

Lesson Plan: Rain Clouds in the Sky

Content	Audience	Method	Output/Products	Outcomes/Impact
Factsheet about clouds and rain as part of a weather study, showing kids a little of how and why rain falls from clouds.	Ages K-4th grade	1. Go over handout 2. Facilitate brief discussion with students about rain and clouds 3. Introduce vocabulary words. 4. Watch video All About Clouds https://www.youtube.com/watch?v=QAgeFSa60TE 5. Hands-on Activity	1. Hand-outs	1. Students will be able to cooperate with one another in large groups 2. Students will conduct a visual hands-on rainy day experiment where they can see a little of how and why rain falls from clouds.

Supplies

- A Glass
- Water
- Shaving Cream (Foam)
- Food Coloring
- Rulers (optional)

Prep

Optional: Setup water glasses at each station and place shaving cream and food coloring there as well. Put handouts at each chair for each student.

Method

- Introduction to rain and clouds. Review hand-out (factsheet about rain and clouds).

- Have a brief discussion with students about rain and clouds (use factsheet).
- Introduce useful words and the different types of clouds vocabulary.
- Watch video
- Perform experiment.

Weather and Climate:

- Weather is the combination of sunlight, wind, snow or rain and temperature in a particular region at a particular time.¹
- Climate is a pattern of weather in an area over a period of time.
- Rain is a water that falls from the sky in drops.²

Cloud Vocabulary

- Clouds are a large group of tiny water droplets that we can see in the air. There are three main types.
- Stratus clouds are low-lying grey clouds that appear as layers of sheets.
- Cumulus clouds are puffy, like cotton floating in the sky and are fair weather clouds that make shapes.
- Cirrus clouds are thin and wispy, appearing high in the sky.³

Other Clouds (optional and are variations of the three main clouds): Cirrocumulus, Altostratus, Altocumulus, Stratocumulus, Cirrostratus, Cumulonimbus, and Nimbostratus.

Watch video: *All about Clouds* <https://www.youtube.com/watch?v=QAqeFSa60TE>

Perform Experiment: Creating a Rain Day:

1. Fill a glass with water to about 1" from the top. Use rulers to help measure.
2. Spray shaving cream into the glass, so that it puffs up above the surface.
3. Encourage students to drop several drops of food coloring on the top of the shaving cream.

Notes:

Repeat the experiment as many times as you like. Allow students to conduct the experiment on their own. Use different variables and see what happens. Try this experiment with varying amounts of food coloring and see what happens.

¹ <https://learninglab.si.edu/standards/view/2537>

² <https://www.factsjustforkids.com/weather-facts/rain-facts-for-kids.html>

³ <https://www.sciencekids.co.nz/sciencefacts/weather/clouds.html>

The Science behind this experiment:

Clouds are a group of tiny water droplets and are formed from water vapor rising into the air and condensing onto miniature dust particles. Water droplets (food coloring) are gathered together in the cloud (shaving cream), and when the cloud becomes too substantial, gravity takes over to pull the water (food coloring) back down to earth in the form of raindrops.

Rain and Cloud Factsheet

- Clouds are a large group of tiny water droplets that we can see in the air.
- Clouds are created when water on Earth evaporates into the sky and condenses high up in the cooler air.
- Clouds can contain millions of tons of water.
- There are many different types of clouds, the main types include stratus, cumulus, and cirrus.
- Stratus clouds are flat and featureless, appearing as layered sheets.
- Cumulus clouds are fair weather clouds and are puffy, like cotton floating in the sky.
- Cirrus clouds are thin and wispy, appearing high in the sky.
- Cumulonimbus clouds, which make thunder and lightning, are typically anvil shaped, tall, grey and puffy.
- There are many variations of these three main cloud types including stratocumulus, altostratus, altocumulus, cirrostratus, and cirrocumulus.⁴
- Rain falls from clouds in the sky in the form of water droplets called precipitation.
- Water can also fall from the sky in the form of hail, sleet or snow.
- Weather radar is used to detect and monitor rain.
- Rain gauges are use to measure the amount of rain over a certain period of time.
- Heavy rain can cause flooding and landslides.
- Rain allows us to create electricity through hydropower.⁵

Resources:

<https://www.sciencekids.co.nz/sciencefacts/weather/clouds.html>

<https://www.factsjustforkids.com/weather-facts/rain-facts-for-kids.html>

<https://learninglab.si.edu/standards/view/2537>

<https://www.youtube.com/watch?v=QAqeFSa60TE>

Arkansas Education Standards

Kindergarten Science

K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather

⁴ <https://www.sciencekids.co.nz/sciencefacts/weather/clouds.html>

⁵ <https://www.factsjustforkids.com/weather-facts/rain-facts-for-kids.html>

3rd grade Science

3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
3-ESS2-2	Obtain and combine information to describe climates in different regions of the world.

NGSS Cross-Cutting Concepts

- Patterns
- Cause-and-Effect

NGSS Science and Engineering Practices

- Obtaining, Evaluating, and Communicating Information
- Analyzing and Interpreting Data
- Asking Questions and Defining Problems



