



Topic **Energy (Food Webs)**

Objectives

- Dramatize a food chain.
- Extend a food chain into a food web.
- Analyze the effects of breaking a food chain on a food web.

Duration 40 minutes

Assessment Type Formative

Students sometimes forget that all food chains and webs begin with the sun and are inter-dependent.

Set-up

Make a list of all the foods eaten by the students at a previous meal. Be sure that there are both plants and animals on this list. Discuss what people eat and what animals eat. Ask how plants get the food they need.

Materials

- ID tag per student: one 'Sun' and common plants and animals they know
- 4 different-colored skeins of yarn



Instructions

1. Give each student a tag with a plant or an animal on it. Make sure one student gets the 'Sun' and have him/her watch from the sidelines until called upon in Step 5.
2. Give four 'animal' students each a skein of yarn.
 - a. Ask them to find one person with a tag that the animal on their tag might use for food.
 - b. With the first students holding onto one end of the yarn, unravel it as they hand it to the selected 'food' person. Linked to the first student, the second student holds the skein of yarn.
 - c. The second student repeats this process until the selected person's tag has a plant on it.
3. Still holding onto the yarn, ask each group to form a straight line, with the plants at the front of the area and the animals toward the back.
 - a. Remaining students may grasp the yarn next to the plant or animal they might use as food.
 - b. Ask what they have formed: a food chain--a straight line of one organism feeding on another.
4. Ask students to find animals or plants in other lines their tag could use for food.
 - a. If they find one, they may stretch the yarn from those students to themselves.
 - b. Ask what they have formed: food web--intersecting lines from one food chain to another.
5. Ask them where the 'Sun' should stand.
 - a. After several answers have been given, bring the Sun to the front of the lines and give him/her the end of each of the skeins of yarn.
 - b. Ask students to watch where the yarn goes from the plants; then ask them what all plants need for food: sunlight.
6. Ask what would happen if some of the organisms were no longer part of the food web.

- a. After several hypotheses are noted, ask them how they would test their guesses.
 - b. Follow the students' directions in testing their hypotheses. Make sure that they see that once an animal or plant leaves the food chain/web, other organisms are affected.
7. Have the very first students (the animals who started each chain) let go of the yarn and step away.
- a. Ask the students how losing them (animals at the top of the food chain/web) affects the other plants and animals. *There is little or no effect other than possible over population of the prey of these animals.*
 - b. Allow the students to return to their original places in the food chains/web.
8. Next, remove a few students near the middle of the food chains/webs.
- a. Ask the remaining students to change their eating habits to adapt to this change. *Some students may not be able to adapt, so they must also leave the food chain/web.* This lack of adaptation may affect still more students, who must also adapt or die.
 - b. Ask students to explain what happened.
 - c. Allow the students to return to the food chains/web.
9. Now, remove half of the plants from the food chains/web.
- a. Ask the remaining students to adapt. *Those who can't are also removed from the chains/webs.*
 - b. Ask the students what will happen if all the plants leave the food chains/web.
 - c. Allow all students to return to the food chains/webs.
10. Finally, remove the sun from the food chains/webs.
- a. Ask the students what will happen to the plants and animals.
 - b. Ask the students if any of the plants or animals can adapt to a world without sunlight.
 - c. Return the sun to the food chains/webs.

Notes

Badge holders (light plastic sleeves with elastic neck bands) work great for this!

Be sure to start with carnivores when passing the yarn. Eventually, all yarn skeins should end at the sun.

Timesaver! You can limit this activity to food chains only, and not go on into food webs if needed.

This could be simulated on a whiteboard or other display, but students greatly benefit from the tactile role-playing aspect of acting it out and moving about the area.

Discussion Questions

- Where do plants get the food they need to grow?
- What would happen if you could no longer get your favorite food?
- Is this a system? What system is it and which parts could the system function without (if any)?
- Why are some people so concerned about endangered plants and animals?

Reality Check! Evaluation

- Did the students successfully create a food chain?
- Could they extend it into a food web?
- Did they see the effects of breaking a food chain on a food web at the top? In the middle? At the end?