



Grade 3 Science Unit 1 Physical Science

Topic 2 Electricity and Magnetism - 20 days

Unit Overview: In this unit students will learn how to identify forces that affect motion. Students will study patterns in motion and conduct investigations that will allow them to predict the path of an object's motion. Students will then learn about the causes of electric and magnetic forces. Students will explore how electrically charged objects behave and interact with one another. Students will learn about magnetic objects, magnetic fields, and strength of magnetic forces. Practical applications related to electricity and magnetism will then be applied.

Topic Essential Question: How can you solve a problem using magnetic forces?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Electric Forces
- Lesson 2 Magnetic Forces
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations (PE)

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paper clips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.* [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Higher Order Thinking Skills (HOTS)

Higher Order Thinking Skills (HOTS) will be identified within each topic plan. Grade 3 HOTS include:

sequencing	reasoning
categorizing	recognizing attributes
identifying patterns	determining relevant/irrelevant information
cause and effect	distinguishing fact vs. opinion
researching	using complete sentences
brainstorming	inferencing
using logic	academic vocabulary

<p>Topic Opener PE: 3-PS2-3, 3-PS2-4, 3-5 ETS1-1 SEP: Asking Questions and Defining Problems* DCI: PS2.B - Types of Interactions</p> <ul style="list-style-type: none"> Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. <p>CCC: Cause and Effect*</p> <p>*Denotes Higher Order Thinking Skill</p>	<p>Savvas Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.</p> <ul style="list-style-type: none"> uConnect Lab – How can you move objects without touching them?* Quest Kickoff – Weigh to Go* Leveled Readers STEM Engineering Reader
<p>Lesson 1- Electric Forces PE: 3-PS2-3 SEP: Asking Questions and Defining Problems* DCI: PS2.B - Types of Interactions</p> <ul style="list-style-type: none"> Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other <p>CCC: Cause and Effect*</p> <p>*Denotes Higher Order Thinking Skill</p>	<p>Savvas Guiding Objective</p> <ul style="list-style-type: none"> Students will relate the causes and effects of electric forces between objects. <p>Literacy Skill</p> <ul style="list-style-type: none"> Sequence <p>Vocabulary</p> <ul style="list-style-type: none"> electric charge neutral repel attract electric force conductor insulator static discharge <p>Academic Vocabulary</p> <ul style="list-style-type: none"> source <p>Connect - TE/SB p.56</p> <ul style="list-style-type: none"> Sports Connection Reading Check- Sequence* <p>Investigate - TE/SB pp. 57-61</p> <ul style="list-style-type: none"> uInvestigate Lab – How can you keep objects in the air?* Video – Electric Forces Literacy Toolbox – Sequence* Visual Literacy Connection – How do electric charges move? * <p>Synthesize - TE/SB pp. 62-64</p> <ul style="list-style-type: none"> Interactivity – What’s the Charge? Reading Check - Sequence* Quest Connection * Quest Check-In – Changing the Electric Force* <p>Demonstrate - TE/SB p. 63</p> <ul style="list-style-type: none"> Lesson 1 Quiz Lesson 1 Check

<p>Lesson 2 Magnetic Forces</p> <p>PE: 3-PS2-3, 3-PS2-4, 3-5 ETS1-3</p> <p>SEP: Planning and Carrying Out Investigations* Asking Questions and Defining Problems*</p> <p>DCI:</p> <p>PS2.B - Types of Interactions</p> <ul style="list-style-type: none"> Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other <p>CCC: Cause and Effect*</p> <p>*Denotes Higher Order Thinking Skill</p>	<p>Savvas</p> <p>Guiding Objective</p> <ul style="list-style-type: none"> Students will describe factors that affect magnetic forces between objects. <p>Literacy Skill</p> <ul style="list-style-type: none"> Sequence <p>Vocabulary</p> <ul style="list-style-type: none"> natural magnet permanent magnet electromagnet magnetic pole magnetic field <p>Academic Vocabulary</p> <ul style="list-style-type: none"> interact <p>Connect - TE/SB p.66</p> <ul style="list-style-type: none"> Curriculum Connection Identify* <p>Investigate - TE/SB pp. 67-69</p> <ul style="list-style-type: none"> Video – Magnetic Forces Investigate Lab – How can you make a magnet?* Visual Literacy Connection – How do people use electromagnets? * Virtual Lab – Make it Move!* <p>Synthesize - TE/SB pp. 70-71</p> <ul style="list-style-type: none"> Interactivity – Magnetism Quest Connection* Crosscutting Concepts-Toolbox-Cause and Effect* <p>Demonstrate - TE/SB pp.71-73</p> <ul style="list-style-type: none"> Lesson 2 Check Reading Check - Sequence* Lesson 2 Quiz Quest Check-In Lab – How can magnets sort objects by weight? *
<p>Topic Close</p> <ul style="list-style-type: none"> Assessment and Remediation TE/SE pp. 78-83 Quest Finding p.76 	<p>Topic 2 Enrichment</p> <p>Topic 2- Lesson 1 Enrichment - TE p.62 - This activity extends student understanding of the lesson by having students explore how electricity makes thunder and sequence the order of events.</p> <p>Enrichment Skill- Sequence</p> <p>Topic 2- Lesson 2 Enrichment - TE p.70 - This activity extends student understanding of the lesson by having students identify the main idea and two supporting details in a passage about how birds use Earth’s magnetic field to find their way.</p> <p>Enrichment Skill- Reasoning</p>

English Language Learners (ELL) Enhancements

To access [hyperlinked](#) material, you must be logged into your BPS Google Drive

Listening

- **Cross- Linguistic Practices**: Gives students opportunities to make connections between what they hear and their home language (For example, allow students to listen to a passage and identify cognates).
- **Activating Prior Knowledge** Activating prior knowledge means both eliciting from students what they already know and building initial knowledge that they need in order to access upcoming content.
- **Activating Prior Knowledge**
- **Visuals** - GIFs, pictures- will assist students in understanding what they are listening to. Use **visual thinking strategies** to set the lens for learning.
- Video to review or introduce a topic – use **closed captioning** to help students see the words and pronunciations while they listen to the content.
- **Word stretching / Vowel stretching** when instructing allows student to listen closely to the pronunciation of the word.
- **Performance Level Descriptors** this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of listening. Scroll for grade 3.

Speaking

- **Sentence Stems/Frames** - to begin a sentence - such as *Evolution is...* or *I think that evolution is...*
- **Academic Conversation Starters**: Have a visual of a list of academic sentence starters that students can refer to in a discussion.
- **Choral Reading** - To build fluency, self-confidence and motivation with [reading/speaking](#).
- Create **movement** to go with the word. Movement can be a motivating factor, as well as a kinesthetic tool for conceptualizing the rhythm and flow of fluent reading while triggering brain function for optimal learning.
- **Performance Level Descriptors** This document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of speaking. Scroll for grade 3.

Reading

- Supplementary Text to help reinforce concepts.
- **Visual Aids** - Pictures or models to support vocabulary words and concepts
- Video to review or introduce a topic - use **closed captioning** to help students read along while they listen to the content.
- **4 Square / Frayer models** to help students gain a deeper understanding of vocabulary.
- **Highlighting** important text to assist students in answering questions after the reading.
- **Chunking**-Break reading of text into chunks or paragraphs
- **Performance Level Descriptors** this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of reading. Scroll for grade 3.
- **Vocabulary Morphology**- Morphology relates to the segmenting of words into affixes (prefixes and suffixes) and roots or base words, and the origins of words. Understanding that words connected by meaning can be connected by spelling can be critical to expanding a student's vocabulary.

Instructional Accommodations (depending on the student's needs)

- **Extended time** for tests in class, projects and assignments
- **Directions read**. Broken down as necessary
- **Model** how to complete the activity in the lesson
- **Oral simplification** of directions or questions
- **Translated version** of test when available. Student may have both version English and native language version
- Use of **approved bilingual glossaries** from NYS in each subject

<p>Special Education Modifications Special Education students must have accommodations as per Individual Educational Plan (IEP)</p>	<p><u>Instructional</u></p> <ul style="list-style-type: none"> ● Pre-teach vocabulary ● Use picture vocabulary ● Scaffold Depth of Knowledge questions ● Provide copy of notes/notes in “cloze” form ● Use of Think, Pair, and Share strategy to help process information ● Scaffold written assignments with the use of graphic organizers ● Allow for multiple ways to respond (verbal, written, response board) ● Provide model of performance task ● Modify informational text to fit the needs of the students ● Provide a digital or paper interactive notebook ● Present complex tasks in multiple ways ● Provide mnemonic strategies for scientific concepts <hr/> <p><u>Technology:</u></p> <ul style="list-style-type: none"> ● Audio reading of text ● Text to type functions ● Videos to clarify/visualize science concepts ● Record class lecture/discussions and make accessible to student ● Nearpod- interactive presentations of notes <hr/> <p><u>In Class Assessments</u></p> <ul style="list-style-type: none"> ● Provide multiple options for projects ● Use of timer in class ● Break all complex tasks into chunks
<p>Step Up to Writing Step Up to Writing materials can be found in BPS Science K-12 Schoology Folder Grade 3 Resources Grade 3 Curriculum Materials SUTW materials</p>	<ul style="list-style-type: none"> ● Breaking Down Definitions ● Four-Step summary Paragraph ● Sketch Then Write Responses ● Traffic Light Colors for Informative/Explanatory Paragraphs ● Performance Level Descriptors this document provides teachers with a description of what output they can expect from students based on earned NYSESLAT levels in the modality of writing. Scroll for grade 3.
<p>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</p>	<ul style="list-style-type: none"> ● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications ● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population ● All students are given an opportunity to engage in science discourse ● Teacher demonstrates high expectations for all students