Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

Essential Questions

- How are living and non-living parts of an ecosystem connected?
- How does matter move through a food web that includes plants, animals, decomposers, and the environment?
- How do our everyday choices affect the flow of energy and matter in the environment?

Enduring Understandings with Unit Goals

EU 1: Matter Moves with Ecosystems
- All organisms, including humans, depend on the transfer of matter and energy through food webs in ecosystems.
- Decomposers break down dead organisms and return nutrients to the environment.

EU 2: Plants Grow from Air, Water, and Sun
- Plants use air (carbon dioxide) and water to grow, not soil.
- Energy in food originally comes from the sun and moves through ecosystems.

EU 3: Communities Must Protect Earth's Resources and Environment
- Communities can use science to develop solutions that protect natural resources and reduce human impact on the environment.

Standards

Common Core State and NGSS Standards:
- **5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- **5-LS1-1.** Support an argument that plants get the materials they need for growth chiefly from air and water.
- **5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- **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.
- **CCSS.ELA-Literacy.RI.4.1**:Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- **CCSS.ELA-Literacy.RI.4.2:** Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- **CCSS.ELA-Literacy.RI.4.4:** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.
- **CCSS.ELA-Literacy.RI.4.9**: Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- **CCSS.ELA-Literacy.W.4.2:** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

- **CCSS.ELA-Literacy.W.4.2.a:** Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- **CCSS.ELA-Literacy.W.4.2.b**: Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- **CCSS.ELA-Literacy.W.4.2.c**: Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*).
- **CCSS.ELA-Literacy.W.4.2.d:** Use precise language and domain-specific vocabulary to inform about or explain the topic.
- **CCSS.ELA-Literacy.W.4.2.e:** Provide a concluding statement or section related to the information or explanation presented.
- **CCSS.ELA-Literacy.W.4.4:** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience
- **CCSS.ELA-Literacy.W.4.5:** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.
- **CCSS.ELA-Literacy.W.4.6:** With some guidance and support from adults, 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 one page in a single sitting.
- **CCSS.ELA-Literacy.W.4.7:** Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- **CCSS.ELA-Literacy.W.4.8:** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources.
- **CCSS.ELA-Literacy.W.4.9:** Draw evidence from literary or informational texts to support analysis, reflection, and research.
- **CCSS.ELA-Literacy.SL.4.1**: Engage effectively in a range of collaborative discussions (one-on one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.
- **CCSS.ELA-Literacy.SL.4.1.a:** Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- **CCSS.ELA-Literacy.SL.4.1.b**: Follow agreed-upon rules for discussions and carry out assigned roles.
- **CCSS.ELA-Literacy.SL.4.1.c**: Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
- **CCSS.ELA-Literacy.SL.4.1.d:** Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.
- **CCSS.ELA-Literacy.SL.4.2:** Paraphrase portions of a text read aloud, or information presented in diverse media and formats, including visually, quantitatively, and orally.
- **CCSS.ELA-Literacy.SL.4.3:** Identify the reasons and evidence a speaker provides to support particular points.

Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

- **CCSS.ELA-Literacy.SL.4.4:** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.
Competency 2: Speak to diverse audiences in an accountable manner.
Competency 3: Develop the behaviors needed to interact and contribute with others on a team.
Competency 4: Analyze and solve problems independently and collaboratively.
Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. **Matter Moves with Ecosystems**
    - Explore how matter and energy move through ecosystems.
    - Understand that plants, animals, decomposers, and the environment are all connected through the cycling of matter and flow of energy.
    - Examine how plants use air and water to grow.
    - Determine how animals depend on plants and other animals for food.
    - Explore how decomposers help break down dead material, returning nutrients to the environment.

2. **What Causes Plants to Grow**
    - Discover that plants do not get their mass from soil, but mainly from air (carbon dioxide) and water.
    - Explore how sunlight provides energy for the process of photosynthesis.
    - Understanding of the role of plants as producers in ecosystems.
    - Connect plant growth to broader cycles of matter and energy in nature.

3. **Communities Must Protect Earth's Resources and Environment**
    - Explore how people use natural resources.
    - Discover the importance of preserving natural resources.
    - Examine how human activities can impact the environment both positively and negatively.
    - Research real-world problems and community solutions
    - Gather and synthesize information to propose ideas and actions that communities can take to care for Earth's resources

Vocabulary and Key Terms: ecosystem, producer, consumer, decomposer, herbivore, carnivore, omnivore, scavenger, nutrients, matter, food chain, food web, energy flow, environment, organism, population, community, habitat, biosphere, cycle, sunlight, solar energy, photosynthesis, chlorophyll, glucose, energy transfer, body warmth, growth, motion, energy source, carbon dioxide, water, air, roots, leaves, soil, nutrients, oxygen, stomata, transpiration, natural resources, renewable resource, nonrenewable resource, conservation, pollution, recycling, composting, sustainability, environment, human impact

Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

Interdisciplinary Connection:

• ELA

Daily Learning Objectives with *TWPS*

Students will be able to…

- Explain what plants, animals, and decomposers need to live and grow.
  - *Explain to someone new to science one of the following vocabulary words: plants, animals, or decomposer.*
- Determine what matter and energy are, and how do they move in ecosystems.
  - *How do energy and matter interact in a natural system like a forest or pond?*
- Investigate what an ecosystem is and what are its parts.
  - *What do you know about the word ecosystem?*
- Determine how living and non-living things interact in an ecosystem.
  - *What would happen to an ecosystem if one part of the system was removed? Explain your answer.*
- Investigate what producers, consumers, and decomposers are.
  - *How do decomposers, producers, and consumers work together to keep an ecosystem balanced?*
- Determine how matter cycles between plants, animals, and the environment.
  - *Can you think of examples where matter moves in a circle rather than a line in nature? Explain.*
- Model the movement of matter in a forest ecosystem.
  - *Why is it important for energy and matter to move between organisms and the environment?*
- Explain what plants need to grow.
  - *If plants don't eat, where do they get the materials they need to grow? Provide evidence to support your answer.*
- Determine where plants get their food from.
  - *Why do people often think that soil is the main source of plant growth? How could you test this idea?*
- Conduct an experiment: Where do plants get their mass?
  - *Using the materials we have, how could we test where plants get their mass from?*
- Investigate how plants use air (carbon dioxide) and water for growth.
  - *How do air and water combine in a plant to create new mass?*
- Determine what photosynthesis is.
  - *How would you explain photosynthesis to someone who has never heard of it before?*
- Build a model to show how plants make their own food.
  - *Why is photosynthesis important not just for plants, but for all living things?*
- Use evidence to support an argument that plants grow from air and water.
  - *What is an experiment you could set up to prove that plants grow from air and water?*
- Investigate where does energy in food comes from.
  - *Do you believe that animals, like a fox or a bear, need the sun to survive? Explain your reasoning.*
- Trace energy back to the sun.
  - *Explain how energy from the sun ends up in an animal.*

Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

- Explain what food chains are.
    - *Why does energy flow in one direction while matter cycles? Can a food web or chain help explain this?*
- Build and label a food chain.
    - *What happens when there is a change in a food chain-like a predator going extinct?*
- Determine what food webs are and how they are different from food chains.
    - *Why is it necessary for scientist to have both a food web and a food chain to explain the flow in energy?*
- Investigate how energy moves through a food web.
    - *What would happen to a food web if the sun's energy stopped reaching Earth?*
- Use a model to show energy transfer in an ecosystem.
    - *How can one small organism, like a plant, impact an entire food web?*
- Determine what happens when plants and animals die.
    - *Why are decomposers just as important as producers in an ecosystem?*
- What role do decomposers play in the environment?
    - *What kinds of real-world problems could happen if nutrient cycling was disrupted?*
- Investigate real decomposers (worms, fungi, bacteria).
    - *How would matter build up in the environment if decomposers didn't exist?*
- Model how decomposers recycle matter into the ecosystem.
    - *Why do you think decomposers are often overlooked in food chains and food webs?*
- Investigate what Earth's natural resources are.
    - *Explain what a natural resource is to someone who does not know. Compare it to a man-made resource.*
- Explain how people use Earth's resources in everyday life.
    - *What resources do humans use that take the longest to replace? Why?*
- Determine what problems can cause overuse of resources.
    - *What examples of overuse can you identify in your own life? How could you reduce that?*
- Explain how communities can reduce, reuse, recycle, and conserve.
    - *How can a small community decision, like reducing plastic, affect a larger ecosystem?*
- Investigate how science can help communities protect Earth's resources.
    - *What scientific ideas have helped reduce human impact on the environment?*
- Choose a local environmental issue and research how communities respond.
    - *Why would some people and communities choose not to protect a natural resource?*
- Plan a way to reduce human impact on a natural resource.
    - *How can you convince others that protecting the environment is necessary using scientific ideas?*
- Create a presentation, poster, or model of solution.
    - *How does your project model the transfer of matter or energy in a real-world context?*
- Present project to the class and explain scientific thinking.
    - *What was the biggest challenge in designing your solution to protect a natural resource?*
- Reflect on what we've learned about ecosystems, energy, and human responsibility.
    - *How do the concepts we learned connect to decisions people make every day?*

Unit 1: Web of Life
5th Grade Science
35 Class Meetings

Written July 2025

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Paragraph frames and sentence starters
- Teacher modeling
- Think-write-pair-share and small-group discussions
- Graphic organizers
- Accountable talk
- Homework
- Word walls with visuals (Venn Diagrams)
- Small group instruction
- Visual exemplars with teacher and student critiques
- Text and video chunking
- Spiraling back to guiding questions
- Close reading with text-dependent questions

EL Differentiation Strategies

- Key vocabulary, Word Banks and Word Walls with visuals
- TWPS (Think, write, pair, share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit teacher modeling
- Graphic organizers
- Strategic Grouping
- Non-verbal assessments

Assessments

FORMATIVE ASSESSMENTS:

- Do Now
- Academic Discourse
- Exit Slips
- Accountable Talk Discussions
- Completed notes
- Completed graphic organizers
- Homework
- Performance Task – "Be the Solution"
    - Teacher's rubric/scoring guide

SUMMATIVE ASSESSMENTS:

- Quiz: Matter, Plants, Resources (EU1, EU2, EU3, and EU4)
- Unit Task: "Be the Solution" (EU1, EU2 and EU3)

Unit 1: Web of Life
5th Grade Science

35 Class Meetings

Written July 2025

Unit Task

Unit Task Name: Be the Solution
Description: Upon completing the unit, students will work individually to identify local environmental issues, research how communities have responded, and create a solution-based project that shows how science can help protect Earth's natural resources. Students will brainstorm ways to reduce the human impact on this resource and use what you've learned about energy, matter, and ecosystems to support their solution. Students should include at least one scientific principle from the unit in their plan (e.g., conservation of matter, energy from the sun, cycling of materials). Students will communicate their ideas through a presentation, poster, or model and reflect on how ecosystems, energy, and human choices are connected.
Evaluation: Teacher's Scoring Guide

Unit Resources

- NewsEla
- Google Slides (Teacher's)
- Student Journals
- Chromebooks
- ReadWorks
- Virtual Fieldtrips
- Google Classroom
- Mystery Science