

Description

Let's discover how rain forms and falls from the sky as a part of the water cycle.

- Age: 2-6
- Time: 5 minutes to prepare, 10 minutes for results

Learning Objectives

- Children will understand how rain is formed and how the effects of gravity creates rain showers.

Vocabulary

- Gravity: a force that pulls objects down to Earth
- Droplets: very small drops of liquid

Materials

- Shaving Cream
- Clear Jar
- Clear cup
- Water
- Pipette or Dropper
- Food Color (Blue)

Materials Preparation

- Create the 'rain' water in a clear cup: Mix water with drops of blue food coloring. The number of food coloring drops depends on your desired color intensity.

Safety Precaution

- Adults should monitor the use of the shaving cream bottle to ensure proper dispensing of product. Shaving cream is not to be ingested, should not come in contact with the eyes, and may cause skin irritation. See the shaving cream label for ingredients to eliminate allergic reactions for the children participating.

Implementation

Introduction

Ask your child some background knowledge questions about rain. "What is rain? Where do you think the rain comes from? How do you think rain falls from the sky? What happens when it rains?" After the child(ren) is thinking about the rain, act it out. "Let's act out rainy weather! Show me with your body what cloudy looks like (put arms out to make a big cloud and sway like clouds). Oh no! What's that? Is that a drop of rain?! Show me what it looks like for a drop of rain (might be jumping to a squat position like a falling raindrop, might be squat into a tiny ball, may use finger to show a tiny little droplet of rain). Oh, now it's very misty! What does it sound like when it's misty (rub hands together to make a misting noise as you move around together....listen to the mist!)? Oh! It's pouring out! Make it rain hard! (Slap your hands against your legs as you move around to make rain noise! Use your fingers to show the rain falling down hard.) Is that thunder I hear? Make the thunder! (Stomp around in the circle). The storm is leaving. The sun is coming out again and warming up the Earth. Show me the sun! Touch the Earth with your



warm rays and warm it up again (Make a big circle above your head and then reach your arms out touching and warming the Earth below you)! You have been a great meteorologist; I can tell that you have observed so many details about rainy weather. Today, we are going to discover how rain is made and how it falls to the Earth with gravity!”

Procedure

1. Fill the clear jar $\frac{3}{4}$ of the way full with cool water (about 2 inches left to the top of the jar). This water will represent the ‘air.’
2. Squirt shaving cream on the top of the water to create the ‘cloud’. You can fill the shaving cream above the top of the jar to create a ‘fluffy cloud’ made of tiny water droplets that have joined together.
3. Use your pipette or dropper to drip the blue water (previously prepared) into the ‘cloud’. Keep adding the colored water to your ‘cloud’ until it starts ‘raining’. When you add the blue water (‘rain water’), you will show how the cloud is getting heavy with water droplets.
4. Enjoy the rainstorm as it falls out from the ‘cloud’ as gravity pulls the ‘raindrops’ to the ‘ground’!

Questions to Prompt Inquiry

1. When you put some of the droplets of rain water in the cloud, does it fall through right away?
2. When did you see gravity pull on the water droplets?
3. What would happen if I put one pipette or dropper full of rainwater in the cloud? Why?
4. What do you think would happen if we made a bigger, fluffier cloud? Would it still rain? How?
5. How can you make it rain harder so it’s pouring like a rainstorm?

Conclusion

Discuss what the child(ren) observed. What did they notice? What did they learn? “Did you notice when gravity took the heavy water droplets in the cloud and pulled them to the ground? It was raining in our jar! Rain is part of a cycle called the water cycle. (Using your hands to motion the cycle) In the water cycle, the sun warms the water from the Earth in rivers, streams, oceans, the ground and plants and it floats up into the air. The little tiny droplets of water mix with little bits of dust and join together to make a big fluffy cloud that you can see. They are able to float because they are so tiny and light. The cloud keeps pulling in more water droplets, but when it gets heavy and full of droplets, what do you think happens next? (Rain!) Yes! The rain falls down to the ground because it is heavy and gravity pulls and pulls it towards the Earth, onto the ground! Then, the water cycle starts all over again!

Tips and Suggestions

Activity Extensions

- Color mixing: Repeat this activity using multiple cups of different colored water (water with food color). Experiment as you put droplets of each colored water into your cloud. What color is falling through the cloud? Are the colors mixing or are they separate? Is the cloud changing color?

Adapting to Home/Classroom/Public space

- Classroom Setting: This lesson is best completed in small groups (2-5 children) to ensure that all children can watch the experiment closely and interact with the activity.

Learn More!

Adapted from: <https://thestemlaboratory.com/rain-cloud-jar/>

- a. Links to learn more: Take another approach to this water cycle activity by learning about how clouds are made! Make a Cloud in a Jar through this fun activity: <https://www.giftofcuriosity.com/weather-science-how-to-make-a-cloud-in-a-jar/>
- b. Reading recommendations: The Little Raindrop by Joanna Gray

