Grade 2 Science
Unit 1 Physical Science
Topic 1 Properties of Matter - 33 days

Unit Overview: In this unit students will practice identifying the three states of matter and recognize that solids have their own shape while liquids and gases take the shapes of their container. Students will learn about object properties and discover that some objects can serve a purpose better than others. Students will then expand on their knowledge of matter and consider various ways to change the properties of matter. Students will explore whether the heating or cooling of matter occurs when the temperature of matter changes and this may or may not be reversible. Students will then learn that objects can be made of parts and explore how the properties of the parts make them useful.

Topic Essential Question: How can different materials be used?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Describe Matter
- Lesson 2 Properties of Matter
- Lesson 3 Use Solids
- Lesson 4 Use Liquids and Gases
- Topic Close - Assessment, Quest Findings

NYSSLS Performance Expectations (PE)

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]

2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]

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.

K-2-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.

Higher Order Thinking Skills (HOTS)

Higher Order Thinking Skills (HOTS) will be identified within each topic plan. Grade 2 HOTS include:

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

Topic Opener **PE:** 2-PS1-1, 2-PS1-2, K-2 ETS 1-1, K-2 ETS 1-2 **SEP:** Planning and Carrying Out Investigations* Analyzing and Interpreting Data* **DCI:** **PS1.A** – Structure and Properties of Matter ● Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. ● Different properties are suited to different purposes. ● A great variety of objects can be built up from a small set of pieces. **CCC:** Cause and Effect* ***Denotes Higher Order Thinking Skill**	**Savvas** **Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.** ● *u*Connect Lab – Which object is bigger?* ● Quest Kickoff- Toy Building Kit* ● Leveled Readers ● STEM Engineering Reader ● Science Song – They're All Matter
Lesson 1- Describe Matter **PE:** 2-PS1-1, K-2 ETS1-2 **SEP:** Developing and Using Models* Planning and Carrying Out Investigations* **DCI:** **PS1.A** – Structure and Properties of Matter ● Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. ● Different properties are suited to different purposes. ● A great variety of objects can be built up from a small set of pieces. **CCC:** Cause and Effect* ***Denotes Higher Order Thinking Skill**	**Savvas** **Guiding Objective** ● Students will explain the difference between a solid, a liquid, and a gas. **Vocabulary** ● matter ● solid ● liquid ● gas ● properties **Connect** ● TE/SB p. 6 ● Jumpstart Discovery **Investigate** ● TE/SB pp. 7-8, 10 ● *u*Investigate Lab – What is different?* ● Video – Describe Matter ● Reading Check – Cause and Effect* ● Reading Toolbox – Cause and Effect* ● Quest Connection **Synthesize** ● TE/SB pp. 9, 11 ● Interactivity- Explore Solids, Liquids, and Gases* ● Quest Check-In – Build with Solids, Liquids, and Gases* **Demonstrate** ● TE/SB p. 10 ● Lesson 1 Quiz

Lesson 2 Properties of Matter **PE:** 2-PS1-1. 2-PS1-2, K-2ETS1-2 **SEP:** Developing and Using Models* **CCC:** Cause and Effect* Patterns* ***Denotes Higher Order Thinking Skill**	**Savvas** **Guiding Objective** ● Students will describe matter by its properties. **Vocabulary** ● weight ● texture ● magnetic ● flexibility **Connect** ● TE/SB p.14 ● Jumpstart Discovery **Investigate** ● TE/SB pp. 15-18 ● Video – Properties of Matter ● *u*Investigate Lab – What can beavers tech engineer?* ● Crosscutting Concepts Toolbox – Patterns* ● Quest Connection* ● Reading Check – Cause and Effect* **Synthesize** ● TE/SB pp. 18-19 ● Interactivity – Observe Properties of Matter ● Quest Check-In - Observe, Measure, Test* **Demonstrate** ● TE/SB pp.18 ● Lesson 2 Quiz
Lesson 3 Use Solids **PE:** 2-PS1-1, 2-PS1-2, K-2ETS1-1 **SEP:** Constructing Explanations and Designing Solutions* Analyzing and Interpreting Data* **CCC:** Cause and Effect* ***Denotes Higher Order Thinking Skill**	**Savvas** **Guiding Objectives** ● Students will investigate how the properties of some solids make them useful. **Vocabulary** ● purpose **Connect** ● TE/SB p. 20 ● Jumpstart Discovery **Investigate** ● TE/SB pp. 21-22 ● Video – Use Solids ● *u*Investigate Lab– Which package fits the blocks?* ● Reading Check – Cause and Effect* ● Math Toolbox – Measuring Objects* **Synthesize** ● TE/SB p. 23 ● Interactivity – The Most Useful Tool for a Job ● Quest Connection **Demonstrate** ● TE/SB pp.23-24 ● Quest Check-In Lab – How can you use shapes when building?* ● Lesson 3 Quiz

Lesson 4 Use Liquids and Gases
PE: 2-PS1-1, 2-PS1-2
SEP: Planning and Carrying Out Investigations*
CCC: Cause and Effect*
Systems and System Models*

***Denotes Higher Order Thinking Skill**

Savvas
Guiding Objectives
- Students will investigate how the properties of some liquids and gasses make them useful.

Vocabulary
- state

Connect
- TE/SB p. 26
- Jumpstart Discovery

Investigate
- TE/SB pp. 27-31
- Video – Use Liquids and Gases
- *u*Investigate Lab– How can you make a bigger bubble?*
- Reading Check – Cause and Effect*
- Crosscutting Concepts Toolbox – Constructing Explanations*
- Quest Connection

Synthesize
- TE/SB p. 30, 32
- Interactivity – Experiment with Solids, Liquids, and Gases*
- Quest Check-In – Liquids and Gas Toys*

Demonstrate
- TE/SB pp.31
- Lesson 3 Quiz

Topic Close
- Assessment and Remediation TE/SE pp. 36-41
- Quest Finding p.34

CLRI Literacy Connections:
Enrichment: Independent Reading
"The Rainbow Mystery" by Jennifer Dussling
Synopsis:
"Colors on the loose? Rainbows suddenly appear and disappear on Annies's wall! Find out how she and her sidekick Mike hunt down the clues and solve the mystery."

Topic 1 Enrichment
Topic 1- Lesson 1 Enrichment - TE p. 9 - This activity extends student understanding of the lesson providing them an opportunity to learn about a fourth type of matter.
Enrichment Skill - Inferencing

Topic 1- Lesson 2 Enrichment - TE p. 18 - This activity extends student understanding of the lesson by comparing and contrasting absorbency.
Enrichment Skill - Categorize

Topic 1- Lesson 3 Enrichment - TE p 23 - This activity extends student understanding of the lesson by researching 3 types of solid materials.
Enrichment Skills-Research

Topic 1- Lesson 4 Enrichment - TE p. 32 - This activity extends student understanding of the lesson by comparing properties of Helium and Air.
Enrichment Skills-Categorizing

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 2.
	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 2.
	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 2. • **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

<table>
<tr><td rowspan="3">Special Education Modifications
Special Education students must have accommodations as per Individual Educational Plan (IEP)</td><td><u>Instructional</u>
• 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</td></tr>
<tr><td><u>Technology:</u>
• 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</td></tr>
<tr><td><u>In Class Assessments</u>
• Provide multiple options for projects
• Use of timer in class
• Break all complex tasks into chunks</td></tr>
<tr><td>Step Up to Writing
Step Up to Writing materials can be found in BPS Science K-12 Schoology Folder
Grade 2
Resources Grade 2 Curriculum Materials SUTW materials</td><td>• Easy Two-Column Notes
• Breaking Down Definitions
• Paragraph Frame- What I Learned
• <u>Performance Level Descriptors</u> 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 2</td></tr>
<tr><td>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</td><td>• 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</td></tr>
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