



LESSON OBJECTIVE

- Understand that a food chain is a way for energy from the sun to be transferred to animals and humans

GRADE

- 5

STANDARDS

- Physical Science

TIME REQUIRED

- 45-60 min

VOCABULARY

- Food Chain
- Producer
- Consumer
- Predator/Prey
- Herbivore
- Carnivore
- Decomposer

MATERIALS

- Paper
- Colored pencils

RECOMMENDED ASSESSMENT

- Flow charts and re-enactment

Introduction

Students will learn about how energy from the sun is passed to plants and then animals by creating a flow chart in groups and acting out the food chain.

State Standards

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.

Lesson Plan

Background Knowledge –

- Flow Chart*: a diagram of the sequence of a process
- Food Chain*: shows how organisms are related to each other by the food they eat and the energy that is transferred
- Energy*: the ability to do work
- Predator*: an animal that eats other animals
- Prey*: an animal that is eaten by another animal
- Producer*: an organism that makes its own food
- Consumer*: a living creature that eats organism from a different population
- Decomposer*: an organism that breaks down dead or decaying organisms

Activity –

1. Ask: What is a flow chart? What could we use a flow chart to show?
2. What is a food chain? Let's draw an example starting at the end of the food chain. On the far right of the board, draw a human. Where do humans get their energy from? How are we able to run around at recess or when we play games? What else do we use our energy for? (We sleep to give our bodies rest, we drink water to stay hydrated, but energy comes from the food we put into our bodies.)
3. Draw a plant food item to the left of the human. Draw an arrow from the food to the human. On top of the arrow, write "Energy".
4. Where did the food get its energy to be able to grow? What do plants need to grow? (Sun, air, water, soil, warmth, time). Plants need sunlight to make the nutrients they need to grow – a plant with no sunlight won't live for very long. What is the process called of plants converting light into

nutrients? Photosynthesis! Draw the sun to the left of the plant and draw an arrow from the sun to the plant. Write "Energy" on top of the arrow.

5. We just made a flow chart showing how the sun "feeds" plants by giving them nutrients and the energy to grow fruit, which feed us and give us energy! We can't get energy directly from the sun because we can't use photosynthesis, so that energy has to go through plants first.
6. Put students into groups of about 5-7. Each group is going to construct a flow chart showing how energy is transferred from the sun through the food chain. Each group's goal is to have a food chain that has at least 5 pieces with 4 arrows between them. Have students start their flow charts with the sun and then choose a plant for the sun to give its energy to. What animal eats that plant? What animal eats that animal? What animal eats that animal? As they are constructing their food chains, have students keep their work a secret from the other groups in the room.
7. If students are having trouble coming up with a 5th piece, you can explain decomposers. There are 4 types of decomposers: fungi, insects, earthworms, and bacteria. When an animal dies, it is consumed by decomposers and gives them energy. Their food chain will likely look like this:

Sun → Plant → Herbivore (prey) → Predator → Decomposer

They may have more pieces in the middle, which is awesome!

8. We kept our work a secret because now each group is going to silently act out their food chain and the process of energy being passed along it for the class. Choose something in the room to symbolize "energy" that will be passed from one student to another. One student can act as the sun, shining down on and passing the "energy" to another student who grows from a seed into a plant. That plant will get consumed by an herbivore, who will take the energy when the plant dies. Continue on until everyone has a role in the food chain. If some of your students do not feel comfortable acting in a role, they can be responsible for props that are used or be in charge of drawing their group's final food chain that will be submitted for a grade.
9. When a group is acting, other students are going to guess the food chain being acted out by writing it on a piece of paper. After the acting, each group can discuss what they think the parts of the food chain are and then each group can make their guesses to the class. You can have each part of the food chain be worth 100 points or have whatever group guesses the most parts correctly take all of the points.
10. What did all of our food chains have in common? What labels can we add to every single one? Can we add words like producer, herbivore, prey, consumer, carnivore, predator, decomposer, and energy to every single food chain the class created? Have each student or group of students label their food chains, add a title to the top "Food Chain Flow Chart" and submit their final food chains for a grade.



Post Activity –

Make a “blank” food chain flow chart using just the labels you added to your group’s chain. Then have students go around the room and ask each other to name one of the categories. For example, a student may approach another and say, “I need a carnivore,” and that student may respond, “Bear”. The first student will write “Bear” in their flowchart. Does the resulting food chain make sense? Even if it may not be something that animal would typically eat, is it something they *could* eat if they needed the energy?

Challenge: Try making a food chain of just ocean animals. Can it be done? Does it work the same way?

Challenge: Try making the longest food chain. How many different consumers can you add? Can you get to 4? How about 5? (Example could be caterpillar, frog, snake, owl.)

Challenge: Create a food chain where everything in it (except the sun) is green (or everything is brown, or yellow).

Discover Further

Extending the Lesson –

Play Food Chain Telestrations. Each student will start with a piece of paper. At the very top, they will write down a sentence that starts with “The sun gives energy to _____” and list a plant type. They will then pass their papers to the left. The next person will read the sentence, fold the paper down to hide the sentence, and draw what the paper said. Then they will pass the paper to their left. The next person will only be able to see the drawing and not the sentence above it. They will look at the drawing, try to determine what kind of plant is getting energy from the sun, and decide what the next step in the food chain will be. They will fold down the drawing so the next person can’t see it, and write, “ (plant guess) gives energy to (animal of choice)”. Continue passing several times, alternating between drawing what is written and guessing what is drawn and adding on to the chain. Return each paper to its original owner and have students read their responses. How good were people at guessing the drawings? Do their food chains work? Why or why not?

Food chains show who eats whom. What is a food web then? A food web is all of the food chains in an ecosystem. How many different food chains can you come up with for one ecosystem?

Learn More –

The Fort Wayne Children’s Zoo understands the importance of every species in the food chain, which is why conservation (the act of preserving animal species and natural spaces) is so important. To learn more about the Zoo’s work in conservation and protecting food chains, visit kidszoo.org/conservation/.

Resources

Help your class explore Food Chains and Webs with these extra resources, including a 5 minute video about the importance of grey wolves in the food web at Yellowstone:

<https://education.nationalgeographic.org/resource/resource-library-food-chains-and-webs/>