Water Conservation and Quality

Learning Objectives:

- Learn the basics of the uses of water and the importance of quality water
- Connect the issue of water quality to other environmental concerns like air pollution and
- ecological health/diversity
- Start discussion about how to address water conservation and quality
- Learn WHAT are the different bodies of water that this affects?
- Learn HOW much water does the average person use up?

Oklahoma Academic Standards Addressed:

- K.LS1.1 Use observations to describe patterns of what plants and animals (including humans) need to survive.
- 1.ESS3.1 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
- 2.LS2.1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.
- 2.ESS2.3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- 3.LS3.2 Use evidence to support the explanation that traits can be influenced by the environment.
- 5.LS1.1 Support an argument that plants get the materials they need for growth chiefly from air and water.
- 5.PS1.1 Develop a model to describe that matter is made of particles too small to be seen.
- 5.ESS2.2 Describe and graph amounts of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.

Vocabulary:

- Conservation: prevention of wasteful use of a resource.
- Irrigation: the supply of water to land or crops to help growth, typically by means of channels

Talking points for teachers:

- Why is taking care of our water important?
    - Water is a necessary resource. We need it to drink, grow our food, and for many more uses.
    - Water covers around 71 percent of the earth's surface.

- But, most of that water is in the ocean, is salty, and can't be used for drinking or growing food.
- Only 3% of water is fresh. Of that water, around 2.5 percent cannot be easily accessed because it is forming glaciers and ice caps, too polluted, or too far under the earth's surface to access.
- This means only .5% is available for use!

- How do we use water? We know that water is one of the building blocks of life, it is what keeps us humans hydrated and alive, and the same goes for plants. However in civilization, water has taken on many more uses than just this. What are some other ways that we use water?

    - Mass agriculture and agricultural food production/irrigation, showers/sinks/household uses, cooling machinery, producing electricity, etc.

- What is the water cycle?
    - This cycle is how water moves around the earth in different states. Water can be a liquid, solid, or gas.
        - It is a liquid in bodies of water like oceans, rivers, streams, and in our faucets.
        - It is a solid when frozen, like in ice or a glacier or snow.
        - It is a gas when it is evaporating, which means it becomes a water vapor that can be found in our sky.
    - During the water cycle, it follows a common path.
        - **Evaporation:** Water that is in our streams and oceans and other bodies of water evaporates in heat from the sun. This makes it it turn into a water vapor that goes into our atmosphere.
        - When in the atmosphere, the water vapor goes through a process called **condensation**, where the water vapor forms together into droplets.
        - These droplets begin to get heavy and form **precipitation**, which comes back down onto the ground through rain and snow and sleet.
        - Water can be absorbed into the ground and end up in places called **aquifers**, which holds **groundwater**.

- What is water quality?
    - “Quality” in terms of water means that it is clean and free of contaminants or pollutants. Pollutants make water dirty and could be chemicals, oil, or trash. All of this makes water unsafe to drink unless it is purified. Purifying water means it is cleaned up. Our city cleans our water before it comes to our house and out of our faucets.

- What is water conservation?
    - Conserving water means to try to use less water and protect water from harmful contaminants. This helps take care of the water we have on our planet and make it less difficult to purify.
    - How much water do you think the average person uses? Answer: 300 gallons of water per day.
    - What are some ways you think we can use less water?
        - Take shorter showers, turn off the water when brushing your teeth, fixing leaky faucets, use less water for our grass and outside plants.

Activity Components:

- Groundwater Pollution Activity: https://www.okcbeautiful.com/uploads/Groundwater_Pollution_Simulation_Activity_1.pdf
- Water Cycle and Conservation Coloring Sheet: https://www.okcbeautiful.com/uploads/Water_Cycle_Conservation_1.pdf
- Water Pollution Activity: https://www.okcbeautiful.com/uploads/Water_Pollution_Activity_1.pdf

Additional Resources:

- Importance of Water on Earth: https://youtu.be/KcfBrmdr8Ag
- Water, Looking After Our Planet: https://youtu.be/bGWr5jXJfbs
- Saving Water: https://youtu.be/rl0YiZjTqpw
- EPA WaterSense for Kids: https://www.epa.gov/watersense/watersense-kids
- NASA Water Cycle: https://climatekids.nasa.gov/water-cycle/
- *Did a Dinosaur Drink this Water?* By Robert E. Wells
- *One Well: The Story of Water on Earth* by Rochelle Strauss