

TEACHER

ACTIVITY OUTLINE

wyland ocean challenge

AQUATIC ECOSYSTEMS

Activity No.

FOUR

Title:

WATER CYCLE ART

O OBJECTIVES:

{students will be able to}

- Correctly apply the terms: evaporation, condensation, and precipitation when referencing the water cycle.
- Explain that water is a limited, non-renewable resource by referencing the water cycle.
- Use several different painting techniques to create an illustration of the water cycle.
- Depict the water cycle using various painting techniques
- Use different instruments to paint

S SUMMARY:

Students will demonstrate an understanding of the different steps of the water cycle by creating a shoe-box water cycle. They will observe evaporation, condensation, and precipitation in their artificial water cycles. Students will create a picture representing each step using watercolors (evaporation), sponge art (condensation), and spray/drip art (precipitation), combining all three compositions to create an artists rendering of the water cycle.

t TIME NEEDED:

1-3 sessions. You can condense this lesson by preparing the water cycles ahead of time and having one in each stage available on the same day or by using heat lamps and ice to speed up the process.

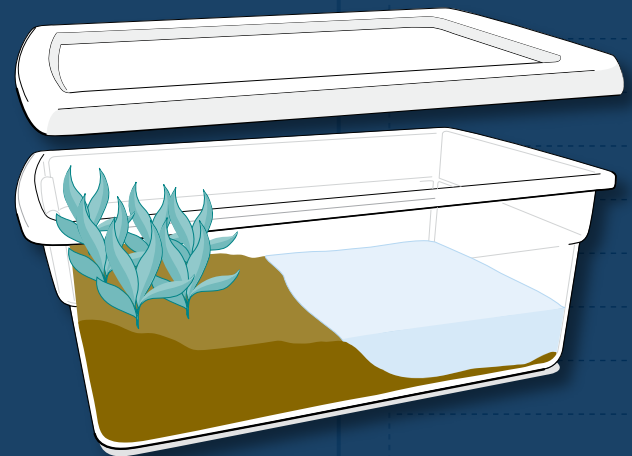
m MATERIALS:

SCIENCE MATERIALS:

{This activity may also be done as a demo to reduce the materials needed}

- Students' Field Notebooks
- Student activity sheets
- Pencils and erasers
- Air tight, watertight, containers (1 per group of 4 to 5 students) such as gladware or other "disposable" 8 cup containers or large glass jars with plastic wrap taped tightly around the jar.
- Container filled with water for each group. To speed experiment you can use hot water (not be hot enough to burn!) or heat lamps.
- Ice for each group if you'd like to speed experiment

SHOEBOX WATERCYCLES



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ART MATERIALS:

- 3 pieces of white construction or watercolor paper for each student
- 1 large piece of light colored construction paper for each student
- Variety of watercolor paints or cakes
- Watercolor brushes
- Containers of water for rinsing brushes
- Paper towel or rags for blotting brushes
- Cut up sponges
- Clean, empty spray bottles (travel size bottles are ideal)
- Glue sticks
- Pencils or black felt-tip pens



PREPARATION:

- Read Background: Water cycle, A never-ending journey
- Read How to use art in your classroom: Watercolor painting
- Have supplies on group tables ready for students



ACTIVITY INTRODUCTION:

1. Lead a discussion on water. Ask students what they know about water. Where does it come from? What happens when rain falls? Where does it go? Is there a limit to how much water is on the planet or do we get more somehow? Write answers on the board, even if they are incorrect. As you go through the lesson, you can revisit any misconceptions. You can also draw the parts of the water cycle on the board as they mention or describe them. Introduce the term Water Cycle to describe the process they just discussed. Tell students that they will be creating their own artificial water cycles to better understand the different steps of the water cycle and answer these questions. As the experiment progresses, you'll create notes and a diagram on the board based on the students' observations.
2. Lead students through the creation of their water cycle (if you are choosing to use hot water and ice, do steps 3-5 before building the water cycles as hot water and ice will trigger water cycle right away):
 - a) Students should carefully pour water into their container, approximately one or two inches. They should make a mark of the water level on the container with a piece of tape or a permanent marker.
 - b) Each group can place the lid on their Water Cycle and put them in a sunny area in the classroom or under a heat lamp. Make sure the lid seals tightly. You may have to tape or glue the lid down to get a good seal.
 - c) If you've chosen to use hot water, have the students observe the container with the hot water for a few minutes and then have them place ice on the lid of the container. The ice will start the condensation process.
3. Pass out the student activity sheet.
4. Have students hypothesize about what might happen in their water cycle and answer the first question on the student activity sheet. Ask them to share their answers with the class or small groups. Write some of these hypotheses on the board.
5. Explain to students that they will be observing their artificial water cycles over the next day or two to observe any changes (unless using hot water and ice).

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EXPLORATION:

Observation #1: Evaporation (Watercolor Paintings)

1. When evaporation is observed within the shoeboxes (when the water level in the boxes goes down), ask students what has happened to the water. Discuss the process of evaporation as a class and have students give examples of how they have seen this process in their everyday lives.
2. Remind students that recording observations when doing an experiment is an important step for scientists. Explain that they will be recording their observations through writing and art. This process will help others to understand what has happened in their experiment, and the conditions present. Remind students how to write their scientific heading in their notebooks, and write an example on the board.
3. Have students record their observations in their field notebook and write an explanation of evaporation on their student activity sheet.
4. Pass out watercolor supplies for students to make their paintings. The size of paper depends on the size of their field notebook, as the finished product will be the three circles put together depicting the water cycle. Instruct students to paint the entire piece of paper. After they are finished painting, have students fold their paper in half and cut out a large circle. They can put scraps in a bin to be used for other art projects, like a collage. The use of circles represents the continuous nature of the water cycle. The idea is for the painting to show the process of evaporation, so ask students to think about how they would communicate this without words.
5. When students are finished with their paintings ask them if any of their paint has dried. Ask students what water cycle process is responsible for their paint drying. Evaporation!

Observation #2: Condensation (Sponge Art)

1. When condensation is observed (water collects on the lid of the box), discuss the process of condensation and the formation of clouds (Note: you can put ice on the lid to accelerate this process). Tell students to recall the process of evaporation and ask students to explain what has happened in their watercycles so far. Ask students if they have seen condensation occur before. Have students give these examples (breath on a cold day, sweating glass of water, breath on mirror).
2. Tell students they will be recording their observations of this stage again through writing and art.
3. Have students record their observations in their field notebook and write an explanation of condensation on their student activity sheet.
4. Pass out pieces of paper, cut-up sponges and watercolor paint supplies. They will paint on the entire paper using sponges. The sponges will help create cloud-like texture. This may be an abstract painting. Have students fold their paper in half and cut out a large circle when they are finished painting.
5. Ask students to consider how sponges are similar to clouds. They hold water and have a point at which they can't absorb any more -- then they drip!

Observation #3: Precipitation (Drizzle & Spray Art)

1. When precipitation has been observed (water droplets begin to fall from the lid), discuss this step of the water cycle. Ask students to recall all steps of the water cycle they have observed in their artificial cycles.
2. Tell students that water is a limited resource. All the water we have on earth is all the water we will ever have. Ask students what will happen to the water that falls to the bottom of the container as a form of precipitation. It will evaporate once again and then condense and precipitate!

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e EXPLORATION:

Continued...

Observation #3: Precipitation (Drizzle & Spray Art)...Continued

3. Tell students they will be recording their observations of this stage again through writing and art.
4. Have students record their observations in their field notebook and write an explanation of precipitation on their student activity sheet.
5. Explain to students that they will be creating different forms of precipitation in art by using their fingers, flicking paintbrushes, and spraying watercolor from squirt bottles. Tell students that these paintings will portray their observations of precipitation within their watercycles.
6. Pass out pieces of watercolor paint supplies, and spray bottles with some watercolor paint in them to help students create their art pieces. After they are finished painting, have students fold their paper in half and cut out a large circle. Again, these may be abstract paintings.
7. When students are finished have them create a water cycle diagram on their student activity sheets.

c COMMUNICATION:

{and assessment}

1. Students will now incorporate their three art circles into one large work of art. Have students arrange their three circles in their journals to illustrate the flow of water from one stage to the next in the cycle (they could do this by painting arrows, placing them in a painted circle, painting a landscape and placing the circles appropriately or other creative means). Students should label each stage. Write key vocabulary large on the board.
2. Students should answer the following questions in their field notebooks:
 - a. How did the water cycle model demonstrate that water is a limited, non-renewable resource?
 - b. What water cycle process is responsible for the paint drying on your paper?
 - c. How did your understanding of the water cycle change from your original thoughts to your painting of the water cycle?
 - d. Was it helpful to sketch during observations? Why or why not?
 - e. Do you think art would help explain the water cycle to someone? What similarities are there between the circle shape you used in your artwork and the water cycle?

a ADAPTATIONS:

For younger students:

This activity can be done with younger students. You may wish to read a story with the students such as "A Drop Around the World" and have students create their own illustrated story about the journey of a drop of water through the water cycle, or have them act out the journey of a water droplet through the water cycle. The drop of water should change form and go through each part of the water cycle at least once.

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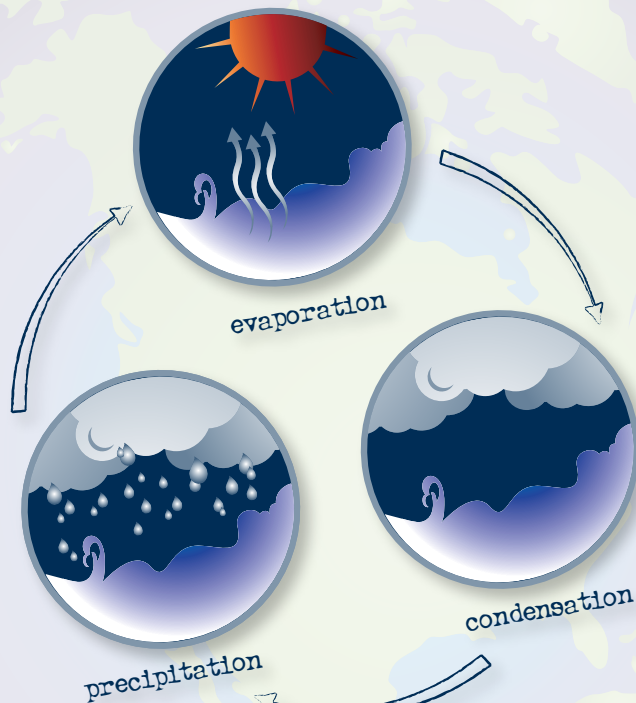
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ADAPTATIONS:

For older students:

Have the students turn their water cycle models into terrariums by adding soil and plants. Students can observe and learn about transpiration (when plants release water) in this closed environment. Can they create a small sustainable ecosystem? Have them document what they add and subtract to their ecosystem and how much water it takes until it can sustain itself and doesn't require any more. How difficult is it to create the right balance?

Have students do some research to find out about weather patterns in the area of the ecosystem you are studying. If it rains or snow, why does that occur there? Where does the water go once it is on the ground? Have them write a report or draw a diagram of the water cycle of a specific ecosystem.



fact:

Of all the
water on earth,
less than 3%
is freshwater.

Name: _____

Date:

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