

Web of Life

Student Objectives

The student:

- can name several relationships between living things in a food chain
- can explain what happens to the food chain when one link is eliminated or threatened
- will name things people can do to help keep our Earth ecosystem and creatures healthy.

Key Words:

eco-system
environment
food chain
food web

Time:

½ hour

Materials:

- ball of yarn
- Web of Life cards
- tape
- Web of Life story
- crayons or markers (optional)
- 3 x 5 cards (optional)

Background Information

A food chain can be described as a transfer of energy from one organism to another. The original source of energy for all of the Earth is the Sun. This means that all food chains must start with the Sun. Only plants can convert sunlight into food, and the herbivore that consumes the plants gets its energy from the Sun through the plant. The carnivore in turn receives the Sun's energy from eating the herbivore.

A food chain can be diagramed. For example:

Sun ----> grass seeds ----> mouse ----> owl

Each animal and plant can be thought of as a link in a chain. The Sun is not usually included in the food chain diagram because it is assumed that we know the Sun is in every food chain.

Food chains only show one possible source of food for the animal. A better way of seeing what an animal eats is to construct a food web. A food web describes all the relationships of one animal or plant to the other members of the community. Most plants and animals are members of many different food chains. The animal eats a variety of different foods, but it is being preyed on by a number of predators. The food web allows us to trace these different food chains and to see how each chain is related to all the other food chains.

Procedure (before class time)

1. Make enough copies of the pages of Web of Life cards so that each student can have one card (unless students are going to be drawing the images on their own cards). For a large class, these characters can have two cards:

trees	ant	rabbit
bird	bee	fox
worm	plant	people

2. Cut the cards apart.

Procedure (during class)

1. Students may color their character cards if you wish. Older students could be given their 'character' name and could draw their creature on a 3 x 5 card.
2. Each student assumes the role of one member of the forest community. Tape the Web of Life cards to their shirts to serve as their nametags.
3. Students sit in a circle with duplicates of any characters sitting together.
4. Read the story. When a character's name appears in the story in **bold** type, pass the ball of yarn to the student(s) that have that character. The yarn is only passed to the student the first time their name is mentioned.
5. The students grasp the yarn and hand the ball back to the instructor. As the yarn is passed around, a 'web' will appear. The students should hold the yarn close to the floor, so that the instructor is able to walk around inside the circle.
6. When the story is finished and the web is completed, the students stand up to see the web they have created.
7. Lead a discussion:
 - Have the students look how the web has grown and how the strings overlap and think about the importance of the relationships within the forest. Tell the students that this connection between animals and plants is called a 'food chain'.
 - What effect did the people walking through the woods have on the web? (*They picked flowers and plants.*)
 - If the plants are taken from the forest, which other creatures will be affected? Have the student who represents the plant give his/her string a gentle pull. Who feels this pull? (*The rabbit and bee*)
 - If plants become scarce, where will the rabbit get its food? (*It may have to leave the forest to find food.*) Emphasize the concept that everything is connected to and needs everything else. Instruct the student who is the rabbit to give the next pull. Who feels this pull? (*The fox*)
 - What happens if a tree falls or is cut down in the forest? Who will feel a pull? Is the tree anyone's home? (*The bird and the worm*) Why are these members of the forest important to the rest? (*The worm eats the leaves that fall from the tree and makes healthy soil.*)
 - Who needs healthy soil? (*Plants, flowers, trees, the rabbit and hence the fox*)
 - What would happen if it didn't rain in the forest for many weeks? What creatures would this affect? (*All of the animals, trees, and plants need water, just like we do.*)
 - What would happen if we drove cars or a school bus near to the woods to go on a

field trip? Would this be good or bad for the air that the entire forest breathes?
(*Bad air will affect all of the forest community and the people too.*)

8. The following discussion can be held after the students have returned to their seats:
 - What would happen if our entire classroom took a field trip to the forest and decided to have a picnic? If we left our garbage would this hurt the forest community? How?
 - What can we do to protect the forest and our environment?

Key Words & Definitions

- **eco-system** – a system made up of an ecological community and its environment
- **environment** – the whole complex of factors that influence the ability to survive for a plant or animal or ecological community
- **food chain** – a series of organisms in which each uses the next (usually lower) member of the series as a food source
- **food web** – explores how all life is interconnected. Food webs show how many animals are connected in many ways to find food.

Further Activities

1. Where does your food come from? Trace your lunch back to the origins of its component parts (and ultimately the Sun!)
2. What eats this plant? Pick one plant and list every animal that might use it for food.
3. Grow some vegetables. Radishes, leaf lettuce, and cherry tomatoes grow particularly well in container gardens in Florida. Plant them either in early fall or early spring.
4. Make a food chain mobile using the cards included in this lesson, straws and string. Start with the Sun at the top of the mobile, working down the energy chain to the carnivores at the bottom.

Related Reading

- ***The Magic School Bus Gets Eaten: A Book About Food Chains*** by Pat Relf, Carolyn Bracken (Scholastic Paperbacks, 1996)
The bright colorful illustrations catch the imaginations of younger readers and complex concepts are brought across simply but accurately. Readers identify with Arnold and the other children, and enthusiastically take part in the discussion as if they were right inside the covers of the book.
- ***Who Eats What? Food Chains and Food Webs*** by Patricia Lauber, Holly Keller (HarperTrophy, 1995)
An award-winning author and artist explains how every link in a food chain is important because each living thing depends on others for survival. This Let's-Read-and-Find-Out Science book presents food chains and food webs on land and under water. Besides showing who eats what in the wild, it brings the food chain idea closer to home with the suggestion that children draw pictures showing the chains for the things they ate for breakfast or have in their lunch.

Web of Life

Imagine that you are no longer in the classroom, but outside in the sunshine, surrounded by the smells and sounds of a forest. Imagine that you are becoming the part of the forest pictured on your nametag.

I'm going to read a story about this forest, which shows how important each member of the forest is to all the other members. As I tell about your part of the forest, I will pass a ball of yarn to you. Take hold of the yarn, then give the ball back to me so I can pass it to the next person.

Don't let go of your part of the yarn, but hold it down on the floor so I can walk around inside the circle and pass the yarn to the next person.

Don't read: Each time you come to a word in bold type in the story, pass the ball of yarn to the child who is that character.

Web of Life

Our forest community grows healthy and strong with the light of the **SUN**.

All of the creatures in the forest depend on this energy. It keeps them all warm, and helps the plants to grow. The tall, beautiful **TREES** that stretch from the ground to the sky look to the Sun to give them strength.

Don't read: With older students, explain the complementary nature of people inhaling oxygen and exhaling carbon dioxide, and plants taking in carbon dioxide and giving off oxygen.

Rain has just stopped falling in the forest and has given every thirsty thing a big drink of **WATER**. The air is cool from the afternoon rain. This **AIR** is what the forest breathes. Take a deep breath. We all need the Sun, water, and air.

The forest is full of life. A colorful **BIRD** sings from the branches of one of the trees and looks around on the ground below for food. It spots a **WORM** moving around on the forest floor that will make a perfect lunch.

The worm crawls down into the dirt and eats the leaves that have fallen from the trees. Thanks to this working worm, the **SOIL** of the forest is clean and good for plants to grow in. An **ANT** has made its home in the soil and also in the bark of the tree.

A **FLOWER** has sprouted from its seed in the ground and waves its petals in the wind. Its roots find food in the soil. This flower has been waiting for the busy **BEE** to buzz by and leave the pollen that helps it make the seeds for next year's flowers.

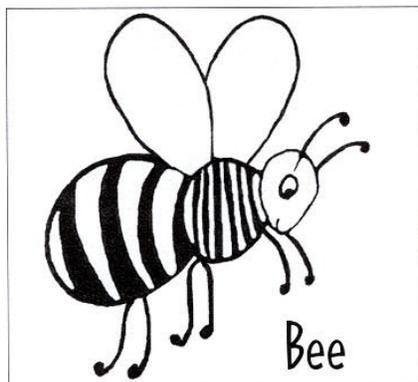
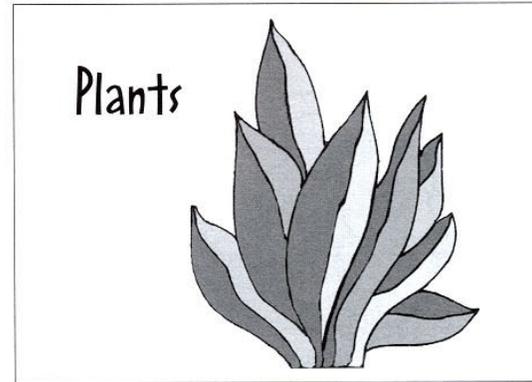
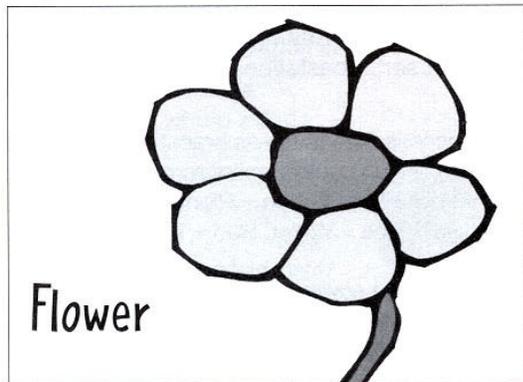
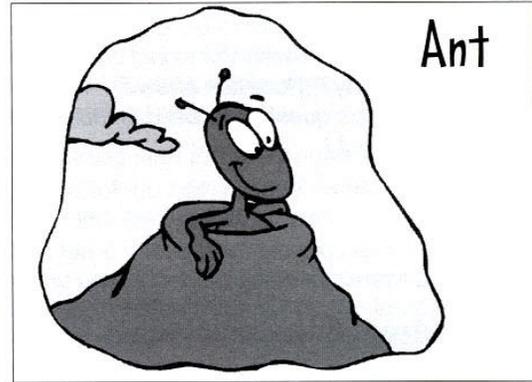
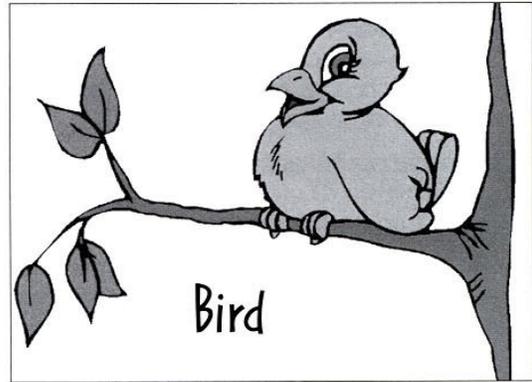
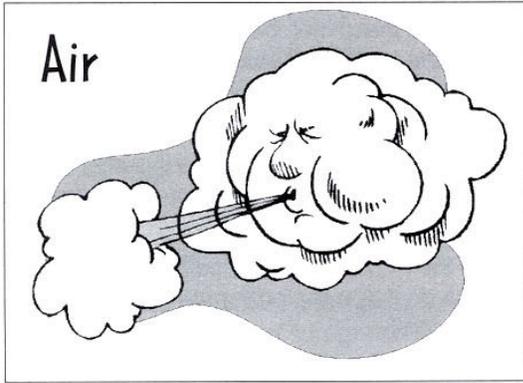
Don't read: With older students, elaborate on the concept of pollination and explain that the flowers depend on the bee for this process.

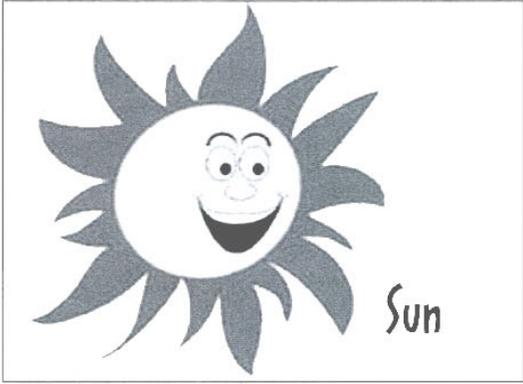
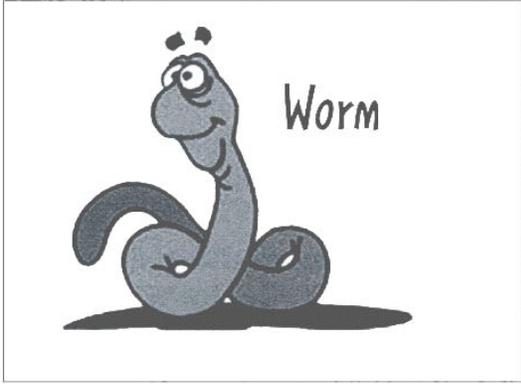
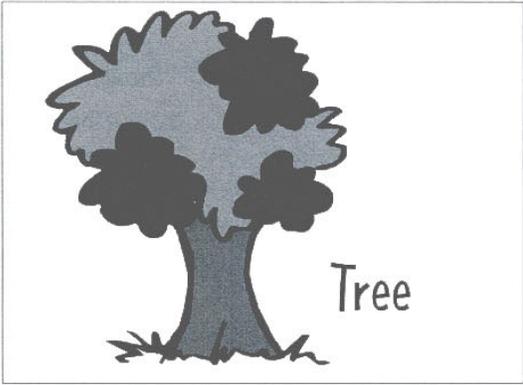
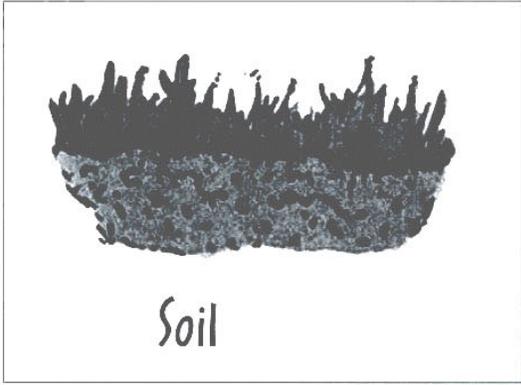
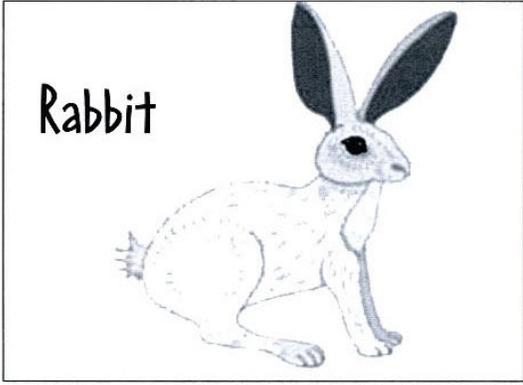
The roots of this flower and the plants on the forest floor dig deep into the soil of the Earth. One **PLANT** is getting warm from rays of sunlight coming through the trees. The raindrops have dried on its leaves. This healthy plant is food for the **RABBIT** who hops by, ready to take a bite of its green leaves. A **FOX** watches the fuzzy rabbit from behind a log, keeping an eye on its food for the day.

Suddenly, the fox hears a loud sound, and runs off to hide behind the trees. Two **PEOPLE** are walking through the forest. They are picking plants and flowers as they walk. They are happy to be in the woods where the air is cool and the animals play. From way up in the branches of the tree, the bluebird sings its welcome song. They stop for a moment to enjoy this special place, and then they walk on.

Don't read: Each child in the circle is now holding part of the yarn, ending with the two people who have entered into the forest community. Ask the class to stand up, being careful not to let go of their part of the yarn.

Used with permission from Population Connection: <http://www.populationconnection.org/>





Rain/Water

Web of Life

Florida NGSS Standards & Related Subject Common Core

			.1	.2	.3	.4	.5	.6
Grade K								
The Practice of Science	Big Idea 1	SC.K.N.1				X		
Grade 1								
The Practice of Science	Big Idea 1	SC.1.N.1	X					
Earth Structures	Big Idea 6	SC.1.E.6		X				
Interdependence	Big Idea 17	SC.1.L.17	X					
Grade 2								
Interdependence	Big Idea 17	SC.2.L.17	X					
Language Arts Standards	Kindergarten: LAFS.K.SL.1.1, LAFS.K.SL.1.3, LAFS.K.SL.2.6 First Grade: LAFS.1.SL.1.1 Second Grade: LAFS.2.SL.1.1							

Kindergarten Benchmarks

Science--Big Idea 1: The Practice of Science

- SC.K.N.1.4 - Observe and create a visual representation of an object which includes its major features.

Language Arts--Standards for Speaking and Listening

- LAFS.K.SL.1.1 - Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
- LAFS.K.SL.1.3 - Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- LAFS.K.SL.2.6 - Speak audibly and express thoughts, feelings and ideas clearly.

First Grade Benchmarks

Science--Big Idea 1: The Practice of Science

- SC.1.N.1.1 - Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.

Science--Big Idea 6: Earth Structures

- SC.1.E.6.2 - Describe the need for water.

Science--Big Idea 17: Interdependence

- SC.1.L.17.1 - Through observation, recognize that all plants and animals, including humans, need the basic necessities of air, water, food and space.

Language Arts–Standards for Speaking and Listening

- LAFS.1.SL.1.1 - Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and large groups.

Second Grade Benchmarks

Science–Big Idea 17: Interdependence

- SC.2.L.17.1 - Compare and contrast the basic needs that all living things, including humans, have for survival.

Language Arts–Standards for Speaking and Listening

- LAFS.2.SL.1.1 - Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

National Next Generation Science Standards

Kindergarten Standards

Earth and Human Activity

- K-ESS3-1 - Use a model to represent the relationship between the needs of different plants or animals (including humans).
- K-ESS3-3 - Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

From Molecules to Organisms: Structures and Processes

- K-LS1-1 - Use observations to describe patterns of what plants and animals (including humans need to survive.

Note: Related Common Core Language Arts Standards are listed in the Florida section above.

First Grade Standards

Note: Related Common Core Language Arts Standards are listed in the Florida section above.

Second Grade Standards

Note: Related Common Core Language Arts Standards are listed in the Florida section above.