

Food Chains, Food Webs, and Biodiversity

Upper Primary/Lower Secondary

Key Inquiry Questions

1. What are food chains and food webs, and how do they relate to biodiversity?
2. What is biodiversity?
3. Why is biodiversity important?

Learning Outcomes

1. Students will be able to define food chain, food web, and biodiversity by the end of the lesson.
2. Students will understand the importance of biodiversity by the end of the lesson.
3. Students will create a food web based on animals in their community by the end of the lesson.

Sustainability Curriculum Goals

Systems Thinking:

1. Our planet - the biosphere - is a complex system that supplies resources and creates conditions that sustain life on Earth.

Sustainable Futures:

1. Actions associated with a sustainable future reflect values of care, respect, responsibility, empathy, and compassion for all living and nonliving things.
2. Sustainable futures involve actions that work to preserve, protect, and/or restore the natural environment.

Activities/Goals:

1. Students should be able to explain what sustainability is, the importance of ecosystem services and biodiversity.

Overview:

The lesson will begin with the students completing a think-pair-share activity about two different ecosystem images they are viewing. Students will work on the inference and observation skills as they talk and answer questions about each of them as they begin to recognize the difference between food chains and food webs. Students will create a class food web, which they will use to draw pictures and play a game as a means of understanding what happens when species are removed from the food web (i.e. biodiversity loss). Lastly, students will think critically about ways they may be harming and can help conserve biodiversity.

Materials

SolarSPELL Resource:

1. For teachers: “Food Chains and Food Webs” (Science > Life Science > Biology > Food Chains and Food Webs)
1. “What is Biodiversity.mp4” (Environment > Natural Habitat >What is Biodiversity.mp4.)

Other:

1. Images (at bottom of lesson)

Suggested Procedure

Before the lesson, it is recommended that you [the teacher] read the document titled “Food Chains and Food Webs” to familiarize yourself with food chains, food webs, and biodiversity.

Before Lesson:

- First ask students where we get our energy from?
 - Answer: the food we eat
- Next, ask students where plants get their energy from?
 - Answer: the sun
- Students will now engage with a think-pair-share activity.
 - In a think-pair-share exercise, students first think about the topic silently to themselves, then talk about their thoughts with a classmate, followed by discussing altogether as a class.
- First ask students where we get our energy from?
 - Answer: the food we eat
- Next, ask students where plants get their energy from?
 - Answer: the sun
- Next, have students work together to observe 2 different ecosystems.
 - Find ecosystem images at the end of this lesson. Images can be printed out or shown on the screen/tablets.
- Tell students to write down the differences between the two ecosystem populations and choose which one they think is more diverse.
 - Hint: the diverse ecosystem has the most amount of plant and animal life.
 - Inform students that one of the images is a food chain, while the other is a food web.
 - Ask students to write down which one they think is which, and why.
 - Allow students 2 minutes to think and write on their own, then 2 minutes to talk with a neighboring peer, followed by 2 minutes to share with the class.
 - During the class explanation share the definitions of a food chain and a food web, and which image is which.
 - Food chains show how every living thing gets food, and how the nutrients and energy are passed from one living thing to another.

- Tell the students that the next activity will be a game and ask them to pick one species from the web to draw.
 - Make sure there are species from each level represented and only allow one species per sheet of paper.
 - After students complete their drawings, ask students to arrange them in a web on the floor according to the food chain.
- The Game:
 - Have the students pick up their drawings, stand in a circle - facing out, and place their drawings at their feet.
 - Explain to students that you will be playing a video or music, and when it stops, everyone should be standing back at a drawing, even if it is not their drawing.
 - Do not tell students you will be removing one.
 - Turn on a video or music and have students walk around the drawings.
 - While students are walking, you [the teacher] should take out one drawing, which represents the loss of a species.
 - Stop the music.
 - When the music stops the students should sit behind a drawing. There will be one less drawing than students, and that student is taken out of the game.
 - Show the picture of the ‘extinct species’ to the class and ask what could have happened to make the species go extinct?
 - Give students 1 minute to talk with their surrounding peers.
 - Ask a few students for their answers.
 - Possible answers: the species ran out of food, the humans destroyed its habitat
 - Have the students stand and start the music again. Remove another drawing.
 - Continue the same process.
 - About halfway through the rounds, ask students to look at the species left on the floor and compare it to the food web they made as a class.
 - Ask the students how many of the species left would be affected by the loss of a removed species.
 - Answer: All of the species are affected by the loss of a species.
 - Repeat the steps until one student is left standing.
 - Ask students what would happen if there were just one species left on the web.
 - Answer: That one species would die because it has nothing to eat.
- After the students discuss what would happen if there were only one species left on the web, direct students to the resource titled “What is Biodiversity”.
 - Each time a new vocabulary word comes up, pause the video and ask students to write it down in their own words.
 - Example: “Biodiversity is all of the different living things on Earth”.

After Lesson:

- Ask students what they learned from the activity.

- Possible answers: if animals go extinct it affects the rest of the animals in the food web, all species are connected, each species has an important role and place in an ecosystem, a food web is a bunch of food chains, humans can cause animals/plants to die.
- Ask the students to recall from the video how humans depend on biodiversity in food webs.
 - Have students each write down one positive and one negative in their journals.
 - Example: Cutting down trees to build a home destroys plant and animal habitats.
 - Positive: humans have homes
 - Negative: cutting down trees messes with the food web
- For homework, challenge students to answer the following questions in their journals:
 - 1. How does biodiversity relate to food chains and food webs?
 - 2. What happens if you continue to cause species to go extinct?
 - 3. Draw one thing in your house that may have destroyed part of a habitat for animals or contributed to the animal being threatened.
 - 4. What is one thing you could do differently to protect biodiversity?

Image 1:

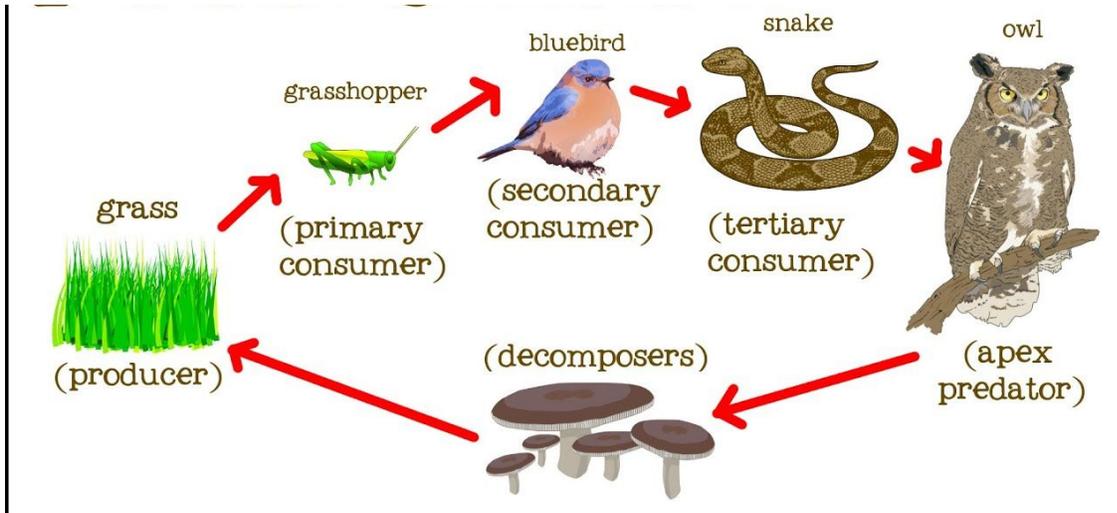


Image 2:

