



Food Webs & Our Ecosystem

Materials

- Yarn/String
- Index cards
- Marker
- Half Sheets of Paper

Standards and Curricular Connections

Next Generation Science Standards

2-LS4-1. Interdependent Relationships in Ecosystems

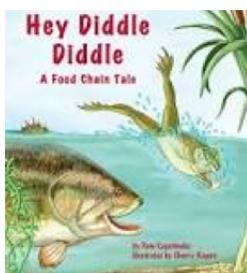
3-LS4-4. Interdependent Relationships in Ecosystems:

Environmental Impacts on Organisms

5-LS2-1. Matter and Energy in Organisms and Ecosystems

Strategies for Engagement

- Have your class discuss their favorite foods; have them think about what it was before they ate it, plant or animal/producer or consumer.
- Go to www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.swf to play an interactive food chain game online.
- Read *Hey Diddle Diddle: A Food Chain Tale*



Overview & Objective

"All living organisms depend on energy from food. A chain is created as one organism consumes another to get its food. Every organism is part of a food chain. Every chain begins with energy from the sun, which is needed by plants to make their own food. The first two links in a food chain will always be the sun and a plant. The food chain is also a cycle. Consumers at the top of the chain will provide energy for decomposers who break down organic matter, putting nutrients back into the soil to nourish plants. Food chains are not isolated; they are interrelated, forming a complex food web. This activity will give students the opportunity to visualize how the complexity of the food web develops from a simple food chain." Jaffe and Appel pp. 216-220



Students will:

- Work as a group to discover the interconnectedness of an ecosystem.
- Define key terms consumer, producer, and decomposer and identify their role in an ecosystem.
- Question the effects of the loss of a species on an ecosystem.

Pre-Activity Questions

- Have you ever heard of a food chain before? Take time to clarify, you may get responses that refer to fried chicken establishments.
- What kinds of things do different animals eat?
- Can animals be part of more than one food chain?
- What do plants eat? Refer to experiments you have done regarding photosynthesis, ask if they remember what happens when plants try to grow in the dark.



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Resources

- Hey Diddle Diddle: A Food Chain Tale. Mt. Pleasant: Sylvan Dell Publishing, 201
- The Cornell Lab of Ornithology www.birds.cornell.edu/birdsleuth

Activity

- Write different plants and animals on index cards. The class can help with this, brainstorming what animals and plants might be found in an ecosystem in Missouri, or in their own school garden. You can also have it done ahead of time. Include the sun, an important player in all ecosystems. Have enough organisms for your entire class. Example: SUN, PLANT, CATERPILLAR, BIRD, HOUSE CAT, HUMAN, FUNGI, BACTERIA
- Make a sign for **Producer, Consumer, and Decomposer** on half sheets of paper.
- Have a large ball of string or yarn ready to connect your class.
- Pass out one labeled paper to each student. Announce that they are now members of an ecosystem! (Though as humans, they already are.)
- Have each student read what is on their paper and tell what they know about that plant or animal, the class can help; is it a meat eater, carnivore, or does it prefer to eat plants, herbivore? Does it eat at all?
- Plants are tricky; take some time to explain how they make their own food with the help from the sun. Have students group together by Producers, Consumers, and Decomposers.
- Now it's time to weave your web. Start with the sun, have that student hold on tight with the end of yarn. Have the students recall what "eats the sun"; you may have several plant papers in your group to connect.
- Keep going with your web, using the opportunity to reinforce vocabulary such as herbivore, omnivore, and carnivore.
- Finish your web with the fungi or bacteria, explaining they eat EVERYTHING as a decomposer.



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Gateway Greening Resources

Connect with us on Facebook to discover upcoming Youth Garden Institute workshops or join the Gateway Greening Educators Group to connect with other teachers:



Discover season-specific gardening how-to's and examples of current lessons:



Looking for Field Trip opportunities or need to ask a question about our education services? Please contact education@gatewaygreening.org or 314-588-9600 ext 107

Follow Up Questions & Additional Activities

1. Ask students what they think might happen if one of these links was missing, just a small member of the ecosystem, a snail or caterpillar.

- Have the student assigned that species drop the web. Next have those connected to that student drop the web; pretty soon, no one is holding the web.
- Students realize when you take out one species, "the whole thing falls apart!"

2. Have students research keystone species in the area and write about what would happen if those species went extinct.

3. If "eating the Sun" was a crazy concept for your class, it may be time to introduce photosynthesis.

- Try planting pea seeds indoors, covering one set of seeds, but allowing another to get the full benefits of light.
- Allow your class to make observations about the lack of color and vigor the covered plants show compared to the others.
- Have the students show their finding through a chart or graph of the plants' growth.

Assessment

- Use "Food Chain Energy" or "Is It a Consumer?" probe as a pre and post-unit assessment. Keeley, P., F. Eberle, & C. Dorsey (2011). *Uncovering Students Ideas in Life Science* (Vol 1). NSTAPress: Arlington, VA.

Reference Materials

- Appel, Gary. Jaffe, Roberta. *The Growing Classroom Garden Based Learning*. Vermont: National Gardening Association, 2007. p.216,220 • Kapchinske, Pam.
- Fee, J. M., A. Rosenberg, and L. DeRado. 2012. *BirdSleuth: Afterschool Investigators Nature Detectives*. Ithaca, NY: Cornell Lab of Ornithology.