COLLEGE OF AGRICULTURE, LIFE & ENVIRONMENTAL SCIENCES
Environmental Science

SUSTAINABILITY

ARIZONA project WET WATER EDUCATION TODAY

MATERIALS

- 1 large die
- 1 ruler
- 3 metal rings to hold shower cups
- 9 station signs with carabiners
- 9 A Frames
- 6 (2 ½) gallon buckets
- 3 containers to catch shower water
- 1 decorated (2 ½) gallon "rain barrel"
- 6 cups, 3 with holes & 3 without
- 1 gallon jug
- Water saving technology packet
- 1 water hose sprayer nozzle
- 1 toilet flapper
- 1 Picture of Sustainability bin setup

Learning Objectives:

Act as environmental stewards, conserving water through both behaviors and available technologies, supporting resilient solutions that benefit the (biodiverse) community.

BIG IDEAS

1. **Technology makes it easier to both waste water and conserve water.**
2. **Together, we can conserve shared water resources by making water-wise choices.**
3. **Smart water use starts with each of us: Let's conserve water to protect our future!**

Activity Flow

1. Students start together on tarp, under the shade
2. Intro, pick attention-grabber, define technology
3. Split into 3 teams
    - Explain Relay Round 1 instructions
    - Each team rolls the die once
4. Students complete Relay Round 1
5. Measure water in each finishing bucket
    - Declare "winner"
    - Interpret meaning behind 1 or 2 on die
6. Lead Sustainability Discussion back on tarp
    - 1 volunteer sets up 2nd relay
    - 1 volunteer introduces **Big Ideas 1 & 2**
7. Same teams line up on opposite relay side
    - Describe and act out the return relay
    - Students pair up
    - Run Relay Round 2
8. Measure shared "rain barrel" bucket to show student's success
9. Final discussion on tarp and **Big Idea 3**
    - Review **Big Ideas**
    - If there is time, review water technology packet and pass out toilet flapper/hose nozzle

SUSTAINABILITY

Supporting Information:

Pipes & Canals: Help communities get water from one area to another. In the case of canals in Arizona, water is most often moved from the Salt or Colorado rivers to our towns and cities. Pipes carry that water from the canals to be cleaned at local water treatment centers and then delivered to our homes/businesses. This critical infrastructure is mostly invisible to users.

Rain harvesting: The practice of collecting and storing rainwater—usually from rooftops—for later use in irrigation, household non-potable needs, or even potable supply with proper treatment. It works by capturing roof runoff through gutters, filtering debris, diverting the first flush, and storing cleaner water in tanks or cisterns for reuse.

Set the Stage for Success:

- Encourage students to think critically about technology, and the positive and negative outcomes of easy water availability. Sustainability includes both the technologies and the behaviors we use to conserve water.
- Kids will often treat the relay like a race, when really it is more important that they are careful when moving their water. We don't announce this ahead of the game, but use it to reinforce the idea of being mindful during our recap.
- At the shower station, students will try to get away with partial pours. Keep it fun by calling them out and insisting they pour out the whole cup! During the 2nd round, it is okay if they work together to plug the holes. We let them come up with this solution on their own and praise their water-wise efforts!
- Standing in line during the relay can be boring! Be sure to actively model cheering and interact with students in line.
- If students complain about the die roll being unfair, keep things light and fun when you respond. Calmly explain that we can't control how many people are in our family or how careful others are with their water.
- We want students to walk away more knowledgeable about water use and empowered to know that THEY can make a difference, starting today!

Water Technology and Water Use Facts:

- **Garden hose nozzles** can reduce water use from **9 to 17 gallons per minute** to only **2.5 gallons per minute.**
- **Native plant gardens** can reduce water needs in this area by **75-95%.**
- A **rain harvesting system** with a 1,000-square-foot catchment area will yield about **6,750 gallons of water per year.**
- A **leaking faucet wastes** approximately **3,000 gallons per year.**
- A **10-minute shower** uses approximately **50 gallons** of hot water. Cut that in half with a 5-minute shower!
- **Turning off the tap** while brushing your teeth **saves about 8 gallons of water per day.**
- Washing dishes with **5 mins of running faucet** can waste **10 gallons** and energy to power a 60-watt bulb for 18 hours!
- If your **toilet has a leak**, you could be wasting about **200 gallons of water every single day.** Replace those flappers!

BLACK = KEY INSTRUCTIONS **BLUE = WHAT YOU SAY** **ORANGE = ACTION BASED INSTRUCTION**

WHAT YOU SAY AND DO

3 Minutes - What is Technology?

- Students start as a whole class sitting on the tarp under the shade structure.
- Introduce yourself and **establish an attention grabber**. Then ask:

What is **technology**? (Let students respond).
Hold up a cup from the material bin.
Is **this cup** technology? (Let students respond) If I didn't have this cup, how would I drink water?

The cup **IS technology** because it makes it much **easier to drink** water. Technology is **anything that helps us do things easier, faster, or better.**

10 Minutes - First Relay

We're going to **divide into 3 teams** to play a game. The **goal** is to **move as much water** as you can from **one side to the other** using only **this cup.** (Hold up cup)

Explain rules and briefly **Demonstrate Actions**

Only the 1st person in line rolls the die **at the start of the game**:

The # rolled (1 or 2) is the **# of times each person** in that line **will repeat each Relay Action**

Each student in line will take 1 turn to:

1. **Fill cup** at **START bucket**
2. Perform **Relay Actions**, 1 or 2 times
3. **Dump water in END** bucket
4. **Run cup back** to next in line

Demonstrate each of the following **actions** for students:

Relay Round 1 Actions:

1. **Sprinkler:** 1 hand behind head, 1 arm extended out doing **"sprinkler dance"** with full cup (1x or 2x)
2. **Shower:** Pour **all water through** shower and try to **catch as much as possible under the cup** (1x or 2x)
3. **Leaky Faucet: Hop on one foot** (1x or 2x) with cup of water in one hand

Once every team is done, **measure the water in each** finishing bucket with the ruler and **declare a winner**

3 Minutes - Sustainability Discussion

While **one volunteer leads** the following discussion, the **other volunteer should set up the second relay**:

Set up steps for volunteer who is not leading discussion: (Relay will now be ran from the other end)

- Fill the 3 original finishing buckets with water (these will be the new starting buckets).
- Replace the 3 original starting buckets with 1 communal rain barrel, in the middle where all 3 teams can access it (this will now be the last station)

Now, let's gather together on the tarp to go over the results. (Announce results of relay)

What could the **numbers on the die represen**t in real life? (Let students respond)
If you have **more people** in your family, will you **use more water**? (Student response) **Yes!**

If you live in a **house with a big grass yard or a pool**, will you **use more water** than if you live in an apartment? (Student response) **Yes!**

(Hold up the jug from the material bin) How much water can this jug hold? (*1 gallon*)

Raise your hand to guess:
How many gallons of water do you think the average person uses each day in Arizona? (*100-120 gallons*)

Are we drinking all of that water? (Student response)
No - and you don't need to worry about drinking too much water!
It's so important to drink enough water in the hot desert.

What are some of the **other ways we use** water in our daily life? (Let students respond)

What is some **technology that we use to get water**? (*faucets, pipes, canals, wells*)
Does **technology make it easier to waste** water? **Yes!** How? (Let students respond)

Do you think **technology can help us save** water too? **Yes!** How?
(Let students respond and **help them think of some examples of water saving technology** items)

TECHNOLOGY MAKES IT EASIER TO BOTH WASTE WATER AND CONSERVE WATER

8 Minutes - Second Relay

Now, we're going to **get back into our same teams** to do a **second relay**, but you will **work in pairs** this time!

This time, **all three teams will be working together** to conserve water.

We will **work together** to **collect as much water as we can** in this rain barrel. (Point out rain barrel)
A **rain barrel** is something used to **collect rainwater that can then be used later**.

TOGETHER, WE CAN CONSERVE SHARED WATER RESOURCES
BY MAKING WATER-WISE CHOICES

The **die is not rolled this time** and your original number does not matter.

Each pair will take turns to do each action 1 time:

Have **students line up** (same teams) **on the opposite side** of the relay area **so reverse signs** are visible.
Demonstrate Round 2 changes **with co-leader:**

Relay Round 2 Actions:

1. **Stop the Leak:** 2 students **fill cup and hop together,** with **one holding it** and **the other one covering** the cup with their hand
2. **Shorter Shower:** Pour **water through the shower** cup **ONE time... Shorter showers save water!**
3. **Rain Barrel:** Holding/covering **partners switch roles** and run to **pour into the rain barrel!**

When you finish running through with your partner, run back to **give the cup to the next pair.**
Once every team is done, **measure final amount** in rain barrel and **show students how much water they collected and saved** before leading final discussion under shade structure

3 Minutes - Final Discussion

How **was the 2nd round different** from the 1st round?
How could we use water collected in a rain barrel in our everyday life?

What **actions** can **you** take **to conserve (save)** water in your daily life? (Student response)
*(Ideas to help: **Turn off faucet** when you're not **actively** using the water, use **reusable water bottles**, pour **unused water on plants** instead of garbage/pavement, **shorter showers**, help parents **spot leaks**)*

SMART WATER USE STARTS WITH EACH OF US:
LET'S CONSERVE WATER TO PROTECT OUR FUTURE!

Review Big Ideas:

Can technology help us waste water? Can it help us save water?

TECHNOLOGY MAKES IT EASIER TO BOTH WASTE WATER AND CONSERVE WATER

Why is that important to think about?

TOGETHER, WE CAN CONSERVE SHARED WATER RESOURCES
BY MAKING WATER-WISE CHOICES!

Can you make a difference as a 4th grader?....**Yes!**

SMART WATER USE STARTS WITH EACH OF US:
LET'S CONSERVE WATER TO PROTECT OUR FUTURE!

Use spare time at the end of the activity to **explore Technology Packet** with students.
You can have **students guess** what items are, **share fun facts**, and **pass around** sample tech items.