## What is the Weather Like Today?

Special thanks to **Tim O'Keefe**, Grade 2/3 Teacher at the Center for Inquiry whose students inspired this lesson design.

**Grade:** 2nd

**Lesson Overview:** Students will gather data (observations and measurements) about the local weather over a period of at least four to six weeks. They will share their weather data with the class daily, contributing to a class record of the weather during the observational period. They will use their data to describe the daily weather conditions and make predictions about upcoming daily and seasonal weather patterns.

- **Standard 2.E.2:** The student will demonstrate an understanding of the daily and seasonal weather patterns.
    - **2.E.2A. Conceptual Understanding:** Weather is the combination of sunlight, wind, precipitation (rain, sleet, snow, and hail), and temperature in a particular region at a particular time. Scientists measure and record these conditions to describe the weather and to identify patterns over time. Weather scientists (meteorologists) forecast severe weather so that communities can prepare for and respond to these events.
        - **Performance Indicator 2.E.2A.1:** Analyze and interpret data from observations and measurements to describe local weather conditions (including temperature, wind, and forms of precipitation).
        - **Performance Indicator 2.E.2A.2:** Analyze local weather data to predict daily and seasonal patterns over time.

**Science and Engineering Practice:**

- **SEP 2.S.1A.4:** Analyze and interpret data from observations, measurements, or investigations to understand patterns and meanings.

**Crosscutting Concepts:**

- Patterns
    - Students should be able use their weather data to recognize the patterns and trends in short and long term weather conditions and should be able to make predictions using these patterns and trends.
- Stability and Change:
    - Students should be able to use their weather data to recognize how weather conditions change from day to day and over time.

**Materials:**

- Weather Journals

    - Can be a small booklet for recording weather or can be part of their regular science journals.
- White Bulletin Board Paper (large enough sheet to stretch across part of the classroom wall and record weather data for 4-6 weeks
- Markers
- Weather Instruments (one set per class)
    - Thermometer
    - Anemometer or similar way of measuring or observing wind speed
        - Can be made using the Air and Weather FOSS kit
    - Weathervane or wind sock and compass (something to tell wind direction)
        - This is optional
    - Rain Gauge
        - Can be made using the Air and Weather FOSS kit

**Teacher Directions:**

1. Brainstorm with students what are some of the things we need to know about the weather when we are planning to do things outside. Make a list of this to reflect back on throughout the learning experience.
2. Demonstrate how the students will be recording their daily weather data:
    a. Temperature- using the thermometer
    b. Wind speed- using the anemometer
    c. Wind direction- using the weathervane and a compass (optional).
    d. Precipitation- describing any rain or snow and measuring the amount using the rain gauge
    e. Clouds- describing the general degree of cloudiness (clear and sunny, mostly clear, mostly cloudy, cloudy)
3. For the first 2-3 days, take the class outside just before recess time and, as a whole class, make these measurements together, recording them in their weather/science journals. Once the students know how to make these measurements, this can shift to being a class job that rotates every day
    a. Each day (after the first few), two students have the job of checking in with the teacher at the start of recess to collect weather data. These students will need to bring their weather journals out with them, check in with the teacher (who has all of the weather instruments), and record their data. This should not take more than a few minutes after which the students can return to recess.
    b. It is important that this take place as close to possible at the same time each day. After the first few days, you may want to ask the students why it is important that they do their weather data collection at the same time each day.
    c. If it is raining or if for some reason students are unable to go outside for recess, students should conduct their observations through a window as much as possible.
4. Once the weather is collected, the students can add their data to the class weather chart.
    a. The chart is basically a long x-y line graph with the temperature on the y-axis and the dates on the x-axis.

    b. Each day, the students should put a mark for the temperature they recorded on that date along with a listing of their other weather data underneath that date on the chart (this can include using symbols for rain or snow, cloudy or clear, windy, etc…)
    c. You may also want to use as website such as weather.com to get the current local weather as well as the forecast for the day's high and low temperatures and mark those on the chart as well (in a different color) to allow students to compare their authentic data with the data from the website.
    d. For weekends and days when school is out, you may want to just record the daily weather from weather.com to have a mostly complete chart.
5. After a week, begin asking students to make predictions about the upcoming weather based on their current weather data and chart. For example, on Friday, they can make predictions for the upcoming week.
6. After about 3-4 weeks, ask students if they are noticing any patterns or trends. Begin asking them to make predictions for how the weather might change as they move out of the current season and towards the upcoming season. Again, these predictions should be based on the current data from their own measurements and observations.

This ongoing weather data collection and analysis can be a part of a larger weather unit in which students put together a long term forecast for their school, make a mock weather report, or as part of a project on severe weather conditions.

**Evidence of understanding:** Students should be able to use data from their weather measurements and observations to describe the current weather conditions and make predictions about how the weather will change from day to day and from season to season.