</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Technology has changed how we use and transport water.</b></li></ul>
12	ENGAGE: Water Relay	<ul style="list-style-type: none"><li>• <b>What's the objective?</b></li><li>• <b>Does the fastest team win?</b></li><li>• <b>Why do we care so much about not spilling water?</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Technology has changed how we use and transport water.</b></li></ul>

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1	Q & A:	<ul style="list-style-type: none"> <li>• <b>How</b> does water <b>get into your home</b>?</li> <li>• What <b>technologies</b> are used to get it there?</li> <li>• <b>How did pipes improve</b> our water use?</li> <li>• Do you think we <b>waste more water</b> now that water is piped into our homes or <b>less water</b>?</li> </ul>	<ul style="list-style-type: none"> <li>• Technology has changed how we use and transport water.</li> <li>• Easy access to water makes it easier to waste water.</li> </ul>
10	ENGAGE: Water Wise Technology	<ul style="list-style-type: none"> <li>• <b>Can technology help us use water more wisely?</b></li> </ul>	<ul style="list-style-type: none"> <li>• Technology can help us use water more wisely.</li> </ul>
1	EXPLANATION: Wrap-Up and Big Ideas	<p><b>Big ideas to review:</b></p> <ul style="list-style-type: none"> <li>• So, can technology help us save water?</li> <li>• What is technology again?</li> <li>• How has technology made it easier for us to use water?</li> <li>• How does technology help us use water more wisely?</li> <li>• What message can you tell your parents when you get home to help your family use water more wisely?</li> </ul>	<ul style="list-style-type: none"> <li>• Technology is anything that makes our lives easier, better, or faster.</li> <li>• Technology has changed how we use and transport water.</li> <li>• Technology can help us use water more wisely.</li> </ul>

