

From Sun to Food

Unit Overview



DRIVING QUESTIONS:

Why do people eat food? How do energy and matter get into our food? How do energy and matter move through a system?

ANCHORING PHENOMENON:

We eat pizza with many ingredients on it. People are building pizza farms where all the ingredients are grown in one place.

- *Students discuss their favorite pizza toppings and watch a video to start to consider why we eat food and ask questions about how a pizza farm works to grow the ingredients on pizza. Throughout the unit, students will conduct investigations and collect evidence about how energy and matter enter into food and how they cycle and move through the environment and living things. Students will develop a model of a pizza farm by adding the new layers of how energy and matter move through it along the way.*

STORYLINE

Section 1: Why do people eat food?

Students observe a yeast model demonstration and discuss how people use energy from food for various needs. They will discuss that food contains energy and matter. Students will connect their learning to the phenomenon as they begin to develop a pizza farm model they will be adding to throughout the unit that shows the movement of energy and matter.

- DCI: Organization in Matter and Energy Flow in Organisms, Structure and Function (MLS)
- SEP: Developing and Using Models, Engaging in Argument from Evidence (MLS)
- CCC: Energy and Matter

Section 2: How do energy and matter get into our food?

Students conduct investigations to figure out what plants need to grow, and use a model activity to learn how matter and energy flow into and out of plants as they grow. They begin investigating soil by observing components of soil. They set up an investigation to figure out what happens to plant matter when it decays. They continue to develop their pizza farm models by adding in the new concepts.

- DCI: Organization in Matter and Energy Flow in Organisms, Interdependent Relationships in Ecosystems, Cycles of Matter and Energy Transfer in Ecosystems, Energy in Chemical Processes and Everyday Life
- SEP: Developing and Using Models
- CCC: Energy and Matter, Systems and System Models

Section 3: How do energy and matter move through a system?

Students explore the flow of matter and energy by building food chains and food webs. Students discuss how matter and energy move from the environment into plants and animals and back into the ecosystem through decomposers. They apply these concepts to finalize their pizza farm models, showing all the pathways of movement of matter and energy in the system.

- DCI: Interdependent Relationships in Ecosystems, Cycles of Matter and Energy Transfer in Ecosystems
- SEP: Developing and Using Models, Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena
- CCC: Systems and System Models

OVERVIEW

Introducing the ANCHORING PROBLEM and DRIVING QUESTIONS

(1 day ≈45 instructional minutes)

ANCHORING PROBLEM

We eat pizza with many different ingredients on it. People are building pizza farms where all the ingredients are grown in one place.

(1 day)

Section 1 <i>Why do people eat food?</i>	Section 2 <i>How do energy and matter get into our food?</i>	Section 3 <i>How do energy and matter move through a system?</i>
<p><i>Total Time: ≈3-4 days</i></p> <p>LESSON 1** Why do we eat food? (≈3-4 days)</p>	<p><i>Total Time: ≈16-17 days</i></p> <p>LESSON 2 What do plants need to grow? (≈4 days)</p> <p>LESSON 3** What do plants need to grow? (≈4 days)</p> <p>LESSON 4 How do plants grow? (≈4 days)</p> <p>LESSON 5 Why do we plant seeds in soil? (≈4-5 days)</p>	<p><i>Total Time: ≈8-9 days</i></p> <p>LESSON 6 How are energy and matter passed between plants, animals, and the environment? (≈4 days)</p> <p>LESSON 7 How are energy and matter recycled in ecosystems? (≈4-5 days)</p>

****Note:** You will need to pre-soak seeds for an investigation starting on day 1 of Lesson 1. Use the Appendix C, Lesson 2: Sprouter Instructions and follow instructions for “A Day Before Starting the Investigation”.

****Note:** Lesson 3 is intentionally titled the same as Lesson 2.

Unit 21 Teacher Guide (version 7) *From Sun to Food*
 Washington University in St. Louis Institute for School Partnership