Winslow Township School District

Grade 1 Science

Unit 2: Investigating Matter and Energy in Our World

Overview: In this unit of study, students develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by placing objects made with different materials in the path of a beam of light and determining the effect of the different materials. Students are expected to demonstrate grade appropriate proficiency in planning and carrying out investigations, constructing explanations, and designing solutions.

Overview	Standards for Science	Unit Focus	Essential Questions
Unit 2 **Investigating Matter and Energy in Our World**	• **1-PS4-1** • **1-PS4-2** • **1-PS4-3** • **1-PS4-4** • **WIDA 1,4**	• Observe that sound and light are all around us. • Observe that sound can travel through waves. • Identify how matter can change. • Observe that light is a form of energy and can travel very fast. • Everything in our physical universe is made of matter. • Matter can be classified by its characteristics in the form of solid, liquid, or gas.	• What is Matter? • What can we observe about solids, liquids and gases? • What is heat? • What can Light do? • What is sound? • How can pushes and pulls cause objects to change speed, direction, and position?
Unit 2: Enduring Understandings	• Light is important because objects can be seen if light is available to illuminate them or if they give off their own light • Light and sound can be used to solve a problem of communicating over a distance • Vibrating materials can make sound and sound can make materials vibrate • Heat, light and sound are all forms of energy. • Matter can be observed, described, and measured. • Heating and cooling can change matter		

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Curriculum Unit 2	Standards		Pacing	
			Days	Unit Days
Unit 2: Investigating Matter and Energy in Our World	**1-PS4-1**	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	10	45
	1-PS4-2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.	10	
	1-PS4-3	Plan & conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.	10	
	1-PS4-4	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	10	
	Assessment, Re-teach and Extension		5	

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Unit 2 Grade 1		
Disciplinary Core Ideas	**Indicator #**	**Indicator**
PS4.A: Wave Properties Sound can make matter vibrate, and vibrating matter can make sound. (1-PS4-1) **PS4.B: Electromagnetic Radiation** Objects can be seen if light is available to illuminate them or if they give off their own light. (1-PS4-2) Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (1-PS4-3) **PS4.C: Information Technologies and Instrumentation** People also use a variety of devices to communicate (send and receive information) over long distances. (1 PS4-4)	**1-PS4-1**	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
	1-PS4-2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.
	1-PS4-3	Plan & conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
	1-PS4-4	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

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Unit 2 Grade 1	
• **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
	  • Students will observe and describe why objects can only be seen when illuminated with a light source.
	  • Waves: Light and Sound: Students will keep a journal that allows for reflection of topics within the study of waves, light and sound.

Resources	**Activities**
• Chromebooks • HSP Science Teacher Manual • Lab Explorations • Big Books pg. • Leveled Readers • Songs on CD • Activity book • Vocab activities • vocab cards • Group discussions • Manipulatives • SMARTboard / Mimio Technology • Google Applications (Documents, Forms, Spreadsheets, Presentation) • Linkit • Readworks website • NJ Department of Education	• Students will ask and answer questions about how light passes differently through different materials. What causes a shadow? How can one shadow be different from another? How can shadows change? How is sound made? • Rock and Water Experiment: Students will drop rock in water and observe the vibrations and movement of the water. Jot down findings into science notebook using a model to explain thinking and draw picture before, during, and after experiment. Then hit tuning forks against various objects to gain information. • Human Voices Experiment: Students will place a finger on throat to • observe vibration when whispering, humming, talking, and yelling. Students will then place finger on throat to observe sound when whispering, humming, talking, and yelling. Then explain that vocal chords vibrate and create sound in throat. • Phone String Lab: Use cups and string to create telephone and observe vibrations and sounds.

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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.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.IML.1: Identify a simple search term to find information in a search engine or digital resource.
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).
9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.TL.7: Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.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 1 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.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4- 2)
W.1.7 Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions). (1-PS4- 1),(1-PS4-2),(1-PS4-3),(1-PS4-4)
W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1-PS4-2),(1- PS4- 3)
SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1- PS4-3)

Math Standards:
MP.5 Use appropriate tools strategically. (1-PS4-4)
1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)
1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1- PS4-4)

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Integration of Computer Science and Design Thinking NJSLS 8
8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.1.2.DA.3: Identify and describe patterns in data visualizations.
8.1.2.AP.4: Break down a task into a sequence of steps.
8.1.2.AP.5: Describe a program's sequence of events, goals, and expected outcomes.
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.
8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.