LESSON 3:
RAINBOW RAINCLOUDS

SUPPLIES

MAIN BIN

- Clear plastic cups (20)
- Pipettes (20)
- Food Coloring (4 colors)
- Cups(45)
- Tablecloth (2)

TEACHER BRINGS

- Shaving Cream (1 can)
- Water (if no sink access)

BIG FOLDER

- Printing Paper (40)

PENCIL BOX

(for extension)

- Markers
- Scissors
- Glue Sticks

OBJECTIVES

- ☑ Identify and understand the process of precipitation.
- ☑ Demonstrate the process of precipitation and how clouds hold and release water.

HOOK

5 min

- Have you ever sat outside and watched the clouds? What do the clouds look like on a sunny day? What about on a rainy day?

INTRODUCTION

3-5 min

From rain to snow to sleet to hail, precipitation is everywhere! Precipitation, when water forms and falls from the sky, helps to fill up rivers, lakes, and even oceans. This process is necessary for the growth and survival of all plants and wildlife!

Clouds form when warm air rises into the sky and cools down. As it cools, the water in the air sticks together to make little drops. These drops group up to make a cloud, and float high up in the sky. Some clouds look white and puffy like cotton candy, while others are gray and bring rain or snow.

Have students describe different types of clouds that they've seen!

COLOR FACTOR

This experiment uses color to explore clouds and rain

- The food coloring collects in the shaving cream. When the shaving cream is saturated, or the food coloring is too heavy, the droplets fall.
- Without color, we wouldn't be able to see what was happening!

RAINBOW RAIN CLOUDS

RAINSTORM ACTIVITY

As a class, you will recreate the sounds of a rainstorm using these actions.

Directions:
Have the students form a circle around the room. Find a place in the circle, and tell the students you are going to "pass" an action around the circle.

Once you start doing an action, the student on your right should start doing that action. Then, the student to their right should start doing that action.

Students can only start an action once the person to their left has started that action, and they can only start a new action once a new one has been "passed" to them.

Here are the actions the teacher should "pass" in order:

Rub Hands Together:	Wind
Pat Thighs:	Distant Rain
Snap Fingers:	Rain Drops
Clap Hands:	Heavy Rain
Stomp & Clap Hands:	Thunderstorm
Clap Hands:	Heavy Rain
Snap Fingers:	Rain Drops
Pat Thighs:	Distant Rain
Rub Hands Together:	Wind

DISCUSSION

3-5 min

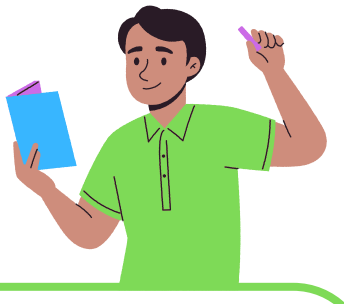
- What causes rain?
  - Inside of a cloud, water droplets condense into one another, making the droplets grow.
  - When these water droplets get too heavy to stay suspended in the cloud, they fall to Earth.
  - This is called precipitation!

Today we will model how precipitation works! This experiment uses color to explore clouds and rain.

- The food coloring collects in the shaving cream. When the shaving cream is saturated, or the food coloring is too heavy, the droplets fall.
- Without color, we wouldn't be able to see what was happening!

Ask the students the following questions:

- What will happen when the food coloring is mixed with the shaving cream?
- Will it drip through the shaving cream or stay in it?
- Why do you think we're using food coloring in this experiment?



TIP

It's important to supervise kids during this experiment, as shaving cream can be messy and should not be ingested.

RAINBOW RAIN CLOUDS

3:00PM
Partially Cloudy
75°

4:00PM
Light Rain
70°

5:00PM
Storm Conditions
68°

ACTIVITY

15-20 min

1. Split students into groups of 2-3.

2. Pass out the following materials to each group:
   - 4 small cups (for water/food dye)
   - 1 large/clear plastic cup, filled 2/3 with water
   - 1 pipette per student
   - NOTE: make sure to use tablecloths to protect tables.

3. Walk from group to group and:
   - Fill the small cups partially full with water and several drops of different color food coloring
   - Add a shaving cream "cloud" to the top of the group's large plastic cup.

4. Have the students use their pipettes to add 3-4 drops of colored water to each cloud

5. Watch the results for 30 seconds to a minute. Have any droplets fallen? Did any sink to the bottom of the cloud? Repeat steps 3 & 4 until droplets start falling. Once they do, encourage students to slow down and watch before adding more.

6. If there is time and materials, you can have the students repeat the experiments, but this time focus on combining primary colors.
   - Ex. Make a cloud with only Red and Blue raindrops. What color do you think the storm will be? Purple!

7. Have students carefully bring their cups to the sink one at a time and dump out the water. Then, have them throw the bowls away. Make sure to clean up any spills.

RAINBOW RAIN CLOUDS

OBSERVE & EXPLAIN

2-4 min

Clouds in the sky are primarily made out of water droplets. When there is too much water, the clouds get heavy to the point where they drop all that water. It then it pours rain in any area that is under that cloud! The experiment we did today showed us what that process looks like. When the food coloring dripped through the shaving cream, it created various colors in our "cloud" because it got too heavy to carry it.

This is known as precipitation, and it is something that happens in the clouds all the time! We can't see the process of it because it is too small for us to see.

Exit Ticket

Ask each student the following questions as they walk out the door.

- Q: What is precipitation?
  - A: Precipitation is any form of water that falls from the sky. This includes rain, snow, sleet, and hail. It's a part of the water cycle, where water moves from the Earth's surface to the atmosphere and back again!
- What are clouds made of?
  - A: Clouds are made of tiny water droplets or ice crystals that float in the sky. These droplets or crystals form when water vapor in the air condenses as it cools.