Lesson Plan

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Ecosystems

By: Lori McDonald
Elementary school teacher; Ed.D. in School Leadership/Administration

Science
Grades 6–8

Introduction

This is a 3 or 4-day unit on food webs and relationships among organisms in an ecosystem. The summative assessment at the end of the unit can either be given on the 3rd day or could be saved for the 4th day, giving extra time for review and re-teaching as needed. There is a group project on day 3 that you could stretch to another day if you choose to take more time with that. Also, as a warm-up activity for this unit, the "Crash Course Kids" YouTube series is used. These are short, engaging videos that are perfect for middle school students. They are rich in information and content vocabulary. Links are provided.

If you don't have the animal cards needed for these activities, you can easily google and print pictures and make them into cards.

Learning Objectives

- The learner will recognize different ecosystems and the features of different habitats.
- The learner will understand that animal adaptations help an animal survive in its habitat.
- The learner will differentiate among the three different types of relationships – mutualism, parasitic, and commensalism.
- The learner will identify the relationships within a food web.
- The learner will relate the effects of the relationships to the food web.

Materials Needed

- Animal cards (a large stack of cards with photos of animals from a wide variety of habitats)

Procedure

Day 1

Warm-up – Watch "Crash Course Kids: Home Sweet Habitat". Ask students to pay special attention and/or take notes on the vocabulary words from the video.

1. Go over the information from the video and discuss the vocabulary words/definitions that the video presented.
   - **Food chain** – a model we use to describe the flow of energy between living things
   - **Food web** – big, tangled systems that include every plant and animal in a habitat

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2. Discuss the animal adaptations that were presented in the video. The animal featured in the video is a polar bear. Discuss the features of the polar bear that make it suitable to the arctic environment. Present another vocabulary word to students.
   - **Adaptation** – anything that helps an animal live in its environment; this can include body coverings and body parts
3. Give each student an animal card. There should be enough for each student to have their own animal. Students are to think about the kind of habitat that the animal lives in and what its adaptations are, telling them to pay special attention to skin coverings (scales, fur, down, feathers), feet, wings, and mouth parts. Then students will be given time to turn and talk to a neighbor about their animal. Each pair will be given the opportunity to present their findings to the class.

Day 2

Warm up – There is a fantastic YouTube video that is great for letting kids see how food webs work. It is called "Crash Course Kids". For today's warm-up, allow students to watch this very short video about food webs.

1. Vocabulary – Introduce the following words – mutualism, parasitic, commensalism
   - **Mutualism** – a relationship between two living things in which both benefit (Example – oxpecker and zebra)
   - **Parasitic** – a relationship in which one living thing lives in or on another living thing (Example – flea, worm, fungus)
   - **Commensalism** – a relationship in which one living thing is helped while the other one is not affected (Example – remora and shark)
   - Discuss the meaning and show the examples. Use a visual for each example.
2. Put students in groups. Give each group a set of cards with pictures of living things from an ecosystem.
   - For example: Set 1– mountain lion, hawk, shrew, mouse, rabbit, snake, squirrel, fungi, grass, insects, birds, deer
   - Choose other ecosystems for each group of students you have a make a set of cards with pictures of living things from that ecosystem.
3. Allow each group to work on creating a food web out of their picture cards. The teacher will monitor and provide guidance as needed.
4. After students have had time to work on food webs, display one set of picture cards with projector. Recreate food web with the class, discussing the relationships (mutualism, parasitic, commensalism) as you go through.

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Day 3

Warm-up – Watch "Crash Course Kids: The Dirt on Decomposers".

1. Introduce the following vocabulary words:
   - **Decomposer** – a living thing that feeds on and breaks down plant and animal matter
   - **Producer** – a living thing that makes (or produces) its own food; plants are producers because they use sunlight, air, and soil to make their own food
   - **Consumer** – a living thing that eats (or consumes) other living things
2. Divide students into groups. Allow each group time to work on a project in which they will research and come up with an ecosystem. They are going to design a poster advertising that ecosystem to other animals. They will describe the ecosystem including producers, consumers, and decomposers. They will include at least six living things on their poster. They should be labeled with the name and whether it is a producer, consumer, or decomposer. Allow students to review the rubric (below) before beginning so they fully understand the expectations.

Day 4 (optional)

Provide a review game for students. Give summative assessment on the unit.

Evaluation

As a formative assessment, have the students complete the following exit ticket.

- Day 1 - How does an animal's body covering help it adapt to its environment? Name an animal and explain how one part of its body is especially suited to its environment. Could that animal survive in another habitat? Explain why or why not.
- Day 2 - Think of two or more living things that coexist in an ecosystem. Identify the organisms and describe the type relationship they have and which type of relationship it is (mutualism, parasitic, commensalism). Draw a diagram and label.
- Day 3 - Use the following rubric to assess the group projects (next page).

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Category	4	3	2	1
Creativity/Artistic detail	Very creative and colorful	Somewhat creative and colorful	Very little creativity and color	Done in pencil
Neatness	Very neat	Somewhat neat	Not neat	Illegible
Included living things	6 living things are clearly included	4-5 living things included	2-3 living things included	0-1 living things included
Living things - named and labeled	All living things are clearly labeled with both animal name and type (decomposer, producer, consumer)	4-5 living things are labeled with both animal name and type (decomposer, producer, consumer)	2-3 living things are labeled with both animal name and type (decomposer, producer, consumer)	0-1 living things are labeled with both animal name and type (decomposer, producer, consumer)
Ecosystem	The ecosystem is clearly named with correct components	The ecosystem is named and has mostly correct components	The ecosystem has some correct components	The ecosystem has little to no correct components