Sept. Grade 5 Unit 1: Living Things and Ecosystems

Content Area: **Science**
Course(s):
Time Period: **September**
Length: **10-12 Weeks**
Status: **Published**

Unit Overview

In this unit, students learn about living things and ecosystems, the roles of producer, consumer and decomposers in ecosystems, how matter and energy moves through ecosystems, what makes an ecosystem healthy or unhealthy, how ecosystems change and how humans change ecosystems.

Enduring Understandings

Ecosystems and living things are interactive.

Producers, consumers and decomposers play important roles in ecosystems.

Matter and energy move through ecosystems.

Ecosystems can be healthy or unhealthy.

Ecosystems change, and humans are also responsible for some of the changes.

Essential Questions

How do ecosystems and living things interact?

What are producers, consumers and decomposers in an ecosystem and what role do they play?

How does matter and energy move through an ecosystem?

How do we measure the health of an ecosystem?

How do ecosystems change, and what part does humans play in those changes?

Instructional Strategies & Learning Activities

TEACHERS: THIS UNIT IS HOT LINKED BY CHAPTERS/QUESTIONS BELOW TO THE TCI SCIENCE ALIVE PROGRAM

What Is an Ecosystem?

Students take on the role of ecologists. They visit many different types of ecosystems and record careful observations in their journals.

Reading Further: Cave Creatures

- 2

What Is the Role of Producers in an Ecosystem?

Students analyze data from a hypothetical plant experiment. They draw conclusions from the data in order to make an argument about what plants need for growth.

Reading Further: Animal Producers

- 3

What Is the Role of Consumers in an Ecosystem?

Students dissect an owl pellet to identify what owls eat. They create a diagram that models how the energy in owls' food was once energy from the sun.

Reading Further: Dropping Clues

- 4

What Is the Role of Decomposers in an Ecosystem?

Students explore what happens when sugar and yeast (a decomposer) are mixed together in water. They carry out an investigation and make observations to produce evidence for their answer.

Reading Further: Decomposers to the Rescue

- 5

How Do Matter and Energy Move in an Ecosystem?

Students develop a model of a food chain and a food web using pictures of plants and animals. They describe how matter and energy move through these models.

Reading Further: The Little Sub That Could

- 6

What Makes an Ecosystem Healthy or Unhealthy?

Students engage in a debate about what actions should have been taken with the Yellowstone ecosystem at various points in its history.

Reading Further: The Ecosystem Inside You

- 7

How Do Ecosystems Change?

Students watch several silent videos depicting how ecosystems respond to change. They read additional text to learn more about each video. Then they research one example in more depth and create a multimedia presentation.

Reading Further: What a Dinosaur Needs

- 8

How Do Humans Change Ecosystems?

Students act as engineers to design a soilless farming system. They work in groups to build the system, observe the results, and think of ways to improve the design.

Reading Further: Unwanted Snakes

Integration of Career Exploration, Life Literacies and Key Skills

working in cooperative groups

Students will discuss and debate actions taken at Yellowstone National Park that affected the ecosystem

Students will learn about Engineering.

WRK.9.2.5.CAP	Career Awareness and Planning
WRK.9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
WRK.9.2.5.CAP.2	Identify how you might like to earn an income.
WRK.9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
WRK.9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
TECH.9.4.5.CI.3	Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).
TECH.9.4.5.IML.1	Evaluate digital sources for accuracy, perspective, credibility and relevance (e.g., Social Studies Practice - Gathering and Evaluating Sources).
TECH.9.4.5.IML.2	Create a visual representation to organize information about a problem or issue (e.g., 4.MD.B.4, 8.1.5.DA.3).
TECH.9.4.5.IML.6	Use appropriate sources of information from diverse sources, contexts, disciplines, and

	cultures to answer questions (e.g., RI.5.7, 6.1.5.HistoryCC.7, 7.1.NM. IPRET.5).
	An individual's passions, aptitude and skills can affect his/her employment and earning potential.
	Digital tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate.

Technology and Design Integration

Online text and applications

Kahoot

Generation Genius

Bill Nye videos

CS.K-2.8.2.2.ED.1	Communicate the function of a product or device.
CS.K-2.8.2.2.ED.2	Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.
CS.K-2.8.2.2.ED.3	Select and use appropriate tools and materials to build a product using the design process.
CS.K-2.8.2.2.ED.4	Identify constraints and their role in the engineering design process.
TECH.8.1.5.A.CS1	Understand and use technology systems
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.
	The use of technology developed for the human designed world can affect the environment, including land, water, air, plants, and animals. Technologies that use natural sources can have negative effects on the environment, its quality, and inhabitants. Reusing and recycling materials can save money while preserving natural resources and avoiding damage to the environment.
	Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.

Interdisciplinary Connections

LA.L.5.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.5.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
LA.L.5.3	Use knowledge of language and its conventions when writing, speaking, reading, or listening.
LA.L.5.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies.
LA.L.5.6	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases, including those that signal contrast, addition, and other logical relationships (e.g., however, although, nevertheless, similarly, moreover, in addition).
LA.W.5.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

LA.W.5.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.W.5.5	With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
LA.W.5.6	With some guidance and support from adults and peers, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.
LA.W.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different perspectives of a topic.
LA.W.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
LA.W.5.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.
LA.RF.5.3	Know and apply grade-level phonics and word analysis skills in decoding and encoding words.
LA.RF.5.4	Read with sufficient accuracy and fluency to support comprehension.
LA.RI.5.1	Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
LA.RI.5.2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
LA.RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
LA.RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
LA.RI.5.5	Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
LA.RI.5.6	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
LA.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
LA.RI.5.8	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
LA.RI.5.9	Integrate and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.
LA.RI.5.10	By the end of year, read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.SL.5.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
LA.SL.5.2	Summarize a written text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).
LA.SL.5.3	Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.

LA.SL.5.4	Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
LA.SL.5.5	Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
LA.SL.5.6	Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.

Differentiation

Understand that gifted students, just like all students, come to school to learn and be challenged.
Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
Consider grouping gifted students together for at least part of the school day.
Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.
Definitions of Differentiation Components:

Content – the specific information that is to be taught in the lesson/unit/course of instruction.
Process – how the student will acquire the content information.
Product – how the student will demonstrate understanding of the content.
Learning Environment – the environment where learning is taking place including physical location and/or student grouping
Differentiation occurring in this unit:

Utilize differentiation suggestions in the TCI Science Alive! program for enrichment and support.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

utilize 504 and IEP accommodations where required

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

End of each section online game as quiz

lab reports

unit tests

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

TCI worksheets, quizzes

Discussion

Teacher observation

Labs and Hands on activities

Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

Unit assessments in the TCI program

standardized state test

Instructional Materials

Materials for labs indicated in TCI program

Standards

SCI.5.LS2.A	Interdependent Relationships in Ecosystems
SCI.5.LS2.B	Cycles of Matter and Energy Transfer in Ecosystems
SCI.5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
SCI.5-LS2	Ecosystems: Interactions, Energy, and Dynamics
	When two or more different substances are mixed, a new substance with different properties may be formed.
	Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.
	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.
	Developing and Using Models
	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.

Assessment does not include molecular explanations.

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

Develop a model to describe phenomena.

A system can be described in terms of its components and their interactions.