

Shared Waters: Making a positive impact on our local watershed



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Lesson 1: All the Water on Earth

(2 days)

Overview:

The Earth is often called the blue planet because 71% of the Earth's surface is covered by water. Water molecules use the sun's energy to move within the Earth and atmosphere; we call this journey the Water Cycle, and in this lesson, we will learn that this journey has many paths.

We begin the lesson with a fun activity. We will toss a globe-patterned beachball from student to student to collect data to determine that $\sim \frac{3}{4}$ (71%) of the Earth's surface is covered by water. This activity reinforces the concept that the Earth has abundant water. Next, we'll tackle a common misconception about the water cycle. Many think it's a simple, continuous loop: water falls from the sky, flows into rivers, reaches the ocean, evaporates into the atmosphere, condenses into clouds, and then falls back to Earth as precipitation, starting the cycle all over again. (Most textbook water cycle diagrams reinforce this simplistic view of the water cycle). While it's true that **water circulates on Earth**, it doesn't follow a linear path or spend equal time in each stage. For example, the sun provides energy that causes surface water to evaporate; water vapor condenses in the clouds and falls back to the surface as precipitation; glaciers melt into the ocean, and groundwater can be pumped up to the surface to water plants, etc. **Water indeed circulates, but its path is not linear, and water does not spend equal time in each space.** In this activity, students become water molecules and move through the water cycle creating a map of their journey and a bracelet to document their journey. This hands-on experience will help students understand that the water cycle is more than just a predictable two-dimensional path – it's a dynamic, ever-changing journey.

Materials:

Materials provided in the Lesson 1 kit:

- **Activity 1:** Globe beach ball, whiteboard/flipchart, and marker
- **Activity 2:** Water Cycle Activity Kit, 9 location cards, 9 blocks, 30 pipe cleaners, and 9 containers of colored pony beads.
- Reading Connection: One Well by Strauss & Woods

Materials you will need to gather:

- [Lesson 1 slide show](#)
- Unit [Anchor Chart](#)
- **Activity 2:** one copy of the [Water Journey Map](#) for each student (*Note- you will need to write the bead color for each station on the map before copying*).
- **Assessment:** one copy of the [Exit Ticket](#) for each student.



Possible Extension:

Have students calculate the ratios independently and compare answers.
Have the students create a pie graph to represent their data.

Possible Differentiation Adaptations:

Have students sit in a circle and roll the ball to each other instead of tossing it.
Create a worksheet for the calculations that set up the first ratio (total water catches/total catches), and then have students set up the second ratio (total land catches/total catches).
Suppose students don't know ratios and use long division yet to get those ratios, but they have a basic knowledge of fractions. In that case, you can do 100 catches to get a more understandable fraction (70/100).

Students may benefit from a visual representation of the data collected. Providing students with a hundreds chart to fill in how many catches were "water" may help them to see the results.

Activity 2 (30 min): [The Incredible Journey](#) *adapted from [Project WET](#), [Utah State University](#), [National Assoc. of Conservation Districts](#)

For this activity, place the nine stations around the room. Each station should include a [picture card](#), the corresponding die, and a container of beads. *Below is a key to tell you which block to place at which station

Cube Station Name

1	Soil	6	Lake
2	Plant	7	Animal
3	River	8	Ground Water
4	Clouds	9	Glacier
5	Ocean		

Project the following image.





WHERE IS THERE WATER IN THIS PICTURE?

Ask students to find all the places where they see water in the picture. Make a list on the board. The list will include lakes, oceans, air (evaporation), clouds, groundwater, snow, etc. Ask students how the water got there.

Water exists in many forms and in many places on Earth. Water uses energy from the sun, so it can change forms and change where it exists on Earth. We call this the water cycle.

Tell the students that they will become water molecules and move through the water cycle, creating a map of their journey and a bracelet to document their journey.

Give each student a pipe cleaner and instruct them to use their finger to create a loop at the bottom. They will then put a single yellow bead on the bracelet representing the sun. Explain that the sun provides the energy for the water molecules to travel around the water cycle. Now, they are ready to start their journey.



Divide the students among the nine stations. (In real life, water molecules are present at each location so that they can start at any station.) This is the starting point of their journey, and each person should get a bead at the station and add it to their bracelet.

At each station, students will line up at the dice, and the first person will roll them and move to where the dice directs them. If the dice tell them to stay, they should collect another bead and move to the back of the line. When students move to a new station, they should collect a bead and move to the back of the line to roll the dice. This process continues for about 10 minutes or until the teacher instructs the students to stop.



Give students a paper copy of the [Water Journey Map](#) and explain to the students that they will use this map to record their journey. (Note- you will need to write the color that



corresponds to each station on the map BEFORE making copies) Tell students to use the colors on their bracelets to draw lines and arrows showing how they traveled through the water cycle.

Gather the class together. Have students compare their bracelets to others. How are the bracelets similar and different? “Look at all the places you found water in the picture we discussed at the beginning of class (Project the Water Location picture again). How does the water get to these places, and how does it travel from place to place?” Ask guiding questions to help students determine that the water cycle is not a big circle where water travels in a linear path, spending equal amounts of time at each place. Instead, the water cycle is a natural process where water can travel on many paths and spend a short or long time in each location.

Possible Adaptation:

For teachers who choose not to use beads, print out the attached document where students can write their movements in the [Water Cycle Dice Game](#).

Assessment:

Give each student an [exit ticket](#) with two questions:

- Why do some people call the Earth the Blue Planet?
- Which is a better picture of the water cycle? Explain.

<p>Explain</p>	

Reading Connection:

[Strauss, R., & Woods, R. \(2007\). One Well: The story of water on Earth. Kids Can Press.](#)

