



LESSON PLAN

FOOD WEBS GRADES 3-5

SUMMARY

In this lesson, students explore interactions between organisms and their environment. Specifically they study food chains and how those food chains connect to form webs. They explore the roles of different plants, animals, and other organisms in population control and recycling.



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.

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

Science & Engineering Practices

Developing and Using Models (5-PS3-1) (5-LS2-1)

**Connections to the Nature of Science
Science Models, Laws, Mechanisms, and Theories
Explain Natural Phenomena** (5-LS2-1)

Connections to Classroom Activity

- Students use models in the video to understand interactions within food chains and food webs.
- Students develop a model to identify food chains and interactions between them to form a personalized food web.
- Students think about underlying mechanisms relating to food webs as explanations for natural events such as shifts in populations.

Disciplinary Core Ideas

Connections to Classroom Activity

PS3.D: Energy in Chemical Processes and Everyday Life

The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)

LS1.C: Organization for Matter and Energy Flow in Organisms

Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary) (5-PS3-1)

LS2.A: Interdependent Relationships in Ecosystems

The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)

- Students recognize that the sun is the ultimate source of energy for life and is transferred to organisms through plants.
- Students recognize that energy is transferred between living organisms as food.
- Students recognize the role of plants as producers in an ecosystem.
- Students observe multiple examples of connections between plants and animals in food webs, such as predators and prey and producers and consumers.
- Students study decomposers and their role in the ecosystem.
- Students recognize that changes to an ecosystem might result in needs for certain organisms not being met, causing imbalance.
- Students recognize that multiple different types of organisms are necessary for a balanced ecosystem and that too many of one kind of organism could lead to imbalance.
- Students recognize the role and importance of decomposers as recyclers in an ecosystem and make compost to demonstrate this role.

Crosscutting Concepts

Connections to Classroom Activity

Energy and Matter (5-PS3-1)
Systems and System Models (5-LS2-1)

- Students recognize that energy is transferred through ecosystems and between plants and animals as food and through decomposition.
- Students observe the interactions between the components of an ecosystem.



DURATION

One to two 45-minute classroom periods

PRE-ASSESSMENT QUESTIONS

Please see Discussion Questions located under the video. These can be discussed as a group or answered individually in student science notebooks.

MATERIALS

- Large paper (yellow or orange if possible)
- Empty bulletin board or wall
- Long strips of colored construction paper (approximately 5 per student)
- Stapler or tape
- Yarn
- Scissors



ENGAGE

Prior to the start of the lesson create a large paper sun that will be posted on a wall. Ask students what they ate for breakfast. Make a list of their answers on the board. Ask students, did anyone eat sunlight for breakfast? State that the energy in everyone's food can be traced back to the sun and that in this lesson students will determine how that is true, and how humans and all living things are connected by a food web.



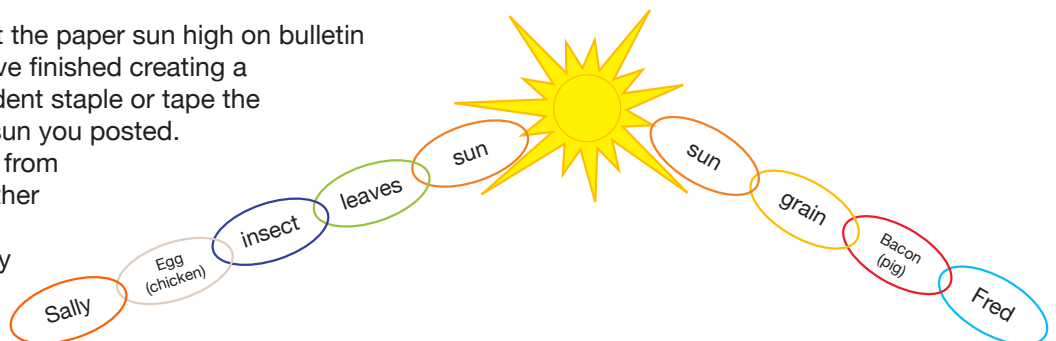
EXPLORE

Return to the list of foods that students ate for breakfast. This might include things like toast, peanut butter, cereal, milk, orange juice, eggs, etc. Hand out strips of construction paper. Instruct each student to write their name on that strip. Staple or tape the strip into a loop shape. Now ask each student to write down one thing they had for breakfast, for example, an egg. They should write this on another strip of paper and make a link that connects to the link with their name. Where did that food come from? An egg comes from a chicken, so make a link for chicken and attach to the egg link. What does a chicken eat? (insects, seeds, grain) Choose one of those items and make a link. Say you chose insects, what do they eat? (leaves) Make a link for leaves. What do leaves eat? Leaves produce their own food through photosynthesis using sunlight. Make a link for the sun. Each student should now have a multi-link food chain that connects them to the sun.



Have students repeat this process with another breakfast item, maybe bacon (bacon comes from pigs, which might eat grain, which is a plant which produces food through photosynthesis and connects to the sun).

While students are working, post the paper sun high on bulletin board or wall. Once students have finished creating a couple of chains, have each student staple or tape the link representing the sun to the sun you posted. Stretch the chain out lengthwise from the sun and staple or tape the other end to the bulletin board or wall. Students can now see the energy in the food they ate can be traced back to the sun.





EXPLAIN



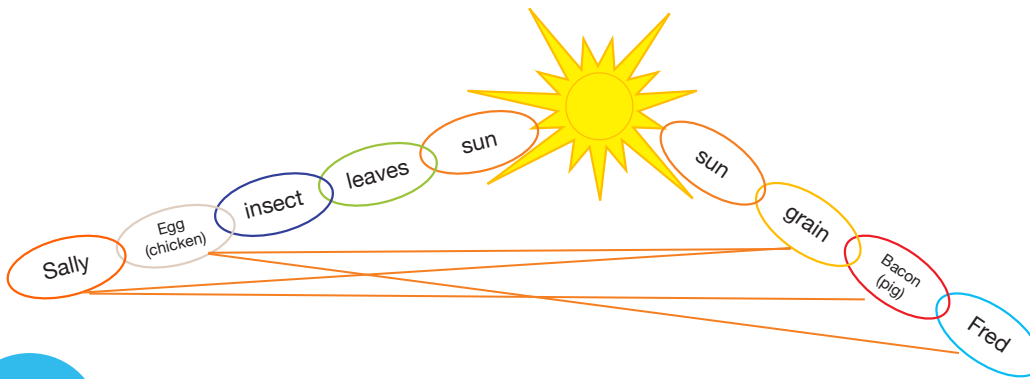
WATCH THE *GENERATION GENIUS FOOD WEBS* VIDEO AS A GROUP

Then facilitate a conversation using the Discussion Questions.



ELABORATE

After watching the video, the students should be able to find some connections between the food chains that they made. For example, a chicken might also eat grain. Sally might also eat bacon. She also eats grains. Fred also eats eggs. Using yarn, allow students to find and make these connections between the food chains posted earlier during the Explore portion of the activity. Together the class will create a food web.



EVALUATE

Using the food chain the class made, instruct students to answer a series of questions in their science notebooks:

- What is the apex predator in this food web? (humans)
- Give an example of a producer in our food web. (grain, leaves)
- Where does the energy in an egg come from? (The energy in an egg originally came from the sun. A plant used the sun's energy to produce leaves, an insect gained energy by eating those leaves, and a chicken that laid the egg gained energy by eating the insect.)



EXTENSIONS

- Research a problem related to human impacts on food webs and design possible solutions.
- Study other food web examples from your region.