



Food Chain Game

Grade: 3rd

Subject: Science

Time Required: 45 Minutes

Setting: Indoors or outdoors

Materials:

- Provided photos (see additional document)
- Provided vocabulary labels (see additional document)
- Scissors
- Whiteboard or chalkboard

Objectives:

Students will 1) recognize that energy flows from the sun to producers and then consumers, 2) describe how resources are shared between each trophic level, and 3) predict how living things respond to changes in resource availability.

Background:

Solar energy drives food chains/webs on Earth. Plants use this energy to produce their own food using resources found on Earth. Consumers cannot make their own food and therefore, must eat either producers and/or other animals to survive. Food chains are a simple representation of how these varying life forms interact and depend on each other for survival. A food web is a more complicated, and realistic, combination of several simplistic food chains. Explore both a terrestrial and marine based food chain in this activity. Learn how organisms respond to changes in their basic needs.

Preparation for the Activity:

- 1) Print out the images and vocabulary labels from these documents found on [NEW Splash 3](#):
 - a. Splash 3 Prep Activity Images - Food Chain
 - b. Splash 3 Prep Activity Vocabulary- Food Chain
- 2) Ask students to cut out all the organisms (keeping marine and land food chains separate)
- 3) Ask students to cut out vocabulary labels (one set may be used for both food chains)
- 4) Use white board/chalk board for activity



Activity:

Teachers read the following to students.

Underlined bold is expected student response.

Let's think about a land food chain, and how energy travels through it.

What's the source of all energy? **Sun.** *(Have student place sun at top of board)*

What uses the sun to make its own food? **Plants.** A scientific term for plants is producers. Plants produce their own food from the sun's energy. What producers might we see on our field excursion? **Trees, grass, mangroves, flowers.** *(Have students place grass and word producers on board).*

Animals that eat to gain energy are called consumers. All consumers need to continue gaining energy to replenish the energy we use or lose as heat. We're going to discuss these consumers.

What kind of animal might eat the plants? **Rabbits, butterflies, caterpillars, gopher tortoises.** These animals are called primary (first) consumers, or herbivores = plant eaters. These animals rely on plants or producers for food. And remember that plants rely on the sun for energy. *(Have student place rabbit and herbivores on board above grass).*

What kind of animals might eat herbivores? **Snakes, fish, birds.** These animals are the next level of consumers. These animals are secondary consumers. Also known as carnivores (meat eaters) or omnivores (plant and meat eaters). *(Have student place snake and carnivores and omnivores on board above rabbits).*

Then, what kind of animals might eat the snake? **Eagle.** This animal would be an omnivore or carnivore. We would call this third animal in our food chain a tertiary consumer. Other tertiary consumers would be? **Dolphins, sharks, whales, eagles, hawks, people.** *(Have student place eagle on board above snakes).*

What happens when animals die? Something must be happening because we don't have dead animals all over the place. We have one more group of organisms that we can call the cleaners. They eat dead and decaying plants and animals. Do you know what we call these animals? **Scavengers and decomposers.** What animals do you think we will see that fit into this group? **Vultures, ants, worms, snails, bacteria.** Through the process of decay, these organisms put nutrients back into soil, making those nutrients available for plants to use again. We may think scavengers and decomposers are gross and disgusting, but they play an extremely useful role. They **RECYCLE** matter! Matter doesn't get lost from an ecosystem – it gets RECYCLED over and over. Circle of life. *(Have students place vulture, worm, mushroom, bacteria, scavenger and decomposer on board anywhere).*

Do you notice anything about the shape of this? It's a pyramid with fewer animals at top.



Each level of animals has to have enough energy. Would one plant be enough for three rabbits? You need lots of plants to support, or give enough energy to three rabbits. Three rabbits might be enough energy for two snakes. And two snakes might be enough energy for one eagle. That eagle doesn't get all the energy the snake had. Energy gets used up. You eat breakfast, and then are hungry for lunch. What do you do with your energy? You use it when you play and study, even when you chew your next meal, or when you sleep! Everything you do requires energy. Need new clothes this year because you outgrew last year's? Growth requires lots of energy. Each of us is also a little heater – we give off body heat. You are always giving off energy as heat.

Let's sing a song about energy!

Energy flows from place to place.
Some gets "lost" and goes to space.
Energy "lost" is changed to heat.
The rest is fuel for you and me.

Let's do another food chain. This one is based on marine life.

What's the source of all energy? **Sun.** *(Have student place sun at top of board)*

What uses the sun to make its own food? **Plants.** A scientific term for plants is producers. Plants produce their own food from the sun's energy. What producers might we see in the Indian River Lagoon? **Mangroves and seagrasses.** *(Have student place these on board).*

Animals that eat to gain energy are called consumers. All consumers need to continue gaining energy to replenish the energy we use or lose as heat.

What kind of animal might eat these plants? **Mangrove tree crab, manatees and mullet (these fish don't eat other fish!).** These animals are called primary (first) consumers, or herbivores = plant eaters. These animals rely on plants or producers for food. And remember that plants rely on the sun for energy. *(Have student place these on board above mangroves/seagrass).*

What kind of animals might eat this herbivore? **Fish, birds.** These animals are the next level of consumers. These animals are secondary consumers. Also known as carnivores (meat eaters) or omnivores (plant and meat eaters). *(Have student place seatrout on board above mullet).*

Then, what kind of animals might eat the mullet? **Osprey, dolphin, bird, bigger fish, people.** This animal would be an omnivore or carnivore. We would call this third animal in our food chain a tertiary consumer. Other tertiary consumers would be? *(Have student place dolphin on board above seatrout).*

What happens when these plants or animals die? The scavengers and decomposers eat them and break them down into smaller pieces and help put nutrients back into soil, making those nutrients available for plants to use again. What animals do you think we will see that fit into this group? **Vultures, some crabs, shrimp, worms, bacteria.**

They play an extremely useful role. They **RECYCLE** matter! Matter doesn't get lost from an ecosystem – it gets RECYCLED over and over. Circle of life. *(Have students place worm, shrimp, crab, bacteria on board anywhere).*

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of the environment and their own well-being.*



Key Questions and Extensions:

Once you've completed the basics of a terrestrial and marine food chain, explore with students what influences might bring about change to these systems. Possible options may include:

- A drought (how would resource availability change?)
- A large input of pollution (oil or chemical spill)
- An input of small levels of pollution over a long time span (a lot of small oil leaks from cars in a neighborhood, lawn fertilizer, and/or pesticides)
- Introduce an invasive or nuisance species at any trophic level (exchange algae for seagrass or an invasive lionfish for a native seatrout)

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