



Grade 5 Science
Unit # 2 – Earth and Space Science
Topic 5 Human Impacts on Earth's Systems – 21 Days

Unit Overview: In Topic 3 students will learn how patterns in the natural world contribute to the interactions of Earth's four spheres – Geosphere, hydrosphere, atmosphere, and biosphere. Water is the primary emphasis in Topic 4. Students will explore the water cycle and the interactions among water and land. **Topic 5** focuses on renewable and non-renewable resources on Earth and how humans use the resources. Topic 6 and Topic 7 both investigate the Solar System. Students will develop models to observe brightness, orbits, and object sizes. Students should be able to recognize the position of the Earth, and key characteristics of the sun, planets, and other space objects. Students will then study patterns of the moon phases, star movement, rotation and revolution of Earth.

Topic Essential Question: How can we protect Earth's resources and environments?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Earth's Natural Resources
- Lesson 2 Earth's Energy Resources
- Lesson 3 Human Activity and Earth's Systems
- Lesson 4 – Protection of Earth's Resources and Environments
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect Earth's resources and environment. [Clarification Statement: Emphasis should be on how communities use information to sustain resources and the environment locally, regionally, nationally, and/or internationally.]

Topic Opener

PE: 5-ESS3-1

SEP: Constructing Explanations and Designing Solutions; Obtaining, Evaluating, and Communicating Information

DCI:

ESS3.C - Human Impacts on Earth Systems

- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

CCC Systems and System Models

Savvas

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

- **uConnect Lab –How can we reuse materials to design new products?**
- Quest Kickoff – Take Care of Earth – It's Our Home!
- Leveled Readers
- STEM Engineering Reader
- Reading Check – Compare and Contrast

Lesson 1 – Earth’s Natural Resources

PE: 5-ESS3-1

SEP: Constructing Explanations and Designing Solutions;
Obtaining, Evaluating, and Communicating Information

DCI:

ESS3.C - Human Impacts on Earth Systems

- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments.
(5-ESS3-1)

CCC Systems and System Models

Savvas

Guiding Objectives

- Students will describe Earth’s natural resources.

Literacy Skill

- Compare and Contrast

Vocabulary

- natural resource
- nonrenewable resource
- renewable resource
- mineral
- rock

Academic Vocabulary

- classify
- efficient

Connect - TE/SB p. 186

- Local-to-Global Connection

Investigate - TE/SB pp. 187-188; 190; 193

- **uInvestigate Lab – Where are the metals?**
- Video – Earth’s Natural Resources
- Literacy Toolbox –Compare and Contrast
- Reading Check – Compare and Contrast
- Quest Connection
- uBe a Scientist
- Quest Check-In – Efficient or Wasteful

Synthesize - TE/SB pp. 189-191

- Interactivity – Drinkable Water
- Reading Check- Text Features

Demonstrate – TE/SB p. 192

- Lesson 1 Check
- Lesson Quiz 1

<p><u>Lesson 2 – Earth’s Energy Resources</u> PE: 5-ESS3-1 SEP: Analyzing and Interpreting Data; Obtaining, Evaluating, and Communicating Information DCI: ESS3.C - Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1) <p>CCC Systems and System Models</p>	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> Students will identify where energy on Earth comes from. <p>Literacy Skill</p> <ul style="list-style-type: none"> Compare and Contrast <p>Vocabulary</p> <ul style="list-style-type: none"> natural gas hydroelectric energy <p>Academic Vocabulary</p> <ul style="list-style-type: none"> transform <p>Connect - TE/SB p. 196</p> <ul style="list-style-type: none"> Engineering Connection <p>Investigate - TE/SB pp. 197-201</p> <ul style="list-style-type: none"> Video – Earth’s Energy Resources <i>u</i>Investigate Lab – What color is best at capturing solar energy? Reading Check – Compare and Contrast Science Practice Toolbox – Obtain Information Quest Connection Visual Literacy Connection – Where is electrical energy generated? <p>Synthesize - TE/SB pp. 201-</p> <ul style="list-style-type: none"> Interactivity – How We Use Earth’s Resources Quest Check-In - Save Energy! <p>Demonstrate – TE/SB p.202</p> <ul style="list-style-type: none"> Lesson 2 Check Lesson 2 Quiz
<p><u>Lesson 3 – Human Activity and Earth’s Systems</u> PE: 5-ESS3-1 SEP: Planning and Carrying Out Investigations; Constructing Explanations and Designing Solutions; Obtaining, Evaluating, and Communicating Information DCI: ESS3.C - Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1) <p>CCC Systems and System Models</p>	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> Students will explain how human activities affect Earth’s resources and environments <p>Literacy Skill</p> <ul style="list-style-type: none"> Compare and Contrast <p>Vocabulary</p> <ul style="list-style-type: none"> pollution <p>Academic Vocabulary</p> <ul style="list-style-type: none"> effect <p>Connect - TE/SB p. 204</p> <ul style="list-style-type: none"> STEM Connection <p>Investigate - TE/SB pp. 205-207</p> <ul style="list-style-type: none"> Video – Human Activity and Earth’s Systems What happens to substances over time? Visual Literacy Connection – How can human activities change Earth’s systems?

	<p>Synthesize - TE/SB pp. 208-209</p> <ul style="list-style-type: none"> ● Interactivity – Causes of Environmental Damage ● <i>u</i>Be a Scientist ● Quest Connection ● Engineering Practice Toolbox – Design Solutions <p>Demonstrate – TE/SB pp. 209-211</p> <ul style="list-style-type: none"> ● Lesson 3 Check ● Lesson 3 Quiz ● Quest Check-In Lab – How do building materials affect energy efficiency?
<p><u>Lesson 4 – Protection of Earth’s Resources and Environments</u> PE: 5-ESS3-1 SEP: Constructing Explanations and Designing Solutions; Obtaining, Evaluating, and Communicating Information DCI: ESS3.C - Human Impacts on Earth Systems</p> <ul style="list-style-type: none"> ● Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1) <p>CCC Systems and System Models</p>	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> ● Students will describe ways to protect Earth’s resources and environments <p>Literacy Skill</p> <ul style="list-style-type: none"> ● Compare and Contrast <p>Vocabulary</p> <ul style="list-style-type: none"> ● conservation <p>Connect - TE/SB p. 212</p> <ul style="list-style-type: none"> ● Curriculum Connection <p>Investigate - TE/SB pp. 213-217</p> <ul style="list-style-type: none"> ● Video – Protection of Earth’s Resources and Environments ● <i>u</i>Investigate Lab – How can you collect rainwater? ● Crosscutting concepts Toolbox – Scale ● Virtual Lab- Electronics and our Earth ● Visual Literacy Connection – How do people recycle? <p>Synthesize - TE/SB pp. 218-220</p> <ul style="list-style-type: none"> ● Interactivity – Go Green ● Question It! ● Quest Connection ● <i>u</i>Be a Scientist ● Quest Check-In – Increase Conservation <p>Demonstrate – TE/SB pp. 219-</p> <ul style="list-style-type: none"> ● Lesson 4 Check ● Lesson 4 Quiz
<p><u>Topic Close</u></p> <ul style="list-style-type: none"> ● Topic Assessment and Remediation TE/SB pp. 224-229 ● Quest Finding and Reflection Take Care of Earth-Its Our Home! TE/SB p. 222 	<p><u>Topic 5 Enrichment</u> Topic 5 - Lesson 1 Enrichment</p> <ul style="list-style-type: none"> ● Enrichment Activity TE p. 191 <p>Topic 5 - Lesson 2 Enrichment</p> <ul style="list-style-type: none"> ● Enrichment Activity TE p. 201 <p>Topic 5 - Lesson 3 Enrichment</p> <ul style="list-style-type: none"> ● Enrichment Activity TE p. 208 <p>Topic 5 – Lesson 4 Enrichment</p> <ul style="list-style-type: none"> ● Enrichment Activity TE p. 218

<p>English Language Learners (ELL) Enhancements To access hyperlinked material, you must be logged into your BPS Google Drive</p>	<p><u>Listening</u></p> <ul style="list-style-type: none"> ● <u>Cross- Linguistic Practices</u>: 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). ● <u>Activating Prior Knowledge</u> 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. ● <u>Visuals</u> - GIFs, pictures- will assist students in understanding what they are listening to. Use <u>visual thinking strategies</u> to set the lens for learning. ● Video to review or introduce a topic – use <u>closed captioning</u> to help students see the words and pronunciations while they listen to the content. ● <u>Word stretching / Vowel stretching</u> when instructing allows student to listen closely to the pronunciation of the word. ● <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 listening. Scroll for grade 5.
	<p><u>Speaking</u></p> <ul style="list-style-type: none"> ● <u>Sentence Stems/Frames</u> - to begin a sentence - such as <i>Evolution is...</i> or <i>I think that evolution is...</i> ● <u>Academic Conversation Starters</u>: Have a visual of a list of academic sentence starters that students can refer to in a discussion. ● <u>Choral Reading</u> - To build fluency, self-confidence and motivation with <u>reading/speaking</u>. ● Create <u>movement</u> 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. ● <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 speaking. Scroll for grade 5.
	<p><u>Reading</u></p> <ul style="list-style-type: none"> ● Supplementary Text to help reinforce concepts. ● <u>Visual Aids</u> - Pictures or models to support vocabulary words and concepts ● Video to review or introduce a topic - use <u>closed captioning</u> to help students read along while they listen to the content. ● <u>4 Square / Frayer models</u> to help students gain a deeper understanding of vocabulary. ● <u>Highlighting</u> important text to assist students in answering questions after the reading. ● <u>Chunking</u>-Break reading of text into chunks or paragraphs ● <u>Vocabulary Morphology</u>- 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. ● <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 reading. Scroll for grade 5.
	<p><u>Instructional Accommodations (depending on the student’s needs)</u></p> <ul style="list-style-type: none"> ● 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 <u>approved bilingual glossaries</u> from NYS in each subject

Grade 5 Unit 2 Earth and Space Science

<p>Special Education Modifications</p> <p>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</p> <p>Step Up to Writing Materials can be found in BPS Science K-12 Schoology Folder Grade 5 Resources Grade 5 SUTW materials</p>	<ul style="list-style-type: none"> ● 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 5.
<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