Weather
2nd Grade

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Benchmarks:

SLC 13: A) Students will read weather instruments and describe how each instrument is used in forecasting the weather. B) Students will be able to use the data collected from weather instruments and other weather sources (newspaper, computer, TV) to forecast the weather.

Objectives:

This lesson is designed to teach the basic components of weather (temperature, precipitation, wind speed), as well as how to measure them. In addition, students will learn how to find these components on weather maps.

Materials:

- Attachment A, pg 19 from Columbus Public Schools for grade 3 SLC 13. (This can be found by going to the main site for CPS. Click on "For Staff," then "science offices," then "curriculum guide". Type in grade 3, slc17, grading period2. The top part of the attachment should not be copied.)
- 5 thermometers.
- Rain Gauge – clear plastic containter
- Current newspaper.
- Drinking Straws.
- Push pins.
- Unsharpened pencils with erasers.
- Small Dixie cups.

Day 1:

Discussion:

Divide the class into five groups. Write "What is Weather?" on the chalkboard. Give the groups 60 seconds to come up with a definition. Briefly discuss each group's answers. Give them another couple of minutes to name the components of weather.

Target Model:

-*Temperature*
-*Precipitation (rain, snow, sleet, cats and dogs…)*
-*Wind Speed*

Discussion:

How do meteorologists measure these components to help them predict the weather?

Target Model:

-Temperature *is measured with a Thermometer.*

-Precipitation (rain, snow, sleet, cats and dogs…) *is measured with a rain gauge (or ruler for snow)*.
-Wind Speed *is measured with an Anemometer.*

Discussion:

Ask the class about thermometers: what are they, how are they used, why do we use them, etc…?

Target Responses:

- *Thermometers are sticks that tell us how hot or cold it is*
- *Thermometers are things that people use to tell if you are sick*
- *Thermometers are used by sticking it in your mouth or under your arm (on people), or by putting it outside (for the air)*
- *Thermometers are used to tell us if something is hot or cold*

Activity:

Pass out the thermometers to every group and be sure that students understand how to read a thermometer and correctly record a temperature. Have students read and record the temperature in the classroom by using the attached data sheet. Compare observations: why are there two different sets of numbers, Celsius and Fahrenheit? How is this like the different units in length measurements, inches and centimeters? Does everyone agree if we use the same units? Why could they be different? What temperature is called "freezing"? What temperature is it when it is really hot in the summer?

Target Observations/Responses:

- Celsius and Fahrenheit are just two different ways to measure temperature.
- As long as we use the same units, students should agree on their measurements.
- The student measurements might be different because some students could be breathing on the thermometers, putting their hands on the bottom, the room might be warmer in different places, wind could be blowing.
- 32 degrees Fahrenheit, 0 degrees Celsius, is called "freezing".
- In the summer it is usually 90 degrees Fahrenheit, 32 degrees Celsius.

Activity:

Now have the students check to see if the thermometers work as they expect: give each group a cup of ice water. Have the students place their thermometers in the ice water – the students will likely enjoy watching the line on the thermometer go down. After the groups have completed the other side of the data sheet, have them measure and record the temperature of the ice water and put the data in the data sheet. Does the thermometer say that the ice water is colder or warmer than the air in the room? Does everyone agree? If not, what might cause the differences? Have a student measure the temperature outside from a thermometer on a window. What other temperatures can you think of?

Day 2:

Activity:

How can we measure precipitation? As said earlier, rain can be measured with a rain gauge.

Break the class up into groups and give each group a clear plastic container to be used as a rain gauge. Give each group a rain maker: a coffee can with holes poked in the lid. Fill the "rain maker" of each group with water and have the students measure the amount of rain that falls from their "rain maker" when it is flipped over for ~10 seconds. Did everyone get the same answer? Why not? Is it because of the rain gauge or the rainmaker?

Optional:
Is the amount of snowfall measured in the same manner? Students can come up with an experiment to test this. For example take a ruler out and put it in the snow. Then put the same amount of snow in inches in the rain gauge. When it melts you will see that the water fills up less of the rain gauge. Which is easier in measuring the amount of snow – with a ruler or with a rain gauge?

Optional 2: If snow is predicted the following day have the students clear out an area. They can rig a ruler to stand up straight and then measure the amount of snow that falls the next day.

Activity:

How is wind speed is measured? As said in Day 1, wind speed is measured with an anemometer – think of a windmill. Divide the students into the groups made for Day 1. Have each group make an anemometer:

Arrange a drinking straw perpendicular to a pencil. Using a pushpin, secure the straw to the pencil eraser. Then put Dixie cups through both ends of the straw with one going one direction and one going the opposite way.

Students can test their anemometers by holding them in a wind-free part of the classroom, blowing into the anemometers, or by holding the anemometers in front of a blowing fan. Students should say whether the wind is blowing hard, soft, or not at all for each of the cases.

Day 3:

Discussion:

Review the instruments covered in Day 1 and Day 2. Have a brief discussion about weather forecasting/predicting and what it means. Give each group a copy of the current weather page from *The Columbus Dispatch* and have a discussion about their observations from the page (target observations?).

Following the discussion, focus their attention on the Ohio and local forecast section. Discuss different aspects of the Ohio map and forecast (symbols, abbreviations, etc.). Give each student a copy of attachment A and have them complete it using '*Today's Weather Forecast*' and '*Mike's Five-Day Extended Forecast*' from *The*

Columbus Dispatch. Students should work within their groups. Conclude the lesson with a discussion of the correct answers and how the students found them.

Names:

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_____

_____

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Data Sheet
Temperature

	Temperature of the air inside		Temperature of the Ice Water		Temperature of the air outside	
Temperature in Fahrenheit (°F)	**Guess**	**Measured**	**Guess**	**Measured**	**Guess**	**Measured**
	_____	_____	_____	_____	_____	_____
Temperature in Celsius (°C)	**Guess**	**Measured**	**Guess**	**Measured**	**Guess**	**Measured**
	_____	_____	_____	_____	_____	_____