

1. Essential Element

Activity/Lesson Title: Weather Prediction

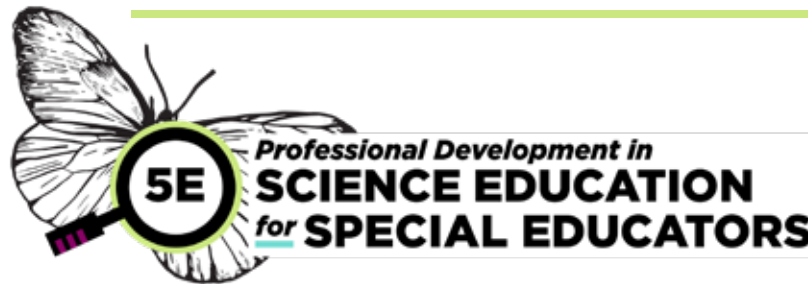
EE.MS.ESS2-6: Interpret basic weather information (e.g., radar, map) to make predictions about future conditions (e.g., precipitation, temperature, wind).

Teacher: Joe

Grade Level: Middle (6-8)

Student: Fiona

Level: Target



2. Science and Engineering Practice

SEP 2: Developing and Using Models

SEP description: Supports students as they use a model to describe phenomena.

3. Disciplinary Core Idea

Weather and Climate

Core Idea description: Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.

4. Crosscutting Concept

Systems and System Models

Concept Description: Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems.

5. Linkage Level Descriptors

Initial: Interpret basic weather information (e.g., radar, map) to identify weather conditions.

Precursor: Interpret basic weather information (e.g., radar, map) to compare weather conditions (either over several days at the same location or different locations on the same day).

Target: Interpret basic weather information (e.g., radar, map) to make predictions about future conditions (e.g., precipitation, temperature, wind).

6. Student's Typical Accessibility Supports

- Computer extensions to access and produce text (e.g., text-to-speech, speech-to-text)
- Science glossary for scientific terms
- Charts, models, and manipulatives
- Graphic organizers (data tables)
- Photographs

7. Student Prior Experiences, Prior Knowledge

- The student likes hands-on materials.
- The student is interested in weather.
- The student likes reading maps.
- The student has made predictions of expected actions.
- The student likes reading about animals.

8. Phenomenon to Explore

Question: How do people predict the weather?

9. Possible Alternative Conceptions

Some students may think (incorrectly) that

- Cold days are caused by the clouds covering the sun.
- The seasons cause the weather to change.
- The water and wind in an area stay in that area.
- High pressure equals high winds and low pressure equals low winds.
- Hot air weighs less than cold air.

10. UDL Options and Solutions to Potential Barriers

- Use hands-on materials to build the barometer within the experiment.
- Use a checklist of lesson activities to track progress.
- Allow the student to work with others to verify and share their weather predictions.
- Use a variety of formats (e.g., photographs of different weather conditions) and materials (e.g., models and manipulatives).
- Use manipulatives to build a barometer to promote the student's comprehension of how weather changes and how those changes are measured.
- Use a graphic organizer to help record predictions and manage predictions over time.

11. Engage

Think

- How can I make sure to access students' prior learning?
- How can I use the CCC to connect everyday language with the scientific language of the phenomenon?
- How can I support student participation by scaffolding the SEP?

Teacher Will

- Find a clip of the local news channel weather forecast and discuss what they see and know about forecasts.
- Ask students to respond to questions and prompts about the weather and weather predictions.
- Ask students to think about tools that help track and predict weather changes.
- Show a video of how a barometer works and what it is used for.

Students Will

- Watch a clip of a local weather forecast and discuss what they heard
- Respond to prompts and photos about the weather and weather prediction.
- Respond to prompts after watching a video about barometers and weather prediction.

12. Explore

Think

- What is difficult or inaccessible about the phenomenon, and how can I make it more accessible in the Explore phase?
- How can students collect data in a way that helps answer a scientific question?
- How can I encourage students' careful observations and asking good questions vs. looking for only the "right answer"?

Teacher Will

- Assist students in examining different types of weather maps and images of radar, watching a video, and answering questions about how meteorologists can predict future weather conditions
- Assist students in building a classroom barometer.
- Support students as they record daily temperature and barometer readings and compare the data to the actual weather.

Students Will

- Examine weather maps and think about how meteorologists predict the weather.
- Build a barometer with assistance.
- Take daily temperature and barometer readings, record the data in a table, and compare their data to the actual weather the next day to see if the barometer predicts the weather correctly.

13. Explain

Think

- How can I help students connect science topics, phenomena, data, and everyday experiences? How can I help my students differentiate everyday language from scientific language? What reasoning helps students see or explain the invisible?

Teacher Will

- Assist students in using data they recorded to come up with findings.
- Help students make the claim that barometers and thermometers help people track weather changes and help them predict future weather conditions.

Students Will

- Complete a CER statement

Claim: Tools help people track weather and help them predict future weather conditions.

Evidence:

- » Our classroom barometer helped predict future weather conditions.
- » Information in a video explained how barometers measure pressure to predict the weather.

Reasoning: Comparing the predicted data collected from the barometer to the actual weather helped confirm that tools are a way for meteorologists to predict future weather conditions.

14. Elaborate

Think

- How can I help enrich or extend student ideas? Are there related science concepts that would support and extend student learning?

Teacher Will

- Extend the lesson so students can use the classroom barometer to predict the weather in a different season of the year.
- Assist students in learning about other tools meteorologists use to predict extreme weather events.
- Search the internet for other weather prediction tools and create a class poster (model) of the tools meteorologists use to predict weather.

Students Will

- Review the data collected from the barometer in a new season of the year and compare it to previous findings.
- Communicate what they learned about how meteorologists use different tools to predict extreme weather events.

15. Evaluate

Think

- What do I need to see or hear from my students that assures that they have learned the science content? What information must I gather to inform my teaching as I move through the lesson?

Teacher Will

- Ask students to identify the tool meteorologists use to measure pressure to predict the weather: a barometer or a weathervane (or some more modern tool to capture wind).
- Use the student responses to inform the evaluation.

Students Will

- Respond to questions posed by the teacher summarizing the investigation, what they did, and what they learned from it.
- Complete the CER.
- Complete the exit ticket.