4th Grade Lesson Plan: The Water Cycle

Objective: Teach students about the different parts of the water cycle (precipitation, condensation, and evaporation) and how the process is fueled by the energy of the sun.

Materials: Permanent markers, tape, water, sandwich baggies that zip closed, labels, and the water cycle "What You Discovered" worksheet revised for classroom use.

Procedure:

1. Start with a basic class discussion about the water cycle where each step is defined and explained. You will want to write/draw each step on the board in a cycle pattern to give the students a visual.
    a. Ask students an opening question, such as: Where does rain come from? Where can water be found on the Earth? Why is water important?
    b. Water is an important part of life for both plants and animals. Its availability influences many things, including the production of food, the erosion of the ground, and the quality of essential oils.
    c. Water is constantly moving as it travels through the water cycle. It works kind of like a recycling program.
        i. Ask students if they know what the three steps of the water cycle are: evaporation, condensation, and precipitation.
    d. Evaporation occurs when water that is already on the earth is heated by the sun, changing it from a liquid to a gas known as water vapor.
    e. After water evaporates, it rises into the air where it cools and gathers into clouds. This step is called condensation. Condensation occurs when water changes from a gas back into a liquid.
    f. After water condenses, the next step of the water cycle is precipitation. This happens when water falls back to the earth.
        i. Ask students for examples of different types of precipitation: rain, snow, sleet, and hail.
    g. Once the water has fallen back to the ground, it's heated again by the sun and the cycle continues.
        i. Ask students how they use water. Answers include: drinking, helps plants grow, showering, cooking things in it, etc.
        ii. Ask students why the water cycle is important. We all need and use water.

2. Have students create a model of the water cycle in a bag. Follow the steps outlined on the dōTERRA® Science for Kids water cycle experiment page.

Evaluation: Teachers will evaluate students' understanding by reviewing their responses to the questions on the "What You Discovered" worksheet, as well as the notes they recorded in their notebook.

The Water Cycle

What You'll Need: (per student)

- 1 Permanent marker
- Water
- Tape
- Label
- Plastic sandwich bag that zips closed
- Blue food coloring (optional)

What You'll Do:

1. Start by using the marker to draw a sun, a cloud, some land, and some water on the sandwich bag. Label the cloud as condensation, the space between the cloud and the ground as precipitation, and the space between the sun and water as evaporation.

2. Write your name on the label and stick it on the bag.

3. Heat the water so that it is warm enough to steam, but not so hot it is boiling.
Note: *You can add blue food coloring to the water in order to make it more visible in the bag.*

4. Carefully pour the water into the bag. You'll only fill the bag about an eighth of the way full. You need to make sure there is space in the bag for the water to steam and condense.

5. Zip the bag closed and tape it to a window.

6. Allow the bag to sit for a few minutes. You'll notice that the steam from the water condenses on the sides of the bag near the top. This represents a cloud forming.

7. After several minutes the water will begin to run down the sides of the bag, representing precipitation. **Note:** *The water may not run down the sides of the bag on its own. If this happens, you may need to gently tap the bag to encourage the water to run down.*

8. If it is warm enough outside, you can keep the bag taped to the window and watch the cycle repeat as the sun heats up the water, leading to evaporation and causing the whole process to begin again.

9. Make sure to complete the "What You Discovered" worksheet once you're done watching your water cycle in a bag.

What Does It Mean?

The water cycle is an important process on earth, as it is essential for all life. Thanks to a plastic bag, you were able to recreate a small version of the water cycle! The water cycle influences where plants will grow, where people can live, and what animals can survive in a certain area.

On a very basic level, the water cycle influences what you wear every day. If it's snowing, you make sure to wear a coat. When it's raining, you wear rain boots and carry an umbrella. The water cycle also helps you live and grow, as you need water to function.

The water cycle even plays an important role in the production of food, clothing, essential oils, and more! Isn't it amazing to see the influence one small process has on the whole world?

What to Do Next:

- Keep a weather log where you record the weather each day for a few weeks. Notice how the water cycle continues over the course of several days as sunshine facilitates evaporation, clouds show condensation, and rain, snow, or hail illustrate precipitation.

- With your parent's permission, post a picture of your water cycle bag on Facebook or Instagram. Make sure to tag @**doterrascience** and to use the hashtags **#doterrascience** and **#doterrascienceforkids.**

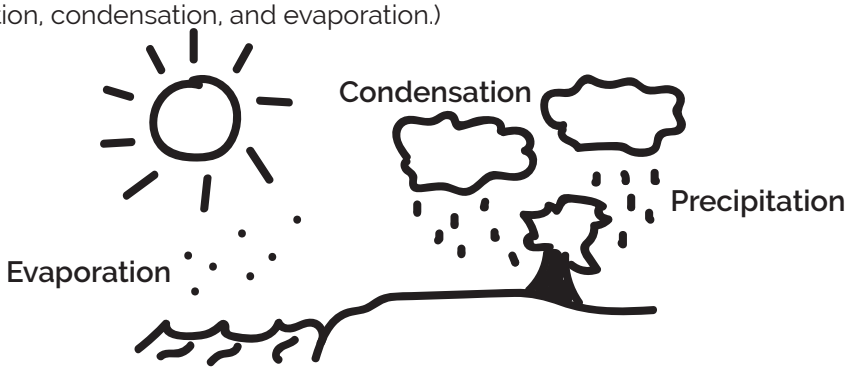
The Water Cycle

Name Teacher's Copy

What You Discovered:

Fill out the questions below as you work on your water cycle experiment.

1. Draw an example of the water cycle, making sure to label the key parts: (precipitation, condensation, and evaporation.)



2. How does the water cycle influence your life?

It influences what we wear, provides water to drink, and helps plants grow.

(Answers will vary.)

3. How have you seen the water cycle in action in your life?

When it rains or snows.

(Answers will vary.)

4. Why is the sun so important to the water cycle?

It provides the energy that powers the water cycle.

5. Which step of the water cycle is currently happening outside? How can you tell?

(Answers will vary depending on the day.)

6. What did you learn about the water cycle?

(Answers will vary.)

The Water Cycle

Name _____

What You Discovered:

Fill out the questions below as you work on your water cycle experiment.

1. Draw an example of the water cycle, making sure to label the key parts:
(precipitation, condensation, and evaporation.)

2. How does the water cycle influence your life?

_____

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3. How have you seen the water cycle in action in your life?

_____

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4. Why is the sun so important to the water cycle?

_____

_____

5. Which step of the water cycle is currently happening outside? How can you tell?

_____

6. What did you learn about the water cycle?

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