

RAINDROPS KEEP FALLING ON MY HEAD

Prep Time: 30 minutes
Teaching Time: 2 hours

INSTRUCTIONS
Grade 3



Science Concept:

Raindrops come in many shapes, sizes and sounds.

Objectives:

The student will:

- describe raindrops using size, shape, and sound;
- use observations to answer questions; and
- produce a poster to illustrate and explain raindrops.

GLEs Addressed:

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] SA1.2 The student demonstrates an understanding of the processes of science by observing and describing the student's own world to answer simple questions.

Writing

[3] W1.2.2 The student writes for a variety of purposes and audiences by using expressive language when responding to literature or producing text (e.g., journals, pictures supported by text or poetry).

Vocabulary:

rain - the condensed moisture of the atmosphere falling visibly in separate drops

droplet - a very small drop of liquid (droplets of water)

length - the measurement or extent of something from end to end

Materials:

- 6-to-8-inch diameter aluminum pie pan (one per group)
- Cardboard to cover pie pan (one per group)
- Ruler (one per group)
- Scissors (one per group)
- Flour, sifted (1 cup per group)
- Dark construction paper
- Red, yellow, blue and green construction paper, cut into squares (an equal number of each color)
- Plastic sandwich bags (one per group)
- Pins or needles of various sizes (60 per student)
- Screen, such as a wire mesh strainer
- Pitcher
- Water
- Food coloring
- Dry rice or beans (1/4 cup per student)
- Cardboard tubes, the longer the better (one per student)
- Brandt, K. (1982). *What makes it rain?: The story of a raindrop*. (Y. Miyake, Illus.). Mahwah, NJ: Troll Associates.
- Williams, J. (2005). *Why is it raining?* Berkeley Heights, NJ: Enslow Publishers, Inc.
- STUDENT WORKSHEET: "Raindrop Questions"
- STUDENT INFORMATION SHEET: "Poster Rubric"

Activity Preparation:

1. Punch 4-6 different sized holes in the bottom of each sandwich bag using the pins.
2. Prepare a pitcher of colored water.

Activity Procedure:

Please refer to the assessment task and scoring rubric located at the end of these instructions. Discuss the assessment descriptors with the class before teaching this lesson.

Gear Up

Process Skills: observing and communicating

1. Ask students what sounds raindrops make.
2. After a short discussion explain that the class will play a game called: "The Rain Game." Distribute one colored square to each student so that there are an equal number of each color distributed. Explain that students will be playing a game with sound and without words. Write the rules on the board and explain:
 - a. red = rub palms together (rising wind)
 - b. yellow = snap fingers (first drops of rain)
 - c. blue = pat hands on thighs (harder rain)
 - d. green = stomp feet (adding thunder to rain)
3. Ask everyone to stand in a circle. Ask students to put their square in front of them on the floor. Start a wave-like motion and indicate that students should follow so that there is a "wave," like at a ballpark. Explain that students will do the motions associated with their card just like they did "the wave." Each student will do the motion on their card, so that all students will be making a motion by the end of four revolutions. Explain students should start and stop when indicated by the teacher.
4. Complete the motions in the following order:
 - a. Rub palms together
 - b. Snap fingers
 - c. Pat hands on thighs
 - d. Stomp feet
 - e. Stop stomping feet
 - f. Stop patting hands on thighs
 - g. Stop snapping fingers
 - h. Stop rubbing palms together
5. When everyone is silent ask students how this exercise relates to rain.
6. Repeat the game as desired.
7. Read *What Makes It Rain? The Story of a Raindrop* by Keith Brandt and *Why Is It Raining?* by Judith Williams and discuss the different sizes and shapes raindrops come in. Write student comments on the board.

Explore

Process Skills: observing, communicating, describing, and classifying

8. Divide students into pairs.
9. Explain that students will be "catching" raindrops. Guide students through the steps below. (If there is no natural rain the day of the lesson, use the sandwich bags from the Activity Preparation.)
 - STEP 1. Place 1 cup of flour in a pie pan. (NOTE: Doing this over a cardboard box reduces mess.)
 - STEP 2. If it is a rainy day, explain that students will be catching raindrops. Practice covering and uncovering the flour with cardboard. If there is no rain, explain that students will be using plastic bags with different sized holes in them to simulate rain.
 - STEP 3. If there is rain, go outside and hold the pie pan under the rain for 8-10 seconds. Otherwise, use the bags and a pitcher of water. Hold bags over the flour. Use timers or count to ten.
 - STEP 4. Return to the classroom. Use a fine screen to sift the flour, separating the dough balls over a box or garbage can.
 - STEP 5. Put the dough balls onto dark construction paper and allow them to dry for about two minutes.

10. Ask pairs to observe the dough balls, then pick 10 different sized dough balls and measure the length of each one in millimeters. Instruct students to sketch the drops and compare the shapes of small, medium, and large drops. Ask students to arrange the drops from smallest to largest. (NOTE: It is easier to sort along the edge of a ruler, moving the dough balls carefully with a pencil.)

Generalize

Process Skills: describing, communicating, classifying, and observing

11. Ask the following questions and discuss as a class:
 - a. How did you classify your raindrops?
 - b. How many different shapes and sizes did you observe?
 - c. Where are some places that raindrops go?

Apply

Process Skills: describing, classifying, and observing

12. Instruct students to go home and ask an adult or family member if they have ever been anywhere else in the rain other than in Alaska. Ask, "What was different about that experience than the rain in Alaska?" Students should write a paragraph summarizing family member's responses in their science journal.

Extension Ideas:

Guide students through making their own rain stick. Explain that rain sticks originate in the Andes and consist of a hollow branch sealed at both ends and are filled with pebbles or seeds. You will need a cardboard tube (longer the better), a marker, about 60 flat head pins (shorter in length than the diameter of the tube), tape (masking or packing tape works best), paper, and rice or small beans (uncooked) for each student.

- a. Most paper tubes have a spiral seam. Help students to use a marker to draw dots about half an inch apart, all the way down the spiral seam of the tube; or do this for them.
- b. Poke a pin all the way through at each dot; complete this for young students that may not handle the pins safely. The pins should not poke through the other side of the tube. Wrap tape around the tube to hold the pins in place.
- c. Help students to cut circles of paper just a little bigger than the ends of the tube and tape one of the circles to the end of the tube. The entire circle should be covered with tape to seal that end of the tube.
- d. Ask students to place rice or beans in their tubes. Students may cover the other end of the tube with their hand and turn it over, adding more rice or beans until they like the sound.
- e. When the student is happy with the sound, they can put the second circle of paper over the open end of the tube and seal it with tape.
- f. Students may decorate their rain sticks as desired.

Answers to Student Worksheet:

1. Round or egg shaped
2. Answers will vary
3. Answers will vary
4. Answers will vary
5. No
6. No
7. Answers will vary, but should indicate that some runs off and some sinks into the ground.
8. Answers will vary, but may include the ground, oceans, rivers, ponds, streams, etc.



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RUBRIC

Assessment Task

Distribute the STUDENT INFORMATION SHEET: "Poster Rubric" and instruct students to design a poster illustrating the different sizes and shapes of raindrops, using the rubric as a guide. Ask students to illustrate their observations and what they learned during the Explore activity. Distribute the STUDENT WORKSHEET: "Raindrop Questions" and ask students to answer the questions independently. They must answer at least six questions correctly.

Rubric

Objective	GLE	Below Proficient	Proficient	Above Proficient
The student describes raindrops using size, shape, and sound.	[3] SD1.2	On a poster, the student does not describe raindrops using size, shape, and/or sound.	On a poster, the student describes one or two raindrops using size, shape, and/or sound.	On a poster, the student describes three or more raindrops using size, shape, and/or sound.
The student uses observations to answer questions.	[3] SA1.2	The student uses observations to answer zero to five questions correctly.	The student uses observations to answer six questions correctly.	The student uses observations to answer seven or more questions correctly.
The student produces a poster to illustrate and explain raindrops.	[3] W1.2.2	The student produces a poster to illustrate and explain knowledge of raindrops. Students must get zero to four points based on the poster rubric.	The student produces a poster to illustrate and explain knowledge of raindrops. Students must get five points based on the poster rubric.	The student produces a poster to illustrate and explain knowledge of raindrops. Students must get six or seven points based on the poster rubric.

CRITERIA

1 POINT EACH

<p>Size: 12x18 white construction paper or poster board with a border.</p>	
<p>Clear Purpose: Demonstrates understanding of lesson.</p>	
<p>Variety of materials used to make the poster: Markers, crayons, paint, magazines, computer lettering or designs, etc.</p>	
<p>Neat and presentable: Easy to read.</p>	
<p>Correct Mechanics: Capitalization, usage, punctuation, and spelling.</p>	
<p>Presentation of poster is understandable.</p>	
<p>Understanding of raindrop size and shape is clearly shown by illustrations and examples.</p>	

NAME: _____

RAINDROP QUESTIONS

Directions: Answer the following questions using what you learned in the investigation.

1. Describe the shape(s) of raindrops.

2. Are the sizes of drops the same or different?

3. Are there more large, medium, or small drops?

4. What size raindrops do you think happen the most? Why?

5. Do all rainstorms have the same raindrop sizes?

6. Do all drops in a rainstorm fall from the same height?

7. What happens to rain that falls on your schoolyard?

8. Where are some places that raindrops go?
