Project-Based Learning Unit: Weather

Grade Level: 2nd
Teacher: Tracy Varner, Reeds Elementary

Essential Question:
How do weather changes affect me?

Subquestions:
1. What is weather?
2. What are the kinds of weather?
   (rain, thunder/lightning, hurricanes, tornados)
3. What is the “water cycle”?
4. How do I dress for the weather?
5. How can I stay safe in dangerous weather?
6. How do I measure weather?

Objectives:
Science
2.03 Describe weather by measurable quantities:
   • Temperature
   • Wind direction
   • Wind speed
   • Precipitation
2.04 Identify and use common tools to measure weather:
   • Wind vane and anemometer
   • Thermometer
   • Rain gauge
2.05 Discuss and determine how energy from the sun warms the land, air, and water.
2.06 Access weather changes over time--day to day,
season to season.

3.01 Identify the three states of matter:
   • Solid
   • Liquid
   • Gas

3.02 Observe changes in state due to heating and cooling in common materials.

Math

2.01 Estimate and measure using appropriate units.
   a. Temperature (Fahrenheit)

4.01 Collect, organize, describe and display data using Venn Diagrams (three sets) and pictographs, where symbols represent multiple units (2’s, 5’s, 10’s)

Real World Connections:
   • Guest speaker: Weather meteorologist Austin Cavaness
   • Classroom “Weather Station”
   • Students will report weather daily during morning announcements.

Activities:
   • Collect weather data from internet daily for one week.
   • Make an anemometer.
   • Make a rain gauge from plastic 16 oz. soda bottle.
   • Make a “Wind Sock” to measure wind direction and speed.
   • Conduct “Water Cycle” experiment in plastic “Ziploc baggies.”
   • Conduct “Twister in a Jar” experiment.

Final Product/Presentation Description:
Children’s work products (weather graphs, data from experiments, weather-related writing and class “Big Book”) will be displayed
throughout the classroom. Parents will be invited to the classroom so that children may share what they have learned, and will have the opportunity to explain specific aspects of weather.

**Evaluation of Product (Rubric): (see attachment)**

**Activities:**

**Activity 1:**

**Title:** Collecting/Graphing Weather

**Objectives Addressed:**

Math Objective 4.01
Collect, organize, describe and display data using Venn diagrams (three sets) and pictographs where symbols represent multiple units (2’s, 5’s, 10’s)

**Materials Needed:**

- Paper/pencil
- Grid paper for graph
- Computer with internet access

**Approximate Time Needed:**

15 minutes daily for 1 week

**Activity Description:**

Children log on to www.wfmy2.com each day, either in the classroom or the computer lab, to access the daily weather forecast. They record their findings for each day of the week. Next they graph the temperature or rainfall (whatever aspect of the weather chosen), using a pictograph. Children then come up with their own questions that refer to the pictographs they made. Present graphs and questions to the class.
Activity 2:

Title: Making an Anemometer

Objectives Addressed:
Science Objective 2.04
Identify and use common tools to measure weather.

Materials Needed:
- 1 paper or styrofoam plate (An “x” shaped design has been drawn onto the plates ahead of time.)
- scissors
- 1 straight pin
- 4 small plastic bathroom cups
- 1 large paper cup (16 oz.)
- 1 pencil

Approximate Time Needed:
15 minutes

Activity Description:
Cut along the black lines of the plate. Put one cup on each arm of the “x” of the paper plate and staple it on. Stick the pencil through the center of the plate, and the stick pin through the eraser of the pencil. Stick the other end of the pencil through the bottom of the other cup, so that the anemometer can sit up on its own.
Take the anemometer outside to measure the speed of the wind. (Holding onto the pencil, see how fast the wind spins the cups around.)

Activity 3:

Title: Making a Rain Gauge

Objectives Addressed:
Science Objective 2.04
Identify and use common tools to measure weather.
Materials Needed:
• 1 emptied and cleaned plastic, 16 oz. soda bottle
• 1 laminated ruler (copied onto construction paper)
• masking tape

Approximate Time Needed:
15 minutes

Activity Description:
Have an adult cut off the top half of the bottle. Turn the top half inside the bottle (to act as a funnel), and tape it securely with masking tape. Tape the laminated, paper ruler to the bottle to measure the rain collected in the bottle.

Activity 4:
Title: Making a Wind Sock

Objectives Addressed:
Science Objective 2.04
Identify and use common tools to measure weather.

Materials Needed:
• 1 sheet 9” x 12” construction paper
• crayons or markers
• yarn
• strips of tissue paper (1” x 12”)
• glue

Approximate Time Needed:
30 minutes

Activity Description:
Using crayons or markers, have children decorate sheet of paper with weather-related pictures. Make a long cylinder by gluing the 12” sides of the construction paper along their edges. Glue the strips of tissue...
paper to one end of the cylinder. Make a handle made from yarn and attach to the other end of the cylinder. Take “Wind Sock” outside, hold in the wind to measure wind direction and speed.

**Activity 5:**

**Activity Title:** Experimenting with the Water Cycle

**Objectives Addressed:**

Science Objectives
2.05 Discuss and determine how energy from the sun warms the land, air and water.
3.01 Identify three states of matter.
3.02 Observe changes in state of matter due to heating and cooling of common materials.

**Materials Needed:**

- “Ziploc” baggies (1 per child)
- water
- food coloring

**Approximate Time Needed:**

15 minutes to prepare baggies. Measure water cycle over a period of one week.

**Activity Description:**

Each child fills his/her baggy 1/3 full of water, along with a couple of drops of food coloring. Tape the baggies to a window. Observe the changes that occur throughout the week. (Children should observe clear droplets of water on the sides of the baggies.) Discuss findings.
Activity 6:

Activity Title: "Twister in a Jar"

Objectives Addressed:
Science Objective 2.06
Access weather changes over time--day to day, season to season.

Materials Needed:
Large jar or 2-liter soda bottle filled halfway with water.

Approximate Time Needed:
5 minutes

Activity Description:
Fill the bottle halfway with water. Shake/spin the bottle for about 30 seconds-1 minute. Observe the motion of the water. Compare to a tornado. Have children record observations/discuss.