



Grade 1 Science Unit 1 Physical Science Topic 2 Light - 30 days

Unit Overview: In this unit students will connect and expand on their ideas of sound and light. In Topic 1 students will learn that sound is related to the vibration of matter and be able to describe sound by pitch and volume. Students explore the vibrations that sound makes in matter and the types of sound made by musical instruments. Students will learn about the different ways in which sounds can be used to communicate. Light is the focus of **Topic 2**. Students learn about sources of light and will recognize that light enables them to see objects. The students explore how light interacts with matter and consider the specific uses of light in everyday situations, including safety, to communicate, to set a mood. Students will design a way to use light to communicate a message over a distance.

Topic Essential Question: How can I use light?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Observe Light
- Lesson 2 Light and Matter
- Lesson 3 Uses of Light
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations (PE)

1-PS4-2. Make observations (firsthand or from media) to construct an evidence-based account that objects can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]

1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed 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. * [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drumbeats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

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 object or tool.

Higher Order Thinking Skills (HOTS)

Higher Order Thinking Skills (HOTS) will be identified within each topic plan. Grade 1 HOTS include:

- sequencing
- categorizing
- identifying patterns
- cause and effect
- researching
- brainstorming
- logic
- reasoning
- inferencing
- academic vocabulary

<p>Topic Opener PE: 1-PS4-2, 1-PS4-3, 1-PS4-4. K-2 ETS-1 SEP: Constructing Explanations and Designing Solutions* 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 - What do you need to see objects?*• Quest Kickoff - Help Send a Message• Leveled Readers• STEM Engineering Reader
<p>Lesson 1- Observe Light PE: 1-PS4-2, 1-PS4-3 SEP: Planning and Carrying Out Investigations* DCI: PS4.B – Electromagnetic Radiation<ul style="list-style-type: none">• Objects can be seen if light is available to illuminate them or if they give off their own light.CCC: Cause and Effect*</p> <p>*Denotes Higher Order Thinking Skill</p>	<p>Savvas Guiding Objective<ul style="list-style-type: none">• Students will observe that light is needed to see objects. Students will identify objects that give off light.Vocabulary<ul style="list-style-type: none">• light• shadowConnect<ul style="list-style-type: none">• TE/SB p. 52• Jumpstart Discovery*Investigate<ul style="list-style-type: none">• TE/SB pp. 43-46• uInvestigate Lab - What happens when an object blocks light? *• Video – Observing Light• Reading Check – Cause and Effect*Synthesize<ul style="list-style-type: none">• TE/SB pp. 44, 47• Interactivity – Light Helps Us See*• Quest Connection• Quest Check-In – Give off Light*Demonstrate<ul style="list-style-type: none">• TE/SB p. 46• Lesson 1 Quiz</p>

<p><u>Lesson 2 Light and Matter</u> PE: 1-PS4-3, K-2 ETS1-1 SEP: Planning and Carrying Out Investigations* DCI: PS4.B – Electromagnetic Radiation</p> <ul style="list-style-type: none"> • Objects can be seen if light is available to illuminate them or if they give off their own light. <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 describe how light interacts with different materials. <p>Vocabulary</p> <ul style="list-style-type: none"> • matter • opaque • transparent • translucent • reflect <p>Connect</p> <ul style="list-style-type: none"> • TE/SB p.48 • Jumpstart Discovery <p>Investigate</p> <ul style="list-style-type: none"> • TE/SB pp. 49-51, 52-53 • Video – Light and Matter • <i>Investigate Lab - How do materials affect light?*</i> • Reading Check – Cause and Effect* • Literacy Toolbox – Cause and Effect* <p>Synthesize</p> <ul style="list-style-type: none"> • TE/SB pp. 51, 53-54 • Interactivity – Shine Light on Matter* • Quest Connection • Quest Check-In - Materials for a Light Signal <p>Demonstrate</p> <ul style="list-style-type: none"> • TE/SB pp.53 • Lesson 2 Quiz
<p><u>Lesson 3 Uses of Light</u> PE: 1-PS4-4, 1-PS4-4, K-2-ETS1-1 SEP: Constructing Explanations and Designing Solutions* DCI: PS4.C- Information Technologies and Instrumentation</p> <ul style="list-style-type: none"> • People also use a variety of devices to communicate (send and receive information) over long distances. <p>*Denotes Higher Order Thinking Skill</p>	<p>Savvas Guiding Objectives</p> <ul style="list-style-type: none"> • Students will explain how people use lights. Students will identify how people use light to communicate with others far away. <p>Vocabulary</p> <ul style="list-style-type: none"> • communicate <p>Connect</p> <ul style="list-style-type: none"> • TE/SB p. 58 • Jumpstart Discovery <p>Investigate</p> <ul style="list-style-type: none"> • TE/SB pp. 59-60, 62-63 • Video – Uses of Light • <i>Investigate – How can you use light to see?*</i> • Reading Check – Cause and Effect* <p>Synthesize</p> <ul style="list-style-type: none"> • TE/SB p. 61 • Interactivity – Light Keeps Us Safe <p>Demonstrate</p> <ul style="list-style-type: none"> • TE/SB pp.63-65 • <i>Quest Check-in –How can you send secret messages?*</i> • Lesson 3 Quiz

<p>Topic Close</p> <ul style="list-style-type: none"> • Assessment and Remediation TE/SE pp. 68-73 • Quest Finding p.66 	<p>Topic 2 Enrichment</p> <p>Topic 2- Lesson 2 Enrichment - TE p. 51 This activity extends student understanding of the lesson by reinforcing why tint for car windows can be helpful using vocabulary terms- transparent, translucent and opaque.</p> <p>Enrichment Skills-Academic vocabulary</p> <p>Topic 2- Lesson 3 Enrichment - TE p. 61 This activity extends student understanding of the lesson by providing opportunities to explore how light can be used for travel.</p> <p>Enrichment Skill- Inferencing</p>
--	--

English Language Learners (ELL) Enhancements

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

	<p>Listening</p> <ul style="list-style-type: none"> • 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 1.
	<p>Speaking</p> <ul style="list-style-type: none"> • Sentence Stems/Frames - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i> • 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 1.
	<p>Reading</p> <ul style="list-style-type: none"> • 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 1. • 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

Special Education Modifications

Special Education students must have accommodations as per Individual Educational Plan (IEP)

Instructional

- **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

Technology:

- **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

In Class Assessments

- Provide **multiple options** for projects
- **Use of timer** in class
- Break all complex tasks into chunks

Step Up to Writing

Step Up to Writing materials can be found in BPS Science K-12 Schoology Folder Gr 1 Resources Gr 1 SUTW materials

- Easy Two-Column Notes
- Breaking Down Definitions
- Paragraph Frame- What I Learned
- **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 1.

Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom

- 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