



**Grade 6 Science**  
**Unit # 2 – Earth and Space Science**  
**Topic 5 Introduction to Earth’s Systems – 16 Days**

**Unit Overview:** Students make sense of phenomena as they explore the disciplinary core ideas through the lens of crosscutting concepts, such as Systems and System Models, Cause and Effect, and Matter and Energy. Students begin their discovery of the physical world with models and observable phenomena and move to explore Earth’s systems and their interactions, weather in the atmosphere, rocks and minerals, plate tectonics, and Earth’s surface systems – erosion and deposition.

**Topic Essential Question:** How do matter and energy cycle through Earth’s systems?

**Lessons**

- Topic Launch/Quest Kickoff
- Lesson 1 Matter and Energy in Earth’s Systems
- Lesson 2 Surface Features in the Geosphere
- Lesson 3 The Hydrosphere
- Topic Close –Assessment, Quest Findings

**NYSSLS Performance Expectations**

**MS-ESS2-1. Develop a model to describe the cycling of Earth’s materials and the flow of energy that drives this process. [Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth’s materials.] [Assessment Boundary: Assessment does not include the specific identification and naming of minerals and rocks but could include the general classification of rocks as igneous, metamorphic, or sedimentary.]**

**MS-ESS2-4. Develop a model to describe the cycling of water through Earth’s systems driven by energy from the Sun and the force of gravity. [Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models could include conceptual or physical models.] [Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.]**

**MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.**

**Topic Opener**

**PE:** MS-ESS2-1; MS-ESS2-4

**DCI:**

**ESS2.A – Earth’s Materials and Systems**

- All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. This energy is derived from the sun and Earth’s hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth’s materials and living organisms. (MS-ESS2-1)

**CCC:** Cause and Effect; System and System Models; Energy and Matter

**Savvas**

**Highlighted labs are important to the understanding of the instructional concepts in this lesson and must be completed during Science instructional time.**

- Topic Readiness Test
- **uConnect Lab – What Interactions Occur within Earth’s Systems?**
- Quest Kickoff Video – How can you predict the effects of a forest fire?
- Quest Kickoff

**Lesson 1 – Matter and Energy in Earth’s Systems**

**PE:** MS-ESS2-1

**SEP:** Developing and Using Models

**DCI:**

**ESS2.A** – Earth Materials and Systems

- All Earth processes are the result of energy flowing and matter cycling within and among the planet’s systems. This energy is derived from the sun and Earth’s hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth’s materials and living organisms. (MS-ESS2-1)

**CCC:** Stability and Change

**Savvas**

**Guiding Objectives:**

- Students will analyze and interpret data to describe evidence that Earth has four major subsystems or spheres that cycle matter and energy and shape Earth’s surface: Atmosphere, geosphere, hydrosphere, and biosphere.
- Students will construct explanations using reasoning to predict similar patterns by recognizing that the Earth’s system: Involves flows of matter and energy through different components and has two main sources of energy – heat from the sun and heat from Earth’s interior.
- Students will develop and use models to demonstrate how a system returns information about itself and that information results in change.

**Literacy Connection**

- Cite Textual Information

**Vocabulary**

- atmosphere
- geosphere
- hydrosphere
- cryosphere
- biosphere
- energy

**Academic Vocabulary**

- system
- feedback

**Connect** - TE/SB p. 178

- Connect It!
- Inquiry Warm-Up Lab – Interaction Actions
- Quest Connection

**Investigate** - TE/SB pp. 179-183

- **Investigate Lab – Where Heat Flows**
- Video – Matter and Energy in Earth’s System
- Interactivity – Describing Systems
- Reading Checks (pp. 179, 181, 182)
- Math Toolbox (p.183)
- Literacy Connection (p.180)
- Model It!

**Synthesize** - TE/SB pp. 183-184

- Interactivity – Thermal Energy and Cycling of Matter
- Quest Check-In Interactivity – Fire and Earth’s Spheres

**Demonstrate** – TE/SB pp. 184

- Lesson 1 Check
- Lesson Quiz 1

**Lesson 2 – Surface Features in the Geosphere**

**PE:** MS-ESS2-1

**SEP:** Developing and Using Models

**DCI:**

**ESS2.A** – Earth Materials and Systems

- All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1)

**CCC:** Stability and Change

**Savvas**

**Guiding Objectives:**

- Students will analyze and interpret data to describe evidence that there are a variety of landforms on Earth because Earth's surface is different from place to place.
- Students will construct explanations using reasoning to predict similar patterns by recognizing that: The geosphere, atmosphere, and biosphere interact with each other to affect Earth and the topography of the land is constantly being created and destroyed by competing constructive and destructive forces.
- Students will develop and use models to demonstrate how computers create topographic and other maps from aerial photography and satellite imagery to model Earth's landforms.

**Literacy Connection**

- Write Explanatory Text

**Vocabulary**

- topography
- landform
- mountain
- coastline
- dune
- river
- delta
- surveying

**Academic Vocabulary**

- model

**Connect** - TE/SB p. 186

- Connect It!
- Poll - Florida Landforms
- Quest Connection

**Investigate** - TE/SB pp. 187-194

- Video – Surface Features in the Geosphere
- ***u*Investigate Lab – Surface Features**

- Interactivity – Maps and Methods
- Reading Check (pp. 187; 189; 191)
- Literacy Connection (p.189)
- Math Toolbox ( pp.188)

**Synthesize** - TE/SB pp. 195-196

- Interactivity – Constructive and Destructive Forces
- Reading Check (p.195)
- Model It!
- Quest Check In – Interactivity – Disrupting the Geosphere

**Demonstrate** – TE/SB p. 196

- Lesson 2 Check
- Lesson 2 Quiz

<p><b>Lesson 3 – The Hydrosphere</b></p> <p><b>PE:</b> MS-ESS2-4</p> <p><b>SEP:</b> Developing and Using Models</p> <p><b>DCI:</b></p> <p><b>ESS2.C</b> – The Roles of Water in Earth’s Surface Processes</p> <ul style="list-style-type: none"> <li>• (NYSED) Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation, sublimation, deposition, precipitation, infiltration, and runoff. (MS-ESS2-4)</li> <li>• (NYSED) Global movements of water and its changes in form are driven by sunlight and gravity. (MS-ESS2-4)</li> </ul> <p><b>CCC:</b> Energy and Matter</p>	<p><b>Savvas</b></p> <p><b>Guiding Objectives:</b></p> <ul style="list-style-type: none"> <li>• Students will analyze and interpret data to describe evidence that: The majority of Earth’s freshwater is frozen into glaciers and thickened ice masses; the remaining fresh water is found underground, in lakes and rivers, and the atmosphere; oceans, rivers, lakes, and ponds are all part of the surface water in the hydrosphere.</li> <li>• Students will develop and use models to demonstrate how the process of evaporation, condensation, transpiration, and precipitation continually cycle water from Earth’s surface to the atmosphere and back again.</li> </ul> <p><b>Literacy Connection</b></p> <ul style="list-style-type: none"> <li>• Determine Central Ideas</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>• water cycle</li> <li>• transpiration</li> <li>• precipitation</li> <li>• aquifer</li> <li>• evaporation</li> <li>• condensation</li> <li>• watershed</li> <li>• well</li> </ul> <p><b>Academic Vocabulary</b></p> <ul style="list-style-type: none"> <li>• process</li> </ul> <p><b>Connect</b> - TE/SB p. 198</p> <ul style="list-style-type: none"> <li>• Connect It!</li> <li>• Write – The Hydrosphere and You</li> <li>• Quest Connection</li> </ul> <p><b>Investigate</b> - TE/SB pp. 199-206</p> <ul style="list-style-type: none"> <li>• <b>Investigate Lab – Water on Earth</b></li> <li>• Interactivity – The Water Cycle</li> <li>• Virtual Lab – Changes in the Water cycle</li> <li>• Video – The Hydrosphere</li> <li>• Plan It!</li> <li>• Reading Check (pp.200; 201; 203; 204)</li> <li>• Literacy Connection (p.200)</li> </ul> <p><b>Synthesize</b> - TE/SB pp. 204-207</p> <ul style="list-style-type: none"> <li>• Interactivity – Floridan Aquifer System</li> <li>• Reading Check (p.206)</li> <li>• Quest Check-In Interactivity – Impact on the Hydrosphere</li> <li>• Quest Check-In</li> </ul> <p><b>Demonstrate</b> – TE/SB p.207</p> <ul style="list-style-type: none"> <li>• Lesson 3 Check</li> <li>• Lesson 3 Quiz</li> </ul>
<p><b>Topic Close</b></p> <ul style="list-style-type: none"> <li>• Topic 5 Assessment and Remediation TE/SB pp. 210-213</li> <li>• Quest Finding and Reflection TE/SB p. 213</li> </ul>	<p><b>Topic 5 Enrichment</b></p> <p><b>Topic 5 - Lesson 1 Enrichment</b></p> <ul style="list-style-type: none"> <li>• Enrichment Activity – Earth’s Hydrosphere</li> <li>• Global to Local – When the Ice Melts</li> </ul> <p><b>Topic 5 - Lesson 2 Enrichment</b></p> <ul style="list-style-type: none"> <li>• Enrichment – Topographic Maps</li> <li>• <i>u</i>Engineer It – Defining the Problem – A Daring Bridge</li> <li>• Engineering Design Notebook – Building a Bridge</li> </ul> <p><b>Topic 5 - Lesson 3 Enrichment</b></p> <ul style="list-style-type: none"> <li>• Enrichment – Ground Water</li> <li>• Case Study – The CASE of the Shrinking Sea</li> </ul>

<p><b>English Language Learners (ELL) Enhancements</b> To access <a href="#">hyperlinked</a> material, you must be logged into your BPS Google Drive</p>	<p><b><u>Listening</u></b></p> <ul style="list-style-type: none"> <li>● <b><u>Cross- Linguistic Practices</u></b>: 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).</li> <li>● <b><u>Activating Prior Knowledge</u></b> 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.</li> <li>● <b><u>Visuals</u></b> - GIFs, pictures- will assist students in understanding what they are listening to. Use <b><u>visual thinking strategies</u></b> to set the lens for learning.</li> <li>● Video to review or introduce a topic – use <b><u>closed captioning</u></b> to help students see the words and pronunciations while they listen to the content.</li> <li>● <b><u>Word stretching / Vowel stretching</u></b> when instructing allows student to listen closely to the pronunciation of the word.</li> <li>● <b><u>Performance Level Descriptors</u></b> 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 6.</li> </ul>
	<p><b><u>Speaking</u></b></p> <ul style="list-style-type: none"> <li>● <b><u>Sentence Stems/Frames</u></b> - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i></li> <li>● <b><u>Academic Conversation Starters</u></b>: Have a visual of a list of academic sentence starters that students can refer to in a discussion.</li> <li>● <b><u>Choral Reading</u></b> - To build fluency, self-confidence and motivation with <a href="#">reading/speaking</a>.</li> <li>● Create <b><u>movement</u></b> 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.</li> <li>● <b><u>Performance Level Descriptors</u></b> 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 6.</li> </ul>
	<p><b><u>Reading</u></b></p> <ul style="list-style-type: none"> <li>● Supplementary Text to help reinforce concepts.</li> <li>● <b><u>Visual Aids</u></b> - Pictures or models to support vocabulary words and concepts</li> <li>● Video to review or introduce a topic - use <b><u>closed captioning</u></b> to help students read along while they listen to the content.</li> <li>● <b><u>4 Square / Frayer models</u></b> to help students gain a deeper understanding of vocabulary.</li> <li>● <b><u>Highlighting</u></b> important text to assist students in answering questions after the reading.</li> <li>● <b><u>Chunking</u></b>-Break reading of text into chunks or paragraphs</li> <li>● <b><u>Vocabulary Morphology</u></b>- 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.</li> <li>● <b><u>Performance Level Descriptors</u></b> 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 6.</li> </ul>
	<p><b><u>Instructional Accommodations (depending on the student’s needs)</u></b></p> <ul style="list-style-type: none"> <li>● <b>Extended time</b> for tests in class, projects and assignments</li> <li>● <b>Directions read.</b> Broken down as necessary</li> <li>● <b>Model</b> how to complete the activity in the lesson</li> <li>● <b>Oral simplification</b> of directions or questions</li> <li>● <b>Translated version</b> of test when available. Student may have both version English and native language version</li> <li>● Use of <b><u>approved bilingual glossaries</u></b> from NYS in each subject</li> </ul>

Grade 6 Unit 2 Earth and Space Science

<p><b>Special Education Modifications</b></p> <p>Special Education students must have accommodations as per Individual Educational Plan (IEP)</p>	<p><b><u>Instructional</u></b></p> <ul style="list-style-type: none"> <li>● <b>Pre-teach</b> vocabulary</li> <li>● Use <b>picture vocabulary</b></li> <li>● Scaffold <b>Depth of Knowledge</b> questions</li> <li>● Provide copy of notes/<b>notes in “cloze”</b> form</li> <li>● Use of <b>Think, Pair, and Share</b> strategy to help process information</li> <li>● <b>Scaffold</b> written assignments with the use of <b>graphic organizers</b></li> <li>● Allow for <b>multiple ways to respond</b> (verbal, written, response board)</li> <li>● Provide <b>model of performance task</b></li> <li>● <b>Modify informational text</b> to fit the needs of the students</li> <li>● Provide a digital or paper <b>interactive notebook</b></li> <li>● Present complex <b>tasks in multiple ways</b></li> <li>● Provide <b>mnemonic strategies</b> for scientific concepts</li> </ul> <hr/> <p><b><u>Technology:</u></b></p> <ul style="list-style-type: none"> <li>● <b>Audio</b> reading of text</li> <li>● <b>Text to type</b> functions</li> <li>● <b>Videos</b> to clarify/visualize science concepts</li> <li>● <b>Record class lecture/discussions</b> and make accessible to student</li> <li>● <b>Nearpod-</b> interactive presentations of notes</li> </ul> <hr/> <p><b><u>In Class Assessments</u></b></p> <ul style="list-style-type: none"> <li>● Provide <b>multiple options</b> for projects</li> <li>● <b>Use of timer</b> in class</li> <li>● Break all complex tasks into chunks</li> </ul>
<p><b>Step Up to Writing</b></p> <p>Step Up to Writing Materials can be found in BPS Science K-12 Schoology Folder Grade 6 Resources Grade 6 SUTW materials</p>	<ul style="list-style-type: none"> <li>● Easy Two-Column Notes</li> <li>● Breaking Down Definitions</li> <li>● Paragraph Frame- What I Learned</li> <li>● <b>Performance Level Descriptors</b> 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 6.</li> </ul>
<p><b>Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom</b></p>	<ul style="list-style-type: none"> <li>● Materials, resources, and/or discussions address diverse cultural backgrounds and real-world applications</li> <li>● Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population</li> <li>● All students are given an opportunity to engage in science discourse</li> <li>● Teacher demonstrates high expectations for all students</li> </ul>