

**Winslow Township School District**

**Grade 3 Science**

**Unit 2: Weather and Space**

**Overview:** In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The concepts of patterns, cause and effect, and the influence of engineering, technology, and science on society and the natural world will be explored. Students demonstrate grade-appropriate proficiency in asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information.

Overview	Standards for Science	Unit Focus	Essential Questions
<p><u>Unit 2</u></p> <p><b>Weather and Space</b></p>	<ul style="list-style-type: none"> <li>• <b>3-ESS2-1</b></li> <li>• <b>3-ESS2-2</b></li> <li>• <b>3-ESS3-1</b></li> <li>• <b>3-5-ETS1-1</b></li> <li>• <b>WIDA 1,4</b></li> </ul>	<ul style="list-style-type: none"> <li>• Using specific instruments to measure weather</li> <li>• Collecting and tracking weather data</li> <li>• Graphing weather data</li> <li>• Reading and interpreting a presentation of weather data</li> <li>• Predicting future weather using patterns analyzed from collected data</li> </ul>	<ul style="list-style-type: none"> <li>• How are weather climates and weather patterns different around the world?</li> <li>• How can you describe different kinds of extreme/harsh weather?</li> <li>• How can we protect people from weather-related hazards?</li> </ul>
<p><i>Unit 2: Enduring Understandings</i></p>	<ul style="list-style-type: none"> <li>• Weather patterns are different in different regions of the world.</li> <li>• Weather patterns can be tracked, graphed, and used to predict future weather.</li> <li>• Weather can be measured using a variety of specific tools.</li> <li>• Weather-related hazards are a result of natural processes (e.g. flooding, lightning, etc.)</li> <li>• There are multiple solutions to weather-related problems. Each solution has advantages and disadvantages.</li> </ul>		

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<b>Curriculum Unit 2</b>	<b>Standards</b>		<b>Pacing</b>	
			<b>Days</b>	<b>Unit Days</b>
<b>Unit 2: Weather and Space</b>	<b>3-ESS2-1</b>	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	10	45
	<b>3-ESS2-2</b>	Obtain and combine information to describe climates in different regions of the world.	10	
	<b>3-ESS3-1</b>	Make a claim about the merit of a design solution that reduces the impacts of a weather- related hazard.	10	
	<b>3-5-ETS1-1</b>	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	10	
	Assessment, Re-teach and Extension		5	

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Disciplinary Core Ideas	Indicator #	Indicator
<p><b>ESS2.D: Weather and Climate</b>            Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)            Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)</p> <p><b>ESS3.B: Natural Hazards</b>            A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1)</p> <p><b>ETS1.A: Defining and Delimiting Engineering Problems</b>            Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5- ETS1-1)</p>	<b>3-ESS2-1</b>	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
	<b>3-ESS2-2</b>	Obtain and combine information to describe climates in different regions of the world.
	<b>3-ESS3-1</b>	Make a claim about the merit of a design solution that reduces the impacts of a weather- related hazard.
	<b>3-5-ETS1-1</b>	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

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**• Assessment Plan**

- Class discussions
- Independent & group work/projects
- Teacher and/or book series provided quizzes, tests, and a performance task to assess student mastery
- Homework monitor and assess class work
- Benchmark assessments
- Teacher Observations
- Performance Tasks

- Short Constructed Responses
- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. Examples of data could include: average temperature, precipitation, wind direction
- Define a simple design problem that can be solved through the development of an object, tool, process, or system and include several criteria for success and constraints on materials, time, or cost.

**Resources**

- Chromebooks
- HSP Science Teacher Manual
- Lab Explorations
- Big Books pg.
- Leveled Readers
- Activity book
- Vocab activities and cards
- Group discussions
- Manipulatives
- SMARTboard / Mimio Technology
- Google Applications (Documents, Forms, Spreadsheets, Presentation)
- Linkit
- Readworks website
- [NJ Department of Education](#)
- Harcourt HSP New Jersey Science textbook
- HSP Lab Manual
- HSP New Jersey Science-Teacher’s Inquiry Tool Kit
- Lesson Planner Resource Pages
- Science Leveled Readers and Science Guides
- HSP Science eBook
- Chromebooks
- Anchor Charts

**Activities**

- [Precipitation Towers: Modeling Weather Data](#): Students use stacking cubes to create 3D graphs of monthly precipitation data for a city of their choice. They also compare the precipitation averages and seasonal patterns for several locations.
- [Investigating Monthly Temperatures and Precipitation](#): Students use monthly temperature and precipitation maps to determine average temperature and amount of precipitation in different locations. They then represent that information in tables and graphs. An interactive lesson for students is included as part of the lesson. There are also additional media resources that can be used if desired.
- [Weather Adds Up to Climate](#): Students begin by describing and reporting weather. They then use their data to learn how weather patterns over a long period of time are used to describe the climate of a location.
- [Tornado!](#): Students learn about tornadoes, the damage they cause, and how engineers consider strong winds in their design of structures to withstand tornado damage. The final activity, Build It Better!, asks groups of students to design a house that is able to withstand the high wind speeds of a tornado.
- [Are Our Homes Built for Severe Weather?](#): In this unit, students investigate five essential questions about severe weather: "What is severe weather? How does weather impact people's lives? How can technology be used to collect data about weather conditions? What can weather data tell us about the frequency of severe weather events? How can people modify their homes to reduce the impact of severe weather?" The printable “Engineering Portfolio” provides a place for students to document their learning as they gather information through videos and text, and design solutions to simulated weather events.
- [Protecting Our City With Levees](#): In 2005 Hurricane Katrina caused severe damage and suffering to the people who lived in New Orleans. The levees that surrounded the city did not hold the immense amount of ocean water that rose from the storm. In this activity, students will use the engineering design process to design and build their own model levees. Acting as engineers for their city, teams create sturdy barriers using limited materials to prevent water from flooding a city in the event of a hurricane.

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**Instructional Best Practices and Exemplars**

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| <ol style="list-style-type: none"> <li>1. Identifying similarities and differences</li> <li>2. Summarizing and note taking</li> <li>3. Reinforcing effort and providing recognition</li> <li>4. Homework and practice</li> <li>5. Nonlinguistic representations</li> </ol> | <ol style="list-style-type: none"> <li>6. Cooperative learning</li> <li>7. Setting objectives and providing feedback</li> <li>8. Generating and testing hypotheses</li> <li>9. Cues, questions, and advance organizers</li> <li>10. Manage response rates</li> </ol> |
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**9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation and Training & 9.4 Life Literacies and Key Skills**

- 9.1.5.RMI.1:** Identify risks that individuals and households face.
- 9.1.5.RMI.2:** Justify reasons to have insurance.
- 9.2.5.CAP.8:** Identify risks that individuals and households face.
- 9.2.5.CAP.9:** Justify reasons to have insurance.
- 9.4.5.CI.2:** Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7).
- 9.4.5.CI.3:** Participate in brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).
- 9.4.5.CI.4:** Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6).
- 9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
- 9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1).
- 9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems.
- 9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).
- 9.4.5.DC.8:** Propose ways local and global communities can engage digitally to participate in and promote climate action (e.g., 6.3.5.GeoHE.1).
- 9.4.5.IML.1:** Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).
- 9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).
- 9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.
- 9.4.5.IML.5:** Distinguish how media are used by individuals, groups, and organizations for varying purposes. (e.g., 1.3A.5.R1a).
- 9.4.5.IML.6:** Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions (e.g., RI.5.7, 6.1.5.HistoryCC.7, 7.1.NM. IPRET.5).

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**9.4.5.IML.7:** Evaluate the degree to which information meets a need including social emotional learning, academic, and social (e.g., 2.2.5. PF.5).

**9.4.5.TL.2:** Sort and filter data in a spreadsheet to analyze findings.

**9.4.5.TL.3:** Format a document using a word processing application to enhance text, change page formatting, and include appropriate images graphics, or symbols.

**9.4.5.TL.4:** Compare and contrast artifacts produced individually to those developed collaboratively (e.g., 1.5.5.CR3a).

**9.4.5.TL.5:** Collaborate digitally to produce an artifact (e.g., 1.2.5CR1d).

The implementation of the 21st Century skills and standards for students of the Winslow Township District is infused in an interdisciplinary format in a variety of curriculum areas that include, English language Arts, Mathematics, School Guidance, Social Studies, Technology, Visual and Performing Arts, Science, Physical Education and Health, and World Language.

Additional opportunities to address 9.1, 9.2 & 9.4:

**Philadelphia Mint**

<https://www.usmint.gov/learn/kids/resources/educational-standards>

**Different ways to teach Financial Literacy.**

<https://www.makeuseof.com/tag/10-interactive-financial-websites-teach-kids-money-management-skills/>

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**Modifications for Special Education/504**

***Students with special needs:*** The students' needs will be addressed on an individual and grade level using a variety of modalities.

Accommodations will be made for those students who need extra time to complete assignment. Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

- Small group instruction
- Audio books/ Text-to-speech platforms
- Leveled texts/Vocabulary Readers
- Leveled informational texts via online
- Modeling and guided practice
- Read directions aloud
- Repeat, rephrase and clarify directions
- Extended time as needed
- Break down assignments into smaller units
- Provide shortened assignments
- Modify testing format
- Repeat directions as needed
- Graphic organizers
- Study Guides, Study Aids and Re teaching as needed

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##### Modifications for At-Risk Students

Formative and summative data will be used to monitor student success. At first signs of failure, student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations

- Audio books and Text-to-speech platforms
- Leveled texts/Vocabulary Readers
- Leveled informational texts via online
- Extended time as needed
- Read directions aloud
- Assist with organization
- Use of computer
- Emphasize/highlight key concepts
- Recognize success
- Provide timelines for work completion
- Break down multi-step tasks into smaller chunks
- Provide copy of class notes and graphic organizer



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English Language Learners	Modifications for Gifted Students
<p>All WIDA Can Do Descriptors can be found at this link:  <a href="https://wida.wisc.edu/teach/can-do/descriptors">https://wida.wisc.edu/teach/can-do/descriptors</a></p> <p><input type="checkbox"/> Grade 3 WIDA Can Do Descriptors:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Listening <input type="checkbox"/> Speaking</li> <li><input type="checkbox"/> Reading <input type="checkbox"/> Writing</li> <li><input type="checkbox"/> Oral Language</li> </ul> <p>Students will be provided with accommodations and modifications that may include:</p> <ul style="list-style-type: none"> <li>• Relate to and identify commonalities in science studies in student’s home country</li> <li>• Assist with organization</li> <li>• Use of computer</li> <li>• Emphasize/highlight key concepts</li> <li>• Teacher Modeling</li> <li>• Peer Modeling</li> <li>• Label Classroom Materials - Word Walls</li> </ul>	<p>Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic.</p> <ul style="list-style-type: none"> <li>• Raise levels of intellectual demands</li> <li>• Require higher order thinking, communication, and leadership skills</li> <li>• Differentiate content, process, or product according to student’s readiness, interests, and/or learning styles</li> <li>• Provide higher level texts</li> <li>• Expand use of open-ended, abstract questions</li> <li>• Critical and creative thinking activities that provide an emphasis on research and in-depth study</li> <li>• Enrichment Activities/Project-Based Learning/ Independent Study</li> </ul> <p>Additional Strategies may be located at the links:</p> <ul style="list-style-type: none"> <li>❖ <a href="#">Gifted Programming Standards</a></li> <li>❖ <a href="#">Webb’s Depth of Knowledge Levels and/or Revised Bloom’s Taxonomy</a></li> <li>❖ <a href="#">REVISED Bloom’s Taxonomy Action Verbs</a></li> </ul>

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##### Interdisciplinary Connections

##### **Interdisciplinary Connections:**

##### **ELA Standards:**

**RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2- 1)

**RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1),(3-LS4-2),(3-LS4- 3),(3LS4-4)

**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS2-1)

**W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1)

**W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)

**SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4- 2),(3- LS4-3),(3-LS4-4)

##### **Math Standards:**

**MP.2** Reason abstractly and quantitatively. (3-LS4-1),(3-LS4- 2),(3-LS4-3),(3-LS4-4)

**MP.4** Model with mathematics. (3- LS4-1),(3-LS4-2),(3-LS4-3),(3-LS4-4)

**MP.5** Use appropriate tools strategically. (3-LS4-1)

**3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. (3- LS4-2),(3-LS4-3)

**3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS4-1)

**3.NBT** Number and Operations in Base Ten (3-LS2-1)

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**Integration of Computer Science and Design Thinking NJSL 8**

- 8.1.5.DA.1:** Collect, organize, and display data in order to highlight relationships or support a claim.
- 8.1.5.DA.3:** Organize and present collected data visually to communicate insights gained from different views of the data.
- 8.1.5.DA.5:** Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
- 8.2.5.ED.1:** Explain the functions of a system and its subsystems.
- 8.2.5.ED.2:** Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
- 8.2.5.ED.3:** Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
- 8.2.5.ED.4:** Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints).
- 8.2.5.ED.5:** Describe how specifications and limitations impact the engineering design process.
- 8.2.5.ED.6:** Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process.
- 8.2.5.ITH.1:** Explain how societal needs and wants influence the development and function of a product and a system.
- 8.2.5.ITH.2:** Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have.
- 8.2.5.ITH.3:** Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use.
- 8.2.5.ITH.4:** Describe a technology/tool that has made the way people live easier or has led to a new business or career.
- 8.2.5.NT.2:** Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies.
- 8.2.5.ETW.1:** Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.
- 8.2.5.ETW.3:** Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.