MINI WATER CYCLE *(MODIFIED FOR ADEED)*

INSTRUCTIONS

Overview:

Water rises and cools to form clouds.

Objectives:

The student will:

- describe what happens to water when it rises;
- make an inference about what happens to water when it rises; and
- write a story about a drop of water that travels through the water cycle.

Targeted Alaska Grade Level Expectations:

Science

[3] SD1.2 The student demonstrates an understanding of geochemical cycles by describing the water cycle to show that water circulates through the crust, oceans, and atmosphere of Earth.

[3] SA1.1 The student demonstrates an understanding of the process of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.

Writing

[2] W1.2.1 The student writes for a variety of purposes and audiences by producing a variety of written forms for specific audiences (e.g., stories, reports, letters, journal entries).

Vocabulary:

cloud formation (condensation) - the process of water vapor in the air turning into liquid water

rain/snow falls (precipitation) – falling products of condensation in the atmosphere, as rain, snow, or hail

water collects (collection) - the act of gathering together; a group of objects or an amount of material accumulated in one location, especially for some purpose or as a result of some process

water cycle – the cycle of evaporation and condensation that controls the distribution of Earth's water as it evaporates from bodies of water, condenses, precipitates, and returns to those bodies of water

water rises (evaporation) – the process of liquid water becoming water vapor, including vaporization from water surfaces, land surfaces, and snow fields, but not from leaf surfaces

NOTE: Students are not accountable for the words in parentheses, as this vocabulary is not assessed until they are in the 5th and 6th grades. However, teachers may use those words during the lesson as desired.

Materials:

- Waldman, N. (2003). *The Snowflake: A Water Cycle Story*. Brookfield, CN: Millbrook Press.
- Quart-sized zippered plastic bag (one per pair)
- Small (approximately 3.5 ounce) disposable cup (one per pair)
- Measuring cup
- Masking tape
- Permanent markers (5-10)
- KWL Chart
- Science journal
- OVERHEAD: "Water Cycle"
- STUDENT LAB: "Title of Student Lab"

Activity Preparation:

A KWL chart is a three-column chart to be filled in during student discussion. The first column should be labeled "K (What I KNOW)," the second column "W (What I WANT to Know)," and the third column " L (What I LEARNED)."

MINI WATER CYCLE

INSTRUCTIONS

Prepare a KWL chart on chart paper in preparation for teaching this lesson.

Activity Procedure:

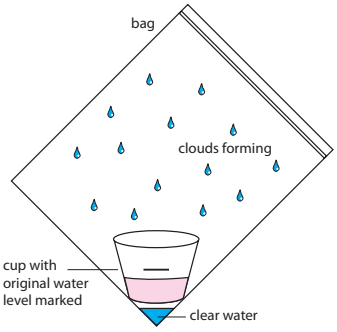
Gear Up

Process Skills: observing, inferring, and communicating

1. Ask students what they know about the water cycle. Write their responses on a KWL chart along with students' initials.
2. Read *The Snowflake : A Water Cycle Story* by Neil Waldman to the class. Ask students to recap the changes the snowflake went through in the story. Write their responses on the board.
3. Review the water cycle using OVERHEAD: "Water Cycle." Share definitions with students.

Explore

Process Skills: observing, describing, and communicating



4. Divide students into pairs. Explain each pair will create a simple water cycle model in a closed zippered bag.
5. Distribute one bag and one cup to each pair. An adult or older student will place two ounces of water in the cup and mark the water line with a permanent marker. Tape the cup to the inside of the bag to prevent spilling and tipping. Close the bag and tape it on a window that gets direct sunlight. Make sure the bag is tilted on the edge like a diamond so water can collect in a corner.
6. For several days, students will observe how water droplets form in the bag.
7. Ask students to draw a picture of the cup and the bag in their journal at the beginning of the investigation. Students should label the bag, cup, water, and water-droplets.
8. The following day, students should record their observations by drawing and labeling the bag and its contents in their science journal. On the third day, instruct students to describe, in two or more sentences, what has happened to the water in their zippered plastic bag.

NOTE: The water will collect on the sides of the bags and will then accumulate at the bottom of the bag after several days.

Generalize

Process Skills: inferring, predicting, describing, and communicating

9. Gather students and ask the following questions. Write student responses on the board.
   a. What happened to the water in the cup?
   b. Where did it go in the bag?
   c. Why did that happen?
   d. How is this like a cloud full of water droplets?
   e. How does the location (on the window) of the mini water cycle affect the amount of water collected in the bottom?
   f. What would happen if we taped the mini water cycles in a cold corner?
   g. What would happen if we left the mini water cycles up for one month?
10. Complete the KWL chart started at the beginning of the lesson.

Apply

Process Skill: communicating

11. Ask students to interview an adult about what they know about how clouds form. Students should write down what the adult told them in the form of a letter to the teacher. Students may need to help this adult remember how clouds form by teaching them what they have learned about cloud formation. Ask students to explain in their letter if you had to teach someone about the way clouds form.

Assessment Task:
Instruct students to write a story about being a water droplet that travels through the water cycle. In the story the droplet must travel through two or more parts of the water cycle. Students should be sure to use appropriate vocabulary terms: water rises, cloud forms, rain or snow falls, and water collects in their story. They should also make at least one inference about what happens to water when it rises.

Rubric:

Objectives	GLES	Below Proficient	Proficient	Above Proficient
The student describes what happens to water when it rises.	[3] SD1.2	The student does not describe what happens to water when it rises.	The student describes what happens to water when it rises.	The student describes what happens to water when it rises and includes how it fits in with one or more parts in the water cycle.
The student makes an inference about what happens to water when it rises.	[3]SA1.1	In his or her story, the student does not make an inference about what happens to water when it rises.	In his or her story, the student makes one inference about what happens to water when it rises.	In his or her story the student makes two or more inferences about what happens to water when it rises.
The student writes a story about a drop of water that travels through the water cycle.	[2]W1.2.1	The student does not write a story about a drop of water that travels through the water cycle, or writes about a drop of water that travels through one part of the water cycle. He or she uses appropriate vocabulary words.	The student writes a story about a drop of water that travels through two parts of the water cycle. He or she uses appropriate vocabulary words.	The student writes a story about a drop of water that travels through three or more parts of the water cycle. He or she uses appropriate vocabulary words in their story.