Winslow Township School District

Grade K Science

Unit 5: Physical Science: Earth and Space

Overview: During this unit of study, students apply an understanding of the effects of the sun on the Earth's surface. Students are expected to demonstrate grade-appropriate proficiency in developing and using models; planning and carrying out investigations; analyzing and interpreting data; and designing solutions. Throughout the unit, students will make observations in order to describe patterns of change. With adult support, they design and build a structure that will reduce the warming effect of sunlight, and then conduct tests to determine if the structure works as intended.

<table>
<tr><th>Overview</th><th>Standards for Science</th><th>Unit Focus</th><th>Essential Questions</th></tr>
<tr><td>Unit 5

Physical Science: Earth and Space</td><td>• K-PS3-1
• K-PS3-2
• K-2 ETS1-1
• ETS1-2
• WIDA 1,4</td><td>• Observing patterns in events generated by cause-and-effect relationships.
• Describing how the shape and stability of structures are related to their function.
• Using tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem.
• Using tools and materials to design and build a structure (e.g., umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area.
• Developing a simple model based on evidence to represent a proposed object or tool.</td><td rowspan="2">• What can we see in the Day sky?
• What can we see in the night sky?
• How does rain and sun affect land?
• How does sunlight affect the playground?
• Imagine that we have been asked to design a new playground. How would we keep the sand, soil, rocks, and water found on the playground cool during the summer?</td></tr>
<tr><td>Unit 5: Enduring Understandings</td><td colspan="2">• Scientists use different ways to study the world.
• Events have causes that generate observable patterns.
• Sunlight warms Earth's surface.
• The shape and stability of structures of natural and designed objects are related to their function(s).
• Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.
• Because there is always more than one possible solution to a problem, it is useful to compare and test designs.</td></tr>
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Curriculum Unit 5	Standards		Pacing	
			Days	Unit Days
Unit 5: **Physical Science: Earth and Space**	**K-PS3-1**	Make observations to determine the effect of sunlight on Earth's surface.	9	36
	K-PS3-2.	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	9	
	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 tool or object.	9	
	ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	3	
	Assessment, Re-teach and Extension		6	

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Unit 5 Grade K		
Disciplinary Core Ideas	**Indicator #**	**Indicator**
PS3.B: Conservation of Energy and Energy Transfer Sunlight warms Earth's surface. (K-PS3-1) **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. Asking questions, making observations, and gathering information are helpful in thinking about problems. Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) **ETS1.B: Developing Possible Solutions** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (K-2-ETS1-2)	**K-PS3-1**	Make observations to determine the effect of sunlight on Earth's surface.
	K-PS3-2	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
	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 tool or object.
	ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

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<table>
<tr><th colspan="2">Unit 5 Grade K</th></tr>
<tr><th colspan="2">• Assessment Plan</th></tr>
<tr><td>• 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 Task</td><td>• Short Constructed Responses
• A Big Star: We will read a reading passage that explains what the sun is and that it provides heat to the Earth. The complete an activity with comprehension and critical thinking questions.
• Effects of Sunlight Project: Students will conduct an investigation by making observations and collecting data that can be used to make comparisons. They will test a variety of materials that are found naturally on the surface of the Earth and place these materials in a plate in direct sunlight and the other out of direct sunlight. Then they will compare the temperature of each and record their observations. They should draw the conclusion that the sun has the same warming effect on all the materials found on the surface of the Earth. Students will use that knowledge to design and build a structure that will reduce the warming effects of the sun.</td></tr>
<tr><th>Resources</th><th>Activities</th></tr>
<tr><td>• Chromebooks
• HSP Science Teacher Manual
• Lab Explorations
• Big Books pg.
• Leveled Readers
• Songs on CD
• 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</td><td>• Casting Shadows Across Literacy and Science: Students will be introduced to shadows by taking them on a shadow walk. Then they will discuss what is a shadow?
• The Warmth of the Sun: Students will broaden their understanding of the sun, particularly its critical role in warming the land, air, and water around us.
• Cooler in the Shadows: Students will be engaged in several activities where they observe, explore, and analyze shadows. Students will make inferences about the cause of shadows.
• Shadow Smile! - Part 6 | Sid the Science Kid: Students will listen to a song about shadows and the necessary shade they provide for people and animals in the heat!</td></tr>
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Instructional Best Practices and Exemplars	
1. Identifying similarities and differences 2. Summarizing and note taking 3. Reinforcing effort and providing recognition 4. Homework and practice 5. Nonlinguistic representations	6. Cooperative learning 7. Setting objectives and providing feedback 8. Generating and testing hypotheses 9. Cues, questions, and advance organizers 10. Manage response rates

9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation and Training & 9.4 Life Literacies and Key Skills

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).
9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
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).
9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.4.2.DC.7: Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1).
9.4.2.IML.2: Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).
9.4.2.IML.3: Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).

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
All WIDA Can Do Descriptors can be found at this link: https://wida.wisc.edu/teach/can-do/descriptors ☐ Grade K WIDA Can Do Descriptors: ☐ Listening ☐ Speaking ☐ Reading ☐ Writing ☐ Oral Language Students will be provided with accommodations and modifications that may include: • Relate to and identify commonalities in science studies in student's home country • Assist with organization • Use of computer • Emphasize/highlight key concepts • Teacher Modeling • Peer Modeling • Label Classroom Materials - Word Walls	Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic. • Raise levels of intellectual demands • Require higher order thinking, communication, and leadership skills • Differentiate content, process, or product according to student's readiness, interests, and/or learning styles • Provide higher level texts • Expand use of open-ended, abstract questions • Critical and creative thinking activities that provide an emphasis on research and in-depth study • Enrichment Activities/Project-Based Learning/ Independent Study Additional Strategies may be located at the links: ❖ Gifted Programming Standards ❖ Webb's Depth of Knowledge Levels and/or Revised Bloom's Taxonomy ❖ REVISED Bloom's Taxonomy Action Verbs

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Interdisciplinary Connections
Interdisciplinary Connections: **ELA Standards:** **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-PS3-1),(K-PS3-2) **Math Standards:** **K.MD.A.2** Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. (K- PS3-1),(KPS3-2)
Integration of Computer Science and Design Thinking NJSLS 8
8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats **8.1.2.DA.2:** Store, copy, search, retrieve, modify, and delete data using a computing device. **8.1.2.DA.3:** Identify and describe patterns in data visualizations. **8.1.2.DA.4:** Make predictions based on data using charts or graphs. **8.2.2.ED.2:** Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. **8.2.2.ED.3:** Select and use appropriate tools and materials to build a product using the design process. **8.2.2.ED.4:** Identify constraints and their role in the engineering design process. **8.2.2.ITH.1:** Identify products that are designed to meet human wants or needs. **8.2.2.ITH.2:** Explain the purpose of a product and its value. **8.2.2.ITH.3:** Identify how technology impacts or improves life. **8.2.2.ITH.5:** Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution. **8.2.2.NT.2**: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.