



Ecosystem Introduction

Connected Next Generation Science Standards

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some less well, and some cannot survive at all.

4-PS3-1 Make observations to provide evidence that energy can be transferred from place to place.

5-LS1-1 Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposer, and the 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.

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Overview

The garden is full of connection between plants, animals, people, and non-living things! Without connections, plants could not grow and people would not have enough to eat. Use these lessons to discover how the plants, animals, and nonliving support each other. This unit focuses on modeling ecosystem relationships and the movement of energy. Classroom concepts like competition, predation, and specific food chain roles could be added to scale up lessons.

Suggested Lesson Sequence

- Ecosystem ABCs
- Ecosystem Modeling
- Schoolyard Ecosystems
- Garden Energy
- Ecosystem Engineering

Connected Garden Tasks

- Garden maintenance - watering and pulling weeds
- Pest control - students can pick pests like aphids and harlequin bugs off of plants or create pest control solutions like fabric row covers.
- Design and plant a pollinator garden.
- Research and build an herb spiral for the garden. Herb spirals create microclimates with drier soil at top and wetter soil at the bottom of the spiral for different plant needs.



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MySci Connections

- Grade 3 - Unit 13, Lesson 1 & 2, Explore sections of the lessons
- Unit 13, Lesson 3, replace ecosystem posters with garden
- Grade 5 - Unit 21, Replace Pond Poster with Garden Exploration

Favorite Ecosystem Books

- *Seedfolks* by Paul Fleischman
- *Monarchs and Milkweed* by Helen Frost
- *Wangari's Trees of Peace* by Jeanette Winter
- *Up in the Garden and Down in the Dirt* by Kate Messner
- *Hey Diddle Diddle: A Food Chain Tale* by Pam Kapchinske

Garden Further Investigations

- Research or use field guides to determine the range and typical habitat of observed plants and animals in the Schoolyard Ecosystem Lesson. Did they observe any plants or animals outside their typical range? How could climate change affect the habitat of observed plants or animals?
- Research or visit another local ecosystem (a forest, pond, prairie, etc) and create an ecosystem model. How is that ecosystem model similar and different?

Indoor Further Investigations

- Create a 3D Biocube to connect your ecosystem observations with community scientists through the Biocube Project from the National Museum of Natural History. Search "Biocube" on www.inaturalist.org to learn more.
- Students create a planting plan for the next season based on what they learned about ecosystems. Diverse gardens and ecosystems are more successful. Introduce the ideas of crop rotation and companion planting to the plan.
- Create a mini ecosystem by making terrariums. How does energy move through the terrarium?



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Seed St. Louis Resources

Connect with us on Facebook or Eventbrite to discover upcoming Educator Workshops. Subscribe to us on YouTube to discover season-specific gardening how-to's.



Looking for Field Trip opportunities or need to ask a question about our educational services? Contact education@seedstl.org or 314.588.9600 ext 106.

Community & Cultural Connections

- Introduce ecosystems by comparing the garden to a school "ecosystem." Each person and part is essential for the school to function. What would happen to the school if certain parts of the school left, like the custodians or the walls? Students can write an essay about their school "ecosystem". Who and what are they most connected to? What is their role? Identify as a class an issue in the school or community that they could solve using their skills.
- Read the short novel *Seedfolks* by Paul Fleischman. It is the story of an urban garden told through different first-person narratives. How does each person contribute to the garden and community? Teacher guides available online.
- Wangari Maathai was a Kenyan environmentalist and activist. She founded Green Belt, a community-based tree planting organization. Investigate how planting trees changed Kenyan ecosystems.