



Grade 5 Science Unit # 3 – Life Science

Topic 9 Matter and Energy in Ecosystems – 21 Days

Unit Overview: In **Topic 8** students will learn how energy is used to make food and how energy is transferred throughout the environment. Students will conduct investigations to demonstrate the principle of energy conservation. In **Topic 9** students will learn how the living and nonliving components of an ecosystem interact. Students will use models to describe how matter and energy cycle within an ecosystem.

Topic Essential Question: How can you model the interaction of living things in an ecosystem?

Lessons

- Topic Launch/Quest Kickoff
- Lesson 1 Ecosystems
- Lesson 2 Organisms Within Ecosystems
- Lesson 3 Change Within Ecosystems
- Lesson 4 Matter and Energy Transform Within Ecosystems
- Topic Close –Assessment, Quest Findings

NYSSLS Performance Expectations

5-LS2-1. Develop a model to describe the movement of matter among plants (producers), animals (consumers), decomposers, and the environment. [Clarification Statement: Emphasis is on the flow of energy and cycling of matter in systems such as organisms, ecosystems, and/or Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]

Topic Opener

PE: 5-LS2-1

SEP: Developing and Using Models

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 do the parts in a fish tank make up a system?**
- Quest Kickoff – Public Relations Gone Wild!
- Leveled Readers
- STEM Engineering Reader
- Reading Check – Compare and Contrast

Lesson 1 – Ecosystems

PE: 5-LS2-1

SEP: Developing and Using Models; Planning and Carrying Out Investigations; Systems and System Models

DCI:

LS2.A - Interdependent Relationships in Ecosystems

- The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants' parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

LS2.B - Cycles of Matter and Energy Transfer in Ecosystems

- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)

CCC: Systems and System Models

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Guiding Objectives

- Students will describe the components of an ecosystem

Literacy Skill

- Compare and Contrast

Vocabulary

- ecosystem
- abiotic
- biotic
- community

Academic Vocabulary

- interact

Connect - TE/SB p. 360

- Sports Connection

Investigate - TE/SB pp. 361-365

- **Investigate Lab – How do the parts of an ecosystem work together?**
- Video – Ecosystems
- Quest Connection
- Literacy Toolbox – Compare and Contrast
- Reading Check – Compare and Contrast
- Visual Literacy Connection – How do factors interact in a forest ecosystem?

Synthesize - TE/SB pp. 365; 367

- Interactivity – Interactions in an Ecosystem
- Quest Check-In- Unwelcome Inhabitants

Demonstrate – TE/SB p. 366

- Lesson 1 Check
- Lesson Quiz 1

Lesson 2 – Organisms Within Ecosystems

PE: 5-LS2-1

SEP: Developing and Using Models; Analyzing and Interpreting Data; Systems and System Models

DCI:

LS2.A - Interdependent Relationships in Ecosystems

- The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants' parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

LS2.B - Cycles of Matter and Energy Transfer in Ecosystems

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CCC: Systems and System Models

Savvas

Guiding Objective:

- Students will describe how organisms use matter.
- Students will describe the relationships between organisms in an ecosystem.

Literacy Skill

- Compare and Contrast

Vocabulary

- producer
- decomposer
- microbe
- consumer
- food chain
- food web

Academic Vocabulary

- transfer

Connect - TE/SB p. 368

- STEM Connection

Investigate - TE/SB pp.369-373

- Video – Organisms Within Ecosystems
- ***u/n*vestigate Lab – How can matter change in an ecosystem?**

- Crosscutting Concepts Toolbox – Systems

- Question It!

- Reading Check – Use Evidence

- Visual Literacy Connection – Who eats whom?

- Interactivity – Explore Organism Interactions

Synthesize - TE/SB pp. 374; 376

- Interactivity – Producers, Consumers, and Decomposers

- Reading Check – Contrast

- Quest Connection

- Quest Check-In – Connections to Others

Demonstrate – TE/SB p. 375

- Lesson 2 Check

- Lesson 2 Quiz

<p><u>Lesson 3 – Change Within Ecosystems</u> PE: 5-PS2-1 SEP: Developing and Using Models DCI: LS2.A - Interdependent Relationships in Ecosystems</p> <ul style="list-style-type: none"> The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants’ parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1) <p>LS2.B - Cycles of Matter and Energy Transfer in Ecosystems</p> <ul style="list-style-type: none"> Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1) <p>CCC: Systems and System Models</p>	<p>Savvas Guiding Objective:</p> <ul style="list-style-type: none"> Students will identify the characteristics of a healthy ecosystem. Students will describe how change affects an ecosystem. <p>Literacy Skill</p> <ul style="list-style-type: none"> Compare and Contrast <p>Vocabulary</p> <ul style="list-style-type: none"> succession competition <p>Academic Vocabulary</p> <ul style="list-style-type: none"> stable <p>Connect - TE/SB p. 378</p> <ul style="list-style-type: none"> Local-to-Global Connection <p>Investigate - TE/SB pp. 379-281</p> <ul style="list-style-type: none"> Video – Change Within Ecosystems <i>Investigate – How does change affect organisms in an ecosystem?</i> Visual Literacy Connection – What happens to a forest ecosystem after a fire? The Forest of Change <p>Synthesize - TE/SB p. 382</p> <ul style="list-style-type: none"> Interactivity – Changes in Ecosystems <i>Be a Scientist</i> Quest Connection <p>Demonstrate – TE/SB pp.383-385</p> <ul style="list-style-type: none"> Lesson 3 Check Lesson 3 Quiz <i>Quest Check-In Lab – How does change affect organisms in an ecosystem?</i>
<p><u>Topic Close</u></p> <ul style="list-style-type: none"> Topic Assessment and Remediation TE/SB pp. 348-353 Quest Finding and Reflection TE/SB p. 346 	<p><u>Topic 8 Enrichment</u> Topic 8 - Lesson 1 Enrichment</p> <ul style="list-style-type: none"> Enrichment Activity TE p. 325 <p>Topic 8 - Lesson 2 Enrichment</p> <ul style="list-style-type: none"> Enrichment Activity TE p. 332 <p>Topic 8 - Lesson 3 Enrichment</p> <ul style="list-style-type: none"> Enrichment Activity TE p. 341

<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

<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