

Winslow Township School District
Grade K Science
Unit 1: Physical Science: Matter and Energy,
Motion

Overview: During this unit of study, students apply an understanding of the effects of different strengths or different directions of pushes and pulls on the motion of an object to analyze a design solution. The crosscutting concept of cause and effect is called out as the organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations and analyzing and interpreting data.

Overview	Standards for Science	Unit Focus	Essential Questions
<p><u>Unit 1</u></p> <p>Physical Science: Matter and Energy, Motion</p>	<ul style="list-style-type: none"> • K-PS2-1 • K-PS2-2 • WIDA 1,4 	<ul style="list-style-type: none"> • Designing simple tests to gather evidence to support or refute ideas about cause and effect relationships • Planning and conducting an investigation with peers • Comparing the strengths of different directions of pushes and pulls on the motion of an object • Analyzing data from a test of an object or tool to determine if it works as intended • Pushes and pulls can have different strengths and directions • Designing simple “push or pull” tests can gather evidence to support or refute ideas about cause and effect relationships. 	<ul style="list-style-type: none"> • What is a push? • What is a pull? • What is force? • What is motion? • What is energy?
<p><i>Unit 1: Enduring Understandings</i></p>	<ul style="list-style-type: none"> • Energy, force and motion are related and are part of their everyday life. • Five senses can be used to explore different forms of energy such as light, heat, and sound. • Motion of an object can be described by the distance it has moved from its initial position to its final position. • A force is a push or pull that gets something moving or stops something that is already in motion. An object that is at rest will stay at rest until a push or pull moves it. 		

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Curriculum Unit 1	Standards		Pacing	
			Days	Unit Days
Unit 1: Physical Science: Matter and Energy, Motion	K-PS2-1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	10	36
	K-PS2-2	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	10	
	K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	10	
	Assessment, Re-teach and Extension		6	

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Disciplinary Core Ideas	Indicator #	Indicator
<p>PS2.A: Forces and Motion: Pushes and pulls can have different strengths and directions. (KPS2-1), (K-PS2-2) Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. (K-PS2-1), (K-PS2-2)</p> <p>PS2.B: Types of Interactions: When objects touch or collide, they push on one another and can change motion. (K-PS2-1)</p> <p>PS3.C: Relationship Between Energy and Forces: A bigger push or pull makes things speed up or slow down more quickly. (secondary to K-PS2-1)</p>	K-PS2-1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
	K-PS2-2	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.
	K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
	K-PS2-2	Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.
	K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

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• Assessment Plan	
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Short Constructed Responses • Students will take on the role of a playground engineer and plan, design and construct a playground structure. They can complete these as a drawing, diorama or lego/block structure of a playground structure. Students will be able to explain how the equipment works. • Push or Pull Worksheet: Write the word "push" or "pull" to show which force is being used. • Push and Pull Venn Diagram: Look at pictures and determine whether it is a push, pull, or both. Discuss and prove why.
Resources	Activities
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Bean Bag Toss Investigation: Teacher will model throwing the bean bag with increasing force (soft throw, medium throw, and hard throw). The students will be invited to toss the bean bag using different forces as modeled by the teacher. They will conclude that the stronger the force the farther distance the bean bag will travel. • Act out examples of pushing and pulling (Example: Opening and closing a door; Pushing buttons on a calculator; Push ups; Tug of War). • Illustrate a picture of a push or a pull. • Distance: Use cubes, tape measures, or rulers to measure the length of the distance between the cubes. • Pushes and Pulls Worksheet: Sort examples of things we move by pushing and pulling.

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Instructional Best Practices and Exemplars

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

9.4.2.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.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.4: Compare and contrast the way information is shared in a variety of contexts (e.g., social, academic, athletic) (e.g., 2.2.2.MSC.5, RL.2.9).

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: https://wida.wisc.edu/teach/can-do/descriptors</p> <p><input type="checkbox"/> Grade K WIDA Can Do Descriptors:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Listening <input type="checkbox"/> Speaking <input type="checkbox"/> Reading <input type="checkbox"/> Writing <input type="checkbox"/> Oral Language <p>Students will be provided with accommodations and modifications that may include:</p> <ul style="list-style-type: none"> • 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 	<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"> • 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 <p>Additional Strategies may be located at the links:</p> <ul style="list-style-type: none"> ❖ 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:

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K- PS2-2)

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-PS2-1)

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)

Math Standards:

MP.2 Reason abstractly and quantitatively. (K- PS2-1)

K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K- PS2-1)

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-PS2- 1)

Integration of Computer Science and Design Thinking NJSL 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.4: Make predictions based on data using charts or graphs.

8.2.2.ED.1: Communicate the function of a product or device.

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.4: Identify how various tools reduce work and improve daily tasks.

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.