

Can we find evidence of food chains in the environment around us?

MY OWN FOOD CHAIN PROGRAM (K-2)

Food Chain Detectives

(ILS 12A, 12B)

Overview

This curriculum explores the relationship between people and the food they eat. It aims to give children in grades K-2 a basic understanding of the flow of energy through the food chain, and the place of people in the food chain. If teachers complete the entire curriculum, their classes will explore food chains in nature, focusing on its individual links and looking at the flow of energy as a whole. Students will then look at the place of people in the food chain, and discover how people have appropriated nature's systems in agricultural practices – making the food chain our own. Classes will compare traditional and sustainable agricultural practices.

Sustainable Agriculture, for the purpose of this curriculum, shall be defined as "a system of food production, supported by consumers, where farming operations, practices and technologies work in harmony with the natural systems that sustain life on earth."

Suggested Grade Level

This curriculum is designed for kindergarten through second grade levels. The topics covered can be built upon in complexity throughout that age range.

Approximate Time

Approximately 75 minutes.

Objectives

1. The students will find evidence that food chains exist all around us.
2. The students will become comfortable exploring outside safely.
3. The students will develop their skills of observation and practice using them to find evidence of food chains around them.

Activity Abstract

The class will brainstorm what would constitute evidence that things had been eating or were being eaten in the area surrounding the school. They will become food chain detectives to look for said signs, and create a collage of their evidence.

Background Information

All living things – from huge blue whales to tiny phytoplankton floating in the sea; from oak trees to buffalo – all living things need to take in and use energy to survive. A food chain is the transfer of energy from one organism to another. The only source of energy available to life on earth is the sun. This means that all food chains must start with the sun. Green plants are the only things on earth that are able to use the sun's energy to

create food energy for themselves and other living things. Through the process of photosynthesis, plants can take water and carbon dioxide, and, in a reaction catalyzed by the sun's energy, create a simple sugar with oxygen as a byproduct. Green plants are called producers, since they produce the food for other living things. Plants create this packaged energy – sugar – so that they can use it to carry out important life processes. They need energy to grow, reproduce and make seeds, etc.

Many animals eat green plants to get their own energy. These animals, called primary consumers, are the next link in the food chain. They eat plants to get energy to move around (finding plants and avoiding predators), reproduce, and grow.

At each link in a food chain, a substantial portion of the sun's energy - originally trapped by a photosynthesizing plant - is let back to the environment (ultimately as heat). Thus, there is less energy being transferred at each level of the food chain. That means there needs to be more plants than primary consumers; more primary consumers than secondary, and so on. It takes about 10 times as many plants to support one primary consumer; and ten primary consumers to support one secondary consumer, and so on. For this reason, the food chain is often described as a pyramid

And what happens when you get to the top of a food chain, to a consumer that is so big or well adapted that nothing else can eat it? Decomposers are organisms, often bacteria, insects or fungi, which get their energy by eating dead things. As they get their energy, they break down materials, making the soil richer. Decomposers often mark the beginning of whole new food chains. For example,

Sun > grass > mouse > hawk > maggots (flies) > frog > heron
would be a food chain that “restarted” when decomposers (maggots) got the energy from a dead top-of-the-food chain animal.

Materials

- Detective costume (overcoat, hat and magnifying lens) – optional but highly recommended!
- Lunch bags for evidence collections (1 per student)
- Construction paper (1 sheet per student, or pair if desired)
- Glue

Set-up

This lesson works better if students can be split into small groups while outside. Recruit parent volunteers to accompany class, if possible.

Procedure (Session 1)

1. **Tap prior knowledge.** Don detective costume. Walk around the classroom pretending to inspect things, including students' ears, heads, etc.
2. Greet the class. Explain that you've been thinking about becoming a detective in your spare time. Ask class what a detective is/does. (Solve crimes, look for clues/evidence, etc.)
3. Explain that you want to be a different type of detective, but you'll still be doing the same types of things, such as looking for clues. Introduce idea of a food chain detective.
4. Review main ideas of food chains.

5. **Hands on Experience.** Ask students to help you figure out what type of clues or evidence you would look for if you wanted to prove that food chains were going on outside the school. The list you generate should include, but not be limited to, eat marks on leaves, sticks, or bark; shells of nuts or seeds; remains of animals that have been eaten, such as feathers or bones. Talk about collecting evidence and distribute the lunch bags. We want to keep records but want to minimize our picking of live plants and may not want to handle dead things. Evidence that can be collected should be carried in the paper bags.
6. Get ready to go outside and become food chain detectives.
7. Explore the school yard, local park (any available open space) searching for, and collecting (if appropriate) signs of food chains. The class can stay together or split up into smaller groups if there are parent helpers there. Note: if this can be done in a local garden plot or farm field, all the better!
8. **Introduce scientific principle.** Return to class and share what the different groups found. Ask class if they think there are, indeed, food chains happening around the school.
9. **Conclusion/Wrap-up.** Create Food Chain Evidence Collages. Give each student (or pair of students, if desired or the amount of evidence collected makes it necessary) a piece of construction paper and glue. Have the students write “Food Chain Evidence” at the top of the paper. (For younger students, the teacher should pre-write this).
10. Have students glue their evidence onto the paper in collage form. Note: If most of the evidence was not collectible, the students can draw and color their evidence.
11. Display lovely projects around classroom 😊

Extensions (optional)

Have students draw the food chains of which they think they found evidence.

References

Van Matre, S. Earth Education: A New Beginning.