



Weather – Grades K-2

Nebraska Science Standards

2.4.3.b Observe and describe simple daily changes in weather

5.4.3.c Recognize the difference between weather, climate, and seasons

Objective: The objective of this lesson is to learn the importance of understanding the weather and its effects on the earth.

Materials (provided by CSM):

Rain cloud demonstration:

- Clear cups
- Shaving cream
- Food coloring
- A pitcher to refill with water (2-3)

Tornado activity:

- Plastic bottles and caps
- Food coloring
- Vinegar
- Soap
- A pitcher to refill with water and funnels (2-3)
- Glitter and weigh boats

Materials (provided by the classroom):

- Water

Discussion: (Questions to ask the students)

- Why is it important for scientists to study weather?
 - So, we can predict weather events and help with safety and planning.
- What types of weather are there?
 - Sunny, cloudy, windy, rainy, and stormy
- What types of storms are there?
 - Blizzards, tornados, hurricanes/tsunamis, earthquakes, hail, etc.
- What do thunderstorms bring?
 - Lightening, thunder, rain, hail, and sometimes tornadoes
 - Discuss thunder by explaining that it is caused by lightning. When a lightning bolt travels from the cloud to the ground it opens a little hole in the air, called a channel. Once the light is gone, the air collapses back in and creates a sound wave that we hear as thunder. The reason we see lightning before we hear thunder is because light travels faster than sound!

** Elaborate on thunderstorms and tornados as you go through the activity.

Activity Description: There are many types of clouds, but the main clouds that cause rain are cumulus clouds. They look white and puffy. These clouds are made up of tiny water droplets. Once there are too many water droplets, the cloud gets too heavy, and it rains.

ACTIVITY 1 – RAIN CLOUD DEMONSTRATION

You will need:

- Clear cups
- Shaving cream
- Food coloring
- Pitcher for water (2-3)
- Water

Setup:

- Fill a pitcher of water to be able to fill each of the student’s cups.
- Have the instructors apply the thin layer of shaving cream and allow the students to add the drops of food coloring with assistance.
- Explain to the students that the “clouds” must wait until they build up with moisture before raining. Discuss how this relates to real life as it doesn’t rain every day here.

Procedure:

1. Give each group of students a plastic cup and fill it with water.
2. Add a thin layer of shaving cream on top of the water and a few drops of food coloring. NOTE: make sure it is a thin layer of shaving cream or the food coloring will not drip through. If possible, help the students add the drops of food coloring to their “rain clouds” with your assistance.
3. The shaving cream will slowly weigh down and rain will form. This will take several minutes, so have the students set aside their raincloud and continue on with the next activity.
4. Have the students continue to observe the raincloud throughout the duration of your visit without disturbing the “cloud”.

Activity 2 – TORNADO

Discussion:

- What is a tornado?
 - Tornadoes form when warm, moist air mixes with cool, dry air. When they mix, it creates instability in the atmosphere. They can destroy large buildings, uproot trees, and hurl vehicles hundreds of yards. They can also drive straw into trees. Damage paths can be more than one mile wide to 50 miles long.

You will need:

- Plastic bottles and caps
- Food coloring
- Vinegar
- Soap
- Pitcher for water and funnel (2-3)
- Glitter and weigh boats
- Water

Set up:

- Tell the students to leave all the supplies alone on their desk until told.
- Have the instructors walk around and help the students add the drops of soap.
- Have the instructors add vinegar and food coloring for this project.
- Have the instructors walk around and help the students add their boat of glitter to the container. Do not throw away the weigh boats.

Procedure:

1. Hand out the bottles and caps and keep the caps off.
2. Fill the weigh boats with a small amount of glitter and hand them out to each student.
3. Have multiple volunteers come around and use a funnel to fill the bottles with water, a little before the point where the neck narrows. Explain that the water represents the sky.
4. Allow the students to add 2-3 drops of dish soap with your supervision. Explain that the soap represents the cool, dry air.
5. Have multiple volunteers walk around and add a few drops of vinegar. Explain that the vinegar represents warm, moist air.
6. Have multiple volunteers walk around and add no more than 2 drops of food coloring. Explain that the food coloring is to help see the tornado better. *NOTE: do not add too much, it is too dark, and the students will not be able to see the tornado. You can always add more food coloring later if needed.
7. Lastly, help the students empty the glitter into the bottles. Explain that the glitter represents the debris that tornados pick up.
8. Have the students list off what might be considered debris in a tornado. What would a tornado be able to pick up in its path?
9. Now, the students may screw the cap on and shake/swirl their bottles. Feel free to walk around the room to see how they are doing. Some may need you to show them how to shake/swirl the bottle.
10. The students will take their bottles home to show their parents.

- ❖ If the students haven't, make sure that they observe their rain clouds after finishing the tornado activity.