

# Unit 2: Matter and Energy in Organisms and Ecosystems

Content Area: **Science**  
Course(s): **Science 6**  
Time Period: **October**  
Length: **25 Days**  
Status: **Published**

## Unit Summary

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How and why do organisms interact with their environment and what are the effects of these interactions?

Students analyze and interpret data, develop models, construct arguments, and demonstrate a deeper understanding of the cycling of matter, the flow of energy, and resources in ecosystems. They are able to study patterns of interactions among organisms within an ecosystem. They consider biotic and abiotic factors in an ecosystem and the effects these factors have on populations. They also understand that the limits of resources influence the growth of organisms and populations, which may result in competition for those limited resources. The crosscutting concepts of matter and energy, systems and system models, patterns, and cause and effect provide a framework for understanding the disciplinary core ideas. Students demonstrate grade-appropriate proficiency in analyzing and interpret data, developing models, and constructing arguments. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on MS-LS2-1, MS-LS2-2, and MS-LS2-3.

## Standards

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SCI.6-8.MS-LS2-1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
SCI.6-8.MS-LS2-3	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
SCI.6-8.MS-LS2-2	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

## Student Learning Objectives

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**SLO 1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.** [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.](MS-LS2-1)

**SLO 2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.** [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.](MS-LS2-2)

**SLO 3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.** [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.] [Assessment Boundary: Assessment does not include the use of chemical reactions to describe the processes.] (MS-LS2-3)

## **Essential Questions/ Enduring Understandings**

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### **Essential Questions**

1. How and why do organisms interact with their environment and what are the effects of these interactions?
2. How do the biotic and abiotic factors in the garden impact what goes on there?
3. How can materials and energy be cycled through the garden to have it be more successful?

### **Enduring Understandings**

Students will understand the cause and effect relationship between amount of resources and the effects this has on organisms and populations.

Students will understand that organisms within an ecosystem have predictable patterns of interactions.

Students will understand how matter and energy cycles through ecosystem.