Unit 1 - Weather

Content Area: **Science**
Course(s): **Science K**
Time Period: **September**
Length: **Trimester 1**
Status: **Published**

Unit Overview

What is the weather like today and how is it different from yesterday?

In this unit of study, students develop an understanding of patterns and variations in local weather and the use of weather forecasting to prepare for and respond to severe weather. The crosscutting concepts of patterns; cause and effect; interdependence of science, engineering, and technology; and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in asking questions, analyzing and interpreting data, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate an understanding of the core ideas.

Note: Unlike other science units, the Weather unit is intended to become a part of the classroom routine throughout the year. Some weather patterns are not obvious unless the students collect data over long periods of time. For example, in some locations it is sunnier during some parts of a year than others. The temperature outside will change from fall, winter, spring, to summer. Also, during some periods, the weather data should be recorded in the morning and then again in the afternoon. Students will be able to observe patterns in temperature through the course of the day. Students are expected to demonstrate age appropriate proficiency in asking questions, analyzing and interesting data, and obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.

NJ Student Learning Standards - Science

K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.
K-ESS3-2.ETS1.A.1	Asking questions, making observations, and gathering information are helpful in thinking about problems.

Disciplinary Core Ideas

ESS2.D: Weather and Climate

Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over

time. (K-ESS2-1)

ESS3.B: Natural Hazards

Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. (K-ESS3-2)

ETS1.A: Defining and Delimiting Engineering Problems

A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)

Asking questions, making observations, and gathering information are helpful in thinking about problems. (K2-ETS1-1)

Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)

Science and Engineering Practices

Analyzing and Interpreting Data

Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)

Asking Questions and Defining Problems

Ask questions based on observations to find more information about the designed world. (K-ESS3-2, K-2-ETS1-1)

Define a simple problem that can be solved through the development of a new or improved object or tool.

(K2-ETS1-1)

Obtaining, Evaluating, and Communicating Information

Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)

Crosscutting Concepts

Patterns

Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1)

Cause and Effect

Events have causes that generate observable patterns. (K-ESS3-2)

Science Knowledge is Based on Empirical Evidence

Scientists look for patterns and order when making observations about the world. (K-ESS2-1)

Interdependence of Science, Engineering, and Technology

People encounter questions about the natural world every day. (K-ESS3-2) Influence of Engineering, Technology, and Science on Society and the Natural World People depend on various technologies in their lives; human life would be very different without technology. (K-ESS3-2)

Learning Targets (Student Language)

- I can ask questions to prepare and respond to severe weather.
- I can construct an argument supported by evidence for how plants and animals can change the environment to meet their needs.
- I can create lists of explanations of the phenomena
- I can explain how to prepare for severe storms and weather
- I can explain why spring is the best time for offspring to be born
- I can identify weather patterns and sequence of seasons
- I can observe and describe the weather
- I can observe changes in weather to identify when a storm is near.
- I can observe weather conditions and identify patterns over time in the arctic.
- I can track and record weather data and analyze patterns
- I can use and share local weather conditions to describe patterns over time.

Essential Questions

- How can someone predict what the weather will be tomorrow?
- How does weather forecasting help us to prepare for dangerous weather?
- What is the weather like today and how is it different from yesterday?

Materials and Resources

- Mystery Science
- NJCTL Weather Unit
- Weather Patterns
- Taking students on Weather Walks
- The Wonders of Science

Assessments

- Graphic Organizers
- Mystery Science Formative Assessments
- Mystery Science Summative Assessments
- Weather Drawings
- Weather Pattern Recordings

Learning Plan (Pacing Guide)

Grade K– Unit 1 Weather ; Weather Patterns, Severe Weather (25 days)

Topic	# of Days (30 min Sessions)	Student Learning Targets (Objectives)
Anchor Phenomena: Furry Foxes	1	1. Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.] (K-ESS2-1) 2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* [Clarification Statement: Emphasis is on local forms of severe weather.] (K-ESS3-2) 3.Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)
Read-Along Lesson 1: How do you know what to wear for the weather?	4	
Lesson 2: What will the weather be like on your birthday?	4	
Lesson 3: Why do birds lay eggs in the spring?	4	
Performance Task: What's the weather like for the arctic foxes?	1	
*Anchor Phenomena	1	
Read-Along Lesson 1: How can you get ready for a big storm?	3	
Lesson 2: Have you ever watched a storm?	3	
Lesson 3: How many different kinds of weather are	3	

there?		
*Performance Task	1	

Interdisciplinary Connections

NJSLS ELA

- W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-ESS2-1)
- RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)
- SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)
- RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)
- W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1)
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1)

NJSLS Mathematics

- MP.2 Reason abstractly and quantitatively. (K-ESS2-1, K-2-ETS1-1)
- MP.4 Model with mathematics. (K-ESS2-1, K-2-ETS1-1)
- MP.5 Use appropriate tools strategically. (K-2-ETS1-1)
- 2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1)
- K.CC.A Know number names and the count sequence. (K-ESS2-1)
- K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
- K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

English Language Arts

With the teachers' support, the students collectively research and write about how people predict the weather. The students listen to non-fiction stories about the weather and how people describe weather (rainy, sunny, cloudy, cool, warm, etc.). With prompting and support, the students ask and answer questions about key

details in the text. Students get information and help each other clarify their thinking as part of the activities. Students demonstrate their understanding of the texts by being able to orally answer such questions as who, what, where, when, why, and how. With guidance and support from adults and in collaboration with peers, students use digital tools to produce and publish writing about the patterns that they see in their weather observations. Throughout the school year, students recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1) W.2.8

Mathematics

With adult support, students measure and record various types of weather (e.g., rainfall or snow amounts, relative temperature at different times of the day and over a period of time). They mathematically represent real-world information by organizing their data into simple weather charts and graphs. Kindergarteners attend to the meaning of various quantities using a variety of units of measure and use counting to analyze data and determine patterns in charts and graphs. By using media resources, students explore how weather scientists represent real-world weather data with picture representations, charts, and graphs. They can use this information to think about how weather scientists use tools to collect and record weather data in order to determine patterns of change. Students will learn the meaning of various quantities used in simple weather charts and graphs, both from classroom observations and from media sources, by counting and comparing severe weather data with daily weather data (e.g., relative amounts of rainfall, snowfall). By analyzing data from weather graphs and charts, young students begin to understand how severe weather affects people and communities and that weather scientists play an important role in predicting severe weather conditions.

Accommodations and Modifications (Interventions. Special Education, ELL, Enrichment)

- Collaborate with after-school programs or clubs to extend learning opportunities.
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understanding.
- Follow all modifications and accommodations as outlined in IEPs and 504s.
- Provide ELL students with multiple literacy strategies.
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tools such as Zoom/Google Meets, experts from the community helping with a project, journal articles, and biographies).
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Structure the learning around explaining or solving a social or community-based issue.
- Use project-based science learning to connect science with observable phenomena.

Career Ready, Life Literacies, and Key Skills

CS.K-2.8.1.2.DA.3	Identify and describe patterns in data visualizations.
CS.K-2.8.1.2.DA.4	Make predictions based on data using charts or graphs.
CAEP.9.2.4.A.2	Identify various life roles and civic and work - related activities in the school, home, and community.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
TECH.9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
TECH.9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
TECH.9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).