Kindergarten Science Unit 3: Weather

Unit Summary: 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 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.

Concepts and Vocabulary:

- There are different types of weather: sunny, cloudy, rainy, windy and snowy.
- Temperature is the measure of how warm or cold the air is.
- A thermometer is used to measure the temperature.
- How to track weather over a period of time.
- There are different types of severe weather.
- Weather scientists help us prepare for severe weather.
- We can prepare for severe weather.

Stage 1 – Desired Results

Performance Expectations: (PE) (Established Goals / Content Standards)

• K-ESS2-1 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-ESS3-2 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-2-ETS1-1 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.**

Enduring Understandings Students will understand that: • How to dress appropriately for different weather conditions. • Weather follows patterns over time. • Where you live can determine what types of severe weather occurs.	**Essential Questions** • EQ: *Why do we dress differently for different weather? *What kind of pattern does the weather where we live follow? *What regions have certain types of severe weather?

Questions that guide lessons:

- What are the different types of weather?
- What is temperature and what tool do we use to measure the temperature?
- How can we track the weather?
- What types of severe weather can you name?
- How do we prepare for severe weather?

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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) • Ask questions based on observations to find more information about the natural and/or designed world(s). • Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-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)	**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. (KESS2-1) 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 an Engineering Problem • A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1)	**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) • Connections to Nature of Science Science Knowledge is Based on Empirical Evidence • Scientists look for patterns and order when making observations about the world. (K-ESS2-1) • Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology

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Stage 2 – Assessment Evidence	
Summative Performance Task(s) ● Students will model the relationships between weather and seasons (drawing, model, etc.) to include at least three things that change depending on the weather (clothing, outdoor activities, planning) ● The Local Forecaster ● Weather Patterns Chart ● Clothing Choice Anchor Chart ● Windy Day Hair Painting w/ straws activities ● Humans impact on the Earth **Audience:** ● Peers, teacher, self-reflection **Criteria:** ● Teacher observation, written evidence	**Formative Evidence:** Through what other evidence will students demonstrate achievement of the desired results? ● (Suggested) 2-4 question oral comprehension checks ● Teacher observation ● Class Discussion/ Anecdotal notes ● (possible) Mystery Science end-of-mystery assessment Mystery Science Weather Assessments Folder ● Standard K-ESS2-1 Assessment Checklist ● Standard K-ESS3-2 Assessment Checklist

Stage 3 – Learning Plan / Road Map (Design to make as student centered as possible)
Suggested Resources for Planning: Kindergarten Science Unit 3 Suggested Activities Folder Reading A to Z Non-Fiction Anchor Texts www.thewonderofscience.com Weather and Climate Anchor Chart Trip to Paris Anchor Chart Here comes the sun anchor chart Phenomena Videos: Weather Folklore Lightning Blizzard
Learning Activities: Building a snow fort Ten Freaky Forces of Nature Slideshow Making Rain Experiment Weather Videos for Kids **Suggested Methods**: (The following methods anchor learning with a purpose, mitigating the “why do I need to know this” questions.) ● Phenomena based learning ● Problem Based Learning (PBL) ● Inquiry Based Learning ● Case studies

● Engaging in Argument w/ evidence