

Stackable Instructionally- embedded Portable Science (SIPS) Assessments

**Grade 5 Unit 2
Matter and Energy in Organisms and Ecosystems**

Storyline Overview

February 2023



Grade 5 Unit 2: Storyline, Phenomena, and Segments

Storyline Overview

Students make sense of the key disciplinary ideas of how matter and energy move between organisms and within food webs and ecosystems. This includes the role of photosynthesis in providing energy to plants as part of ecosystems.

Anchor Phenomenon

The anchor phenomenon is the basis of driving questions that are visited throughout the unit. In this case, it is about the role of food providing matter and energy for an organism to grow, repair, and survive.



Image in the Public Domain. Source: National Parks Gallery

This image of an owl pellet can be a starting point for discussions about the way evidence can be used to understand the flow of energy and matter within a food chain, a food web, and an ecosystem.

Measurement Target

Students can apply Science and Engineering Practices with emphasis on developing and using models and engaging in evidenced-based argument related to transfer of matter in ecosystems, and the transfer of energy that is required by living things for growth and survival.

Relationship to Prior and Subsequent Learning

Unit 2 focuses on ecosystems, building across food chains for predators and prey to incorporate the role of plants into food webs where matter cycles among biotic and abiotic components while energy flows begin with the light energy from the sun. This builds on ideas related to the transformation and movement of matter in Unit 1. Unit 3 focuses on the water within Earth's systems, including its role in ecosystems and the need to consider how water is important in ecosystems and Earth's systems more generally.

Segment 1: Students use investigations, models, and data to identify and explain what animals eat, how they use this food in growth, repair, and for energy, and that the foundation of food webs are plants.

Investigate the evidence for food use in an organism.

Use information on food use to develop relationships of food between organisms.

Develop models for the way food provides the energy and matter needed for growth and repair.

Create a food chain that documents how matter flows within a food web.

Revise the food chain to document how energy flows amongst the organisms and the environment.

Revise the model to connect food chains into a food web with plants, herbivores, carnivores, and omnivores.

Segment 2: Students obtain and evaluate information and use investigations and data to engage in argumentation about the role of air, water, and sunlight in plant growth. The importance of the sun in providing energy to plants that form the foundation of the food web is emphasized and modeled.

Investigate the ways gardens produce food for consumers.

Obtain information on the things that plants need to survive and to grow.

Carry out investigations on how different factors, including light and soil, are necessary for plant growth.

Analyze data on how different factors impact plant growth.

Explain how different factors provide and include matter and energy.

Revise a food web model for how plants use light, air, and water.

Segment 3: Students develop and use models, carry out investigations, and support arguments about how matter cycles through an ecosystem of producers, consumers, and decomposers.

Model how matter cycles among biotic and abiotic components of an ecosystem.

Evaluate evidence for the role of producers, consumers, and decomposers in an ecosystem.

Collect evidence on the way that decomposition occurs within an ecosystem.

Revise a model to include decomposers in an ecosystem.

Construct an ecosystem to document understanding of the role of biotic and abiotic factors.

Revise a model to describe the impact of invasive species in an ecosystem.