

ELA: Grade 5, Lesson 3, Ecology

Lesson Objective: Students will create their own food webs

Practice Focus: Today we will be reading about food webs.

TN Standards: 5.RI.KID.2, 5.RI.KID.3, 5.FL.VA.VA.7a

Teacher Materials:

- ELA, Grade 5, Lesson 3 Teacher Packet
- Chart paper
- markers

Student Materials:

- Two pieces of paper
- Pen or pencil

Teacher Do	Student Do
<p><u>Opening</u> Hello! Welcome to Tennessee’s At Home Learning Series for literacy! Today’s lesson is for all our 5th graders out there, though all children are welcome to tune in. This lesson is the third in our series.</p> <p>My name is ____ and I’m a ____ grade teacher in Tennessee schools! I’m so excited to be your teacher for this lesson! Welcome to my virtual classroom!</p> <p>Today we will be learning about ecology! Before we get started, to participate fully in our lesson today, you will need:</p> <ul style="list-style-type: none"> • Pencil or pen • Two pieces of paper <p>Ok, let’s begin!</p>	<p>Collects materials needed to engage in the lesson.</p>
<p><u>Intro</u> Ask students the following:</p> <ul style="list-style-type: none"> • What do we call the field of science that studies the households of animals and plants? [Pause] Yes, it is called ecology! • What is an ecologist? [Pause] Nice job, a person who studies ecology. • What is a habitat? [Pause] Yes, it’s an animal’s home that provides food, water, shelter, and space. • What is an ecosystem? [Pause] <p>What Do We Know?</p>	<p>Student interacts with teacher’s questions as posed. Student prepares to listen and learn from the read aloud by accessing prior knowledge.</p> <p>Student draws 1 or 2 simple food chains.</p> <p>Student writes down how the predict to be connected to a bee or an ant.</p>

<p>The title of today's read-aloud is "Food Chains, Part 1.</p> <ul style="list-style-type: none"> • Who can share what a food chain is? [Pause] Yes, a relationship of living things as food sources for other living things. • Draw a simple food chain on chart paper, a chalkboard, or a whiteboard, such as wheat > mouse > cat. First, the wheat is a food source for the mouse, and then the mouse is a food source for the cat. Please draw one or two of your own simple food chains. [Pause] <p>Making Predictions About the Read-Aloud</p> <ul style="list-style-type: none"> • Remember that at the end of our last read-aloud, Zeke the ecologist asked you to think about how you are connected to an ant or a bee. Let's revisit those predictions or make a prediction if you missed the last lesson. • Go to your paper and write down how you think you are connected to a bee or an ant. [Repeat directs 2x and then pause] • You will find out whether your predictions are correct after today's read-aloud. <p>Purpose for Listening</p> <ul style="list-style-type: none"> • Please listen carefully to find out more about food chains and whether your predictions were correct. 	
<p><u>Teacher Model</u> Food Chains, Part I</p> <ul style="list-style-type: none"> • [Show image 2A-1: Zeke Showing Interdependent Organisms] Last time we met, I talked about ecosystems that cover different parts of the earth. What is an ecosystem? [Pause] I love the effort! An ecosystem is a community of both living organisms and nonliving things that interact with one another and their physical environment. Living and nonliving things work together in an ecosystem. They are interconnected and depend on one another. They are, in other words, interdependent. • [Show image 2A-2: Organisms and Habitats in Ecosystem] Different habitats, or homes, exist within a particular ecosystem. Remember, habitats are where plant and animal species normally live and grow. Species are groups of living organisms that share the same characteristics. Because they also share the same needs, they live in a shared habitat where all of their needs can be met. 	<p>Student interacts with teacher's questions as posed. Student uses appropriate note-taking strategy to capture information from today's learning in compare and contrast food webs and food chains.</p>

<p>What do organisms need to survive, or continue to live? [Pause]</p> <p>All organisms within a habitat, and all habitats within an ecosystem, are connected by a common need: food. Food provides nutrients and energy, or fuel, which organisms need in order to grow, breathe, and move around.</p> <ul style="list-style-type: none"> • Where does this energy come from? [Pause] Yes, the sun's energy is transferred in different ways as fuel for different organisms, but the source of nearly all our energy comes from the same place—the sun! • [Show image 2A-3: Energy and Food Sources] Almost all the energy needed for life on Earth comes from sunlight. Ecosystems—from deserts to rainforests—may look very different from one another, but they all depend on the sun for energy. Energy flows through the ecosystem, passing from sunlight to plants, animals, and humans. This energy then also passes through plants to animals and humans. All living things within an ecosystem are interdependent on one another. They need one another in order to survive. Who knows what type of ecosystem this is? [Pause] If you said rainforest, you are correct! • What kinds of habitats and animals do you see? [Pause] Yes, trees/monkeys, water/turtles, ground/worm – and many more examples. • [Show image 2A-4: Child Linked to Apple Tree] Plants, animals, and humans are linked by the transfer of this energy in the food they eat. For example, when you eat an apple, you are part of a link in a chain. Where did that apple come from? [Pause] Yes, a tree. And where did the tree get its energy, or food, needed to grow the apple? [Pause] Exactly, from sunlight. The sun's energy passed from the tree's fruit to you. You and the tree are both links in the same chain—the food chain. • That's a rather simple example, with only two links—you and the tree. These links, or connecting steps in the food chain, are called trophic [traw-fik] levels. Say the word trophic with me. You will hear the word trophic throughout the rest of these read-alouds when discussing the connecting steps in a food chain. Listen carefully to learn about trophic levels. Because every living organism needs to eat, every organism belongs to at least one food chain. Every food chain 	
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<p>has at least two feeding, or trophic, levels. Trophic levels show who eats what within an ecosystem. There are many, many food chains in nature, and every one of them has three essential, or necessary parts: producers, consumers, and decomposers. Let's take a look at each part.</p> <ul style="list-style-type: none"> • [Show image 2A-5: Producers Absorbing Sunlight and Water] All food chains begin with living things that produce their own food. On land, green plants are the main producers. Plants are the only living things that make their own food. • How do they do that? That's right, they depend on the sun. The sun's energy enters the plants' leaves. • Plants absorb water through their underground roots, and take in carbon dioxide, a gas, from the air. With the help of the sun's energy, plants change water and carbon dioxide into the food they need to grow. This is called photosynthesis. Producers include algae, lichens, and mosses, in addition to plants like trees and grasses. • Plants are the first feeding step, or trophic level, of every food chain. All animals depend on plants to live, even if they do not eat plants themselves. Producers, at the bottom of every food chain, perform another very important job in an ecosystem. • As they take in water, sunlight, and carbon dioxide, they also release oxygen into the air. Oxygen is a gas that is essential for all organisms to live. There are producers in every ecosystem. Without them, there would be no life on Earth. Carbon dioxide is a gas produced when humans and animals breathe out, or when carbon-based fuel is burned. The next trophic level is composed of consumers. Animals cannot make their own food. Even though animals and humans receive some energy directly from the sun, they also must consume, or eat, food to get the energy and nutrients they need to survive. • Sometimes this trophic level is broken into more than one level, or feeding step, because there are several different types of consumers, or eaters. The consumers in this image are the mouse, the boar, and the wolf. Some consumers eat only plants, some eat only animals, and others eat both plants and animals. These three types of consumers have specific names. Who remembers what we call animal consumers who consume only plants? [Pause] Yes, plant-eaters are 	
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<p>called herbivores. Herbivores may be as small as squirrels or as large as elephants.</p> <ul style="list-style-type: none"> • Can you name some other herbivores, consumers who eat only producers? [Pause] The second type of consumers belongs to the group called carnivores. Who knows what carnivores eat? [Pause] That's right. Carnivores are primarily meat-eaters. Carnivores usually do not eat producers, but instead eat other consumers. Examples of carnivorous animals include lions, polar bears, and sharks. Omnivores are the third type of consumers. They eat both producers and other consumers. Rats, raccoons, skunks, and pigs are all omnivores. Many humans are omnivores, too, eating both plants and animals. Do you eat both plants and animals? Then, you are an omnivore. Raise your hand if you are an omnivore. [Pause for a show of hands] • [Show image 2A-7: Producers, Consumers, and Decomposers] When plants and animals die, they sometimes become food for other animals. Have you ever seen a vulture or a crow eating dead animals by the roadside? [Pause] I know I have. • These consumers are animals called scavengers. But scavengers rarely finish the job. For that, nature relies upon another essential part of the food chain. Who remembers the name of the organisms that work together with the producers and the consumers? [Pause] They are the decomposers • Decomposers are a special type of consumer that continues the work of scavengers if parts are left behind. Decomposers decompose, or break down, dead plants and animals and their wastes. By doing so, they feed themselves while returning valuable nutrients back into the soil to be reused by other organisms in the food chain. Just as with scavengers, some decomposers also eat living plants and animals. Decomposers—worms, slugs, snails, beetles and other insects, microscopic bacteria, and fungi—are some of Earth's greatest recyclers. They are very important to an ecosystem. Without decomposers, plants would not get the nutrients they need, and Earth would be crowded with the dead remains of plants and animals. • [Show image 2A-8: Full cycle Completed Producers, Consumers, and Decomposers] Energy is transferred in a circular fashion from one organism to another 	
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and back again into the soil to help new producers grow. If there were no producers, there would be nothing for consumers to consume, so there would be no consumers. Without consumers, there would be nothing to decompose, so there would be no need for decomposers. Producers, consumers, and decomposers are equally dependent upon one another. They are interdependent links in all food chains, passing stored energy from one organism to another. The ongoing, regular completion of this energy cycle in food chains determines an ecosystem's ability to survive.

What word part do you recognize in circular? [Pause]

What do you think circular means? [Pause]

- [Show image 2A-9: Caterpillar Food Chain]
Let's look at an example of another rather simple food chain. First, a leaf creates its own food. Next, a caterpillar eats the leaf. Then, a small bird eats the caterpillar. Then, a large bird of prey swoops down and eats the small bird. Energy has passed from the leaf to the caterpillar to the small bird to the bird of prey.
- Who was the producer? [Pause] The leaf.
- Who were the consumers? [Pause] There were three.
- Can you name them? [Pause] First, the caterpillar consumed the leaf. Next, a small bird consumed the caterpillar. Then, the large bird consumed the small bird.
- But that is not the end of the cycle, is it? [Pause] It is not.
- What is the final step? [Pause] Let's talk about that together. The large bird dies and the decomposers begin their important work of breaking down the animal's body into the soil and helping new producers to grow. This simple food chain can be drawn with arrows onto a piece of paper.
- [Show image 2A-10: Food Web] But nature is rarely that simple. Think about what else could happen to change the simple pattern of these circular arrows. Who else might eat the caterpillar? [Pause] Perhaps a lizard or a frog would find the caterpillar tasty. And who else might eat the small bird?
- Perhaps a cat or snake would make a meal of it. Lizards and frogs and cats and snakes are members of other food chains as well. When an animal from one food chain eats a member of another food chain, two food chains connect, and the chains begin to look far

<p>more complicated with many arrows going many different ways. When food chains overlap like this, the complicated patterns that they form are called food webs. Many different plants and animals can be included in food webs.</p>	
<p><u>Guided Practice</u> Let's return to our question, how do you think you are connected to an ant or a bee? [Pause] Let's use a food chain to trace the energy that connects us to the ant. [Teacher creates a simple, circular food chain diagram for the ant.] Now you create a simple food chain for the bee and its connection to you.</p>	<p>Student will create a simple food chain.</p>
<p><u>Independent Practice</u></p> <ul style="list-style-type: none"> • [Show image 2A-11: Zeke at the Park Saying Goodbye] Before we get together again, I would like you to create a food web by combining the bee and ant food chains with your own. [Repeat directions 2x] • Remember, food webs take many twists and turns. The web will not be simple and circular. In order to help you solidify today's learning, you should also write an explanation of the relationship that exists between food chains and food webs. <p>These questions will help guide your thinking as you write. [Repeat each question 2x]</p> <ul style="list-style-type: none"> • Is there a direct relationship? [Pause] • How do you know? [Pause] • Can they function independently of one another? [Pause] • Why or why not? [Pause] <p>We'll talk more about food chains and food webs next time.</p>	<p>Student will create a food web and a written explanation of the relationship that exists between food chains and food webs.</p>
<p><u>Closing</u></p> <ul style="list-style-type: none"> • I enjoyed learning about ecology with you today! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee's At Home Learning Series! Bye! 	

