



**Grade 5 Science**  
**Unit # 3 – Life Science**  
**Topic 8 Energy and Food – 18 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:** Where does food's energy come from and how is food used?

**Lessons**

- Topic Launch/Quest Kickoff
- Lesson 1 Energy in Food
- Lesson 2 How Plants Make Food
- Lesson 3 How Animals Use Food
- Topic Close –Assessment, Quest Findings

**NYSSLS Performance Expectations**

**5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the Sun. [Clarification Statement: Emphasis should be on plants converting light energy by photosynthesis into usable energy. Examples of models could include diagrams and flow charts.]**

**5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]**

**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.]**

**3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**

**Topic Opener**

**PE:** 5-PS3-1

**SEP:** Developing and Using Models; Engaging in Argument from Evidence

**DCI:**

**PS3.D - Energy in Chemical Processes and Everyday Life**

- The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)

**LS1.C - Organization for Matter and Energy Flow in Organisms**

- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

**CCC:** 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.**

- **uConnect Lab – How much food do you need?**
- Quest Kickoff – Plan Your Plate!
- Leveled Readers
- STEM Engineering Reader
- Reading Check – Use Evidence from Text

**Lesson 1 – Energy in Food**

**PE:** 5-PS3-1

**SEP:** Developing and Using Models

**DCI:**

**PS3.D** - Energy in Chemical Processes and Everyday Life

- The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)

**LS1.C** - Organization for Matter and Energy Flow in Organisms

- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

**CCC:** Patterns

**Savvas**

**Guiding Objectives**

- Students will use models to describe how energy in an animal’s food was once energy from the Sun.

**Literacy Skill**

- Use Evidence from Text

**Vocabulary**

- herbivore
- carnivore
- omnivore

**Connect** - TE/SB p. 320

- Curriculum Connection

**Investigate** - TE/SB pp. 321-325

- **Investigate Lab – How is the Sun involved in your meals?**

- Video – Energy in Food
- Literacy Toolbox – Use Evidence from Text
- Reading Check – Use Evidence from Text
- Quest Connection
- Visual Literacy Connection – What is a trophic level?

**Synthesize** - TE/SB pp. 325-326; 327

- Interactivity – Energy in Food Chains
- Be a Scientist
- Science Practice Toolbox – Engage in Argument from Evidence
- Quest Connection
- Quest Check-In – Sorting Foods

**Demonstrate** – TE/SB p. 326

- Lesson 1 Check
- Lesson Quiz 1

**Lesson 2 – How Plants Make Food**

**PE:** 5-LS1-1; 5-LS2-1; 3-5 ETS1-3

**SEP:** Developing and Using Models; Engaging in Argument from Evidence

**DCI:**

**LS1.C -** Organization for Matter and Energy Flow in Organisms

- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

**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)

**ETS1.B -** Developing Possible Solutions

- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5-ETS1-3)

**CCC:** Patterns; Systems and System Models

**Savvas**

**Guiding Objective:**

- Students will describe how plants make food using sunlight, air, water, and materials in soil.

**Literacy Skill**

- Use Evidence from Text

**Vocabulary**

- photosynthesis
- chlorophyll

**Academic Vocabulary**

- obtain

**Connect -** TE/SB p. 328

- STEM Connection

**Investigate -** TE/SB pp.329-331

- Video – How Plants Make Food
- *u*Investigate Lab – What matter do plants need to make food?
- Crosscutting Concepts Toolbox – Energy and Matter
- Model It!
- Virtual Lab – Solving Crop Problems

**Synthesize -** TE/SB pp. 332-333

- Interactivity – Photosynthesis
- *u*Be a Scientist
- Reading Check – Use Evidence from Text
- Quest Connection
- Engineering Toolbox – Growing Plants in Space

**Demonstrate –** TE/SB p. 333-335

- Lesson 2 Check
- Lesson 2 Quiz
- Quest Check-In Lab – What plant foods provide the most energy and nutrients?

<p><b><u>Lesson 3 – How Animals Use Food</u></b>  <b>PE:</b> 5-PS3-1  <b>SEP:</b> Developing and Using Models  <b>DCI:</b>  <b>PS3.D</b> - Energy in Chemical Processes and Everyday Life</p> <ul style="list-style-type: none"> <li>● The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)</li> </ul> <p><b>LS1.C</b> - Organization for Matter and Energy Flow in Organisms</p> <ul style="list-style-type: none"> <li>● Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)</li> </ul> <p>CCC: Energy and Matter</p>	<p><b>Savvas</b>  <b>Guiding Objective:</b></p> <ul style="list-style-type: none"> <li>● Students will explain how animals use the energy they get from food.</li> </ul> <p><b>Literacy Skill</b></p> <ul style="list-style-type: none"> <li>● Use Evidence from Text</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>● endotherm</li> <li>● ectotherm</li> <li>● metabolism</li> </ul> <p><b>Academic Vocabulary</b></p> <ul style="list-style-type: none"> <li>● maintain</li> </ul> <p><b>Connect</b> - TE/SB p. 338</p> <ul style="list-style-type: none"> <li>● Sports Connection</li> </ul> <p><b>Investigate</b> - TE/SB pp. 339-340; 342</p> <ul style="list-style-type: none"> <li>● Video – How Animals Use Food</li> <li>● <b>Investigate – How do animals get energy from the sun?</b></li> <li>● Crosscutting Concepts Toolbox – Energy and Matter</li> <li>● Reading Check – Use Evidence from Text</li> <li>● Quest Connection</li> <li>● Be a Scientist</li> <li>● Quest Connection</li> </ul> <p><b>Synthesize</b> - TE/SB pp. 341; 344</p> <ul style="list-style-type: none"> <li>● Interactivity – Ectotherms and Endotherms</li> <li>● Quest Check-In – Animals Using Energy</li> </ul> <p><b>Demonstrate</b> – TE/SB p.343</p> <ul style="list-style-type: none"> <li>● Lesson 3 Check</li> <li>● Lesson 3 Quiz</li> </ul>
<p><b><u>Topic Close</u></b></p> <ul style="list-style-type: none"> <li>● Topic Assessment and Remediation TE/SB pp. 348-353</li> <li>● Quest Finding and Reflection TE/SB p. 346</li> </ul>	<p><b><u>Topic 8 Enrichment</u></b>  <b>Topic 8 - Lesson 1 Enrichment</b></p> <ul style="list-style-type: none"> <li>● Enrichment Activity TE p. 325</li> </ul> <p><b>Topic 8 - Lesson 2 Enrichment</b></p> <ul style="list-style-type: none"> <li>● Enrichment Activity TE p. 332</li> </ul> <p><b>Topic 8 - Lesson 3 Enrichment</b></p> <ul style="list-style-type: none"> <li>● Enrichment Activity TE p. 341</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 5.</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 <b><u>reading/speaking</u></b>.</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 5.</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 5.</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>

<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 5 Resources Grade 5 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><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 writing.</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>