

THE WATER CYCLE

2ND-
5TH

OBJECTIVES

- Make observations about water.
- Demonstrate part of the water (hydrologic) cycle.
- Explore how water moves through the hydrologic cycle.
- Explain how the hydrologic cycle works and define relevant vocabulary.

BACKGROUND INFORMATION

The water cycle (or hydrologic cycle) is the movement of water on our planet. The amount of water on earth does not change, but it does change state of matter such as from solid to liquid to gas. The temperature of water plays an important role in how water changes states and moves through the environment.

MATERIALS

- | | | |
|-------------------------|---------------------------|-----------------------------|
| • Clear Plastic Jar | • Food Coloring | • Markers |
| • Small Plate or saucer | • Water Cycle Posters | • Water Droplet "Passports" |
| • Hot Water | • (9) Station Tubs | • Dry Cloth & Water |
| • Bag of Ice | • Laminated Station Cards | |

ANTICIPATORY SET

1. As a group, discuss the locations on earth where you can find water.
2. Ask your students: How does water get from one location to another?
3. Watch the StudyJams! video called "The Water Cycle." Link under Resources.

PRIOR KNOWLEDGE ACTIVATION

As a class, map out the water cycle (i.e., liquid water evaporating into the air, then condensing to form a cloud, then back to liquid as rain).

Depending on grade level, discuss vocabulary such as evaporation, precipitation, run-off, accumulation, transpiration, and condensation.

DEMONSTRATION: WATER CYCLE IN A JAR

MATERIALS

- Hot Water (the hotter the better)
- Large, Clear Jar
- Food Coloring
- Ice Cubes
- Small Plate
 - This should fit over the mouth of the jar

INSTRUCTIONS

1. Pour hot water into the clear jar, filling it about 1/2 way.
2. Add several drops of food coloring.
3. Place the small plate on the jar opening and fill it with ice.
4. Observe the hot water evaporating toward the top of the jar, then condensing back into rain drops.
5. Ask students to add labels to their water cycle diagram (ex. heat, evaporation, and precipitation).

WHY DOES THIS HAPPEN?

The hot water at the bottom of the jar represents any large water body on earth that has been warmed by the Sun. The warm water evaporates and rises into the atmosphere as a water vapor (gas). The higher the water vapor rises, the cooler it gets. This causes the water vapor to condense into droplets that form clouds. After a few minutes, "rain" forms and drips down the edges of the jar back to the original body of water. This process demonstrates part of the Water Cycle!

ACTIVITY: JOURNEY OF A WATER DROPLET

MATERIALS

- (1) Laminated Passport for Each Student
- (1) Washable Marker for Each Student
- Station Cards for each Tub
- Labeled Station Tubs
 - Plant, Ocean, Animal, River, Groundwater, Glacier, Lake, Cloud, Soil
- Dry Cloth and Spray for cleaning the passports after the activity

INSTRUCTIONS

1. Set the (9) station tubs in a large, spread-out circle, and place the designated station cards in each tub.
2. Give each student a Water Droplet Passport and a marker. Explain to the students that they will act as water droplets moving through the water cycle.
3. Assign an even number of students to start at each water station (River, Ocean, Groundwater, etc.)
4. Using the marker, each student should color in one square on their passport to represent the station where they started (i.e. If they start at "River," they should color in the square closest to the River label on their passport).
5. Students will pick up one card from this station tub and read the information on the card. This card will tell them which station they should travel to next.
6. Before heading to the next station, they must place their card at the back of the stack in that station tub!
7. Once they get to the second station, students will color in a square to represent this next location in the water cycle.
8. Students will pick up a card at their second station, read it, then place the card at the back of the stack before heading to their next station.
9. Students will mark a square on their passport for EVERY TURN they take! They may pick up a card that says "STAY," at one location for multiple turns. Students will still mark a square for each time they had to "STAY."
10. Allow students to go through the stations for several minutes before stopping them to discuss the activity.

JOURNEY OF A WATER DROPLET DISCUSSION

Once your group has gone through the stations for several minutes, have them sit down where they are. Tell students to turn their passport on its side with the station names at the bottom. They have created a bar chart of their journey through the Water Cycle! This bar chart should show them where the most water is located within the Water Cycle. Some of your students may have felt frustrated that they kept getting "STAY" cards at the Ocean station. This just goes to show how much water is in the ocean, and how long it takes for a water droplet in the ocean to get cycled through to the next location.

EXTENSION

1. Have your students brainstorm locations where they can see the water cycle in action in their community. Can they think of local streams, rivers, lakes or even puddles that may be part of the process?
2. Have your students write a creative short story about the life of a water droplet moving through the water cycle.
3. Have your students work together to create a 3-dimensional model of the water cycle.

TEKS ALIGNMENT

Science, Adopted 2021:

2(a) 1Ai, 1B, 1E, 3A, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2B, 2D, 3B, 3C, 5A, 5D, 6A.

3(a) 1Ai, 1B, 1E, 3A, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2B, 2D, 3B, 3C, 5A, 5B, 5C, 5D, 6C.

4(a) 1Ai, 1B, 3A, 5. (b) 1A, 1C, 1D, 1E, 1F, 1G, 2B, 2D, 3B, 3C, 5A, 5B, 5C, 5D, 5E, 6A, 10A.

5(a) 1Ai, 1B, 3A, 5, (b) 1A, 1C, 1D, 1E, 1F, 2B, 3B, 3C, 5A, 5B, 5C, 5D, 5E.



OCEAN STATION CARD



STAY

(Color in the next empty box in this row and place this card at the bottom of the stack. Then pick a new card!)

OCEAN STATION CARD

The sun warms the surface
water of the ocean.
This water evaporates and
goes into the atmosphere.

OCEAN STATION CARD

Whales filter salt water
when eating krill and other
small marine animals.
Go to the animal station.



RIVER STATION CARD



A deer drinks from the river.
Go to the animal station.

RIVER STATION CARD

All rivers eventually flow
into the ocean.



RIVER STATION CARD



River water flows
into a lake.

RIVER STATION CARD

The sun warms the surface water of the river. This water evaporates and goes into the atmosphere.



RIVER STATION CARD



Water is absorbed into the
banks of the river.
Go to the soil station.



LAKE STATION CARD



Water is absorbed into the
banks of the lake.
Go to the soil station.

LAKE STATION CARD

The sun warms the surface water on a lake. This water evaporates and goes into the atmosphere.

LAKE STATION CARD



Water flows from a lake
into a river.

LAKE STATION CARD



A bear comes to the
lake to get a drink,
go to the animal station.

LAKE STATION CARD



STAY

(Color in the next empty box
in this row and place this
card at the bottom of the
stack. Then pick a new card!)

MOISTURE SOIL

The logo consists of a white five-pointed star centered on a rounded rectangular background. The background is split horizontally: the top half is a light teal color, and the bottom half is a light grey color. The word 'MOISTURE' is written in a dark blue, sans-serif font, positioned vertically along the right side of the star. The word 'SOIL' is written in the same dark blue, sans-serif font, positioned vertically along the left side of the star. The letters of 'SOIL' are partially overlaid by the teal background, while the letters of 'MOISTURE' are partially overlaid by the grey background.

SOIL STATION CARD



STAY

(Color in the next empty box in this row and place this card at the bottom of the stack. Then pick a new card!)

SOIL STATION CARD



Water is absorbed by the
roots of a plant.

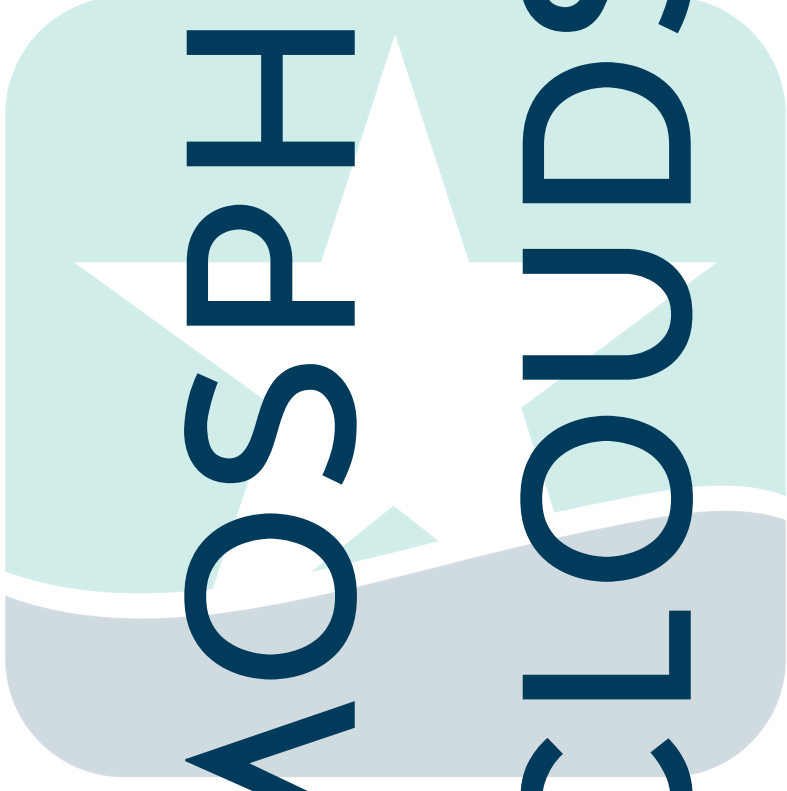
SOIL STATION CARD

Water filters into cracks in
the Earth and enters the
Edwards Aquifer.
Go to the groundwater
station.

SOIL STATION CARD

Soil is warmed by the sun
and the heat causes water
to evaporate and enter the
atmosphere.

ATMOSPHERE (CLOUDS)



ATMOSPHERE STATION CARD



Water condenses and falls
as rain into the ocean.

ATMOSPHERE STATION CARD



Water condenses and falls
as rain into a Lake.

ATMOSPHERE STATION CARD



Water condenses and falls
as rain onto the soil.

ATMOSPHERE STATION CARD



Water condenses and falls
as snow onto a glacier.

ATMOSPHERE STATION CARD



Water condenses and falls
as rain down a hill side,
entering the river.



PLANT STATION CARD



STAY

(Color in the next empty box
in this row and place this
card at the bottom of the
stack. Then pick a new card!)

PLANT STATION CARD

Plants release water
through transpiration.

This water enters the
atmosphere.

PLANT STATION CARD



Water flows down the
stems of plants and
reaches the soil.



ANIMAL STATION CARD



Animals excrete water
through feces and urine.
This water returns to the soil.

ANIMAL STATION CARD

Breathing, panting, or sweating allows water to evaporate into the atmosphere.



GLACIERS STATION CARD

Glacier ice melts and this
water flows into a river.



GLACIERS STATION CARD

Glacier ice melts into liquid water, then evaporates into the atmosphere.

A background graphic featuring a stylized glacier in shades of blue and grey, with a large, light blue recycling symbol (three chasing arrows) overlaid on it.

GLACIERS STATION CARD



STAY

(Color in the next empty box in this row and place this card at the bottom of the stack. Then pick a new card!)

GLACIERS STATION CARD

Glacier ice melts into liquid water, which filters into the ground. Go to the groundwater station.

GROUND WATER



GLACIERS STATION CARD



Someone pumps water
through a well, then drinks
the water.
Go to the animal station.

GLACIERS STATION CARD



Groundwater flows up
through the Edwards Aquifer
into Spring Lake.

GLACIERS STATION CARD



Groundwater is pumped up through a well, and is used to water crops.

Go to the plant station.

GLACIERS STATION CARD



STAY

(Color in the next empty box in this row and place this card at the bottom of the stack. Then pick a new card!)

WATER DROPLET PASSPORT

[illegible]

RESOURCES

- Thirstin's Water Cycle Adventure, Retrieved from https://www.epa.gov/sites/production/files/2016-03/documents/graphic_grades_k-3_watercycle.pdf
- Thirstin's Ground Water Movement Activity, Retrieved from https://www.epa.gov/sites/production/files/2016-03/documents/activity_grades_k-3_groundwatermovement.pdf
- Follow a Drip Through the Water Cycle, Interactive water-cycle diagram, Retrieved from <https://water.usgs.gov/edu/watercycle-kids-adv.html>
- That Magnificent Ground Water Connection: The Water Cycle and Water Conservation, 1-2. Retrieved from http://www.epa.gov/region1/students/pdfs/gndw_712.pdf
- Video: The Water Cycle: A StudyJams!, Retrieved from <https://www.scholastic.com/teachers/activities/teaching-content/water-cycle-studyjams-activity/>



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM

512.245.1346

txstreamteam@txstate.edu

www.TexasStreamTeam.org