

Grade 2 Science, Quarter 4, Unit 4.1
Simple Food Webs

Overview

Number of instructional days: 5 (1 day = 40 minutes)

Content to be learned

- Act out or construct simple diagrams that show simple food webs.
- Use information about a food web to determine how basic needs are met by the habitat or environment.

Science processes to be integrated

- Create graphic and kinesthetic representations that illustrate relationships within a system.
- Describe interactions and patterns of change within a system.
- Use information to draw conclusions about relationships within a system.

Essential questions

- How do organisms meet their needs in their environment?
- In what ways do organisms depend on one another in order to survive?

Written Curriculum

Grade-Span Expectations

LS2 - Matter cycles and energy flows through an ecosystem.

LS2 (K-4) SAE –6

Describe ways plants and animals depend on each other (e.g., shelter, nesting, food).

LS2 (K-2)–6 Students demonstrate an understanding of food webs in an ecosystem by ...

6a acting out or constructing simple diagrams (pictures or words) that shows a simple food web.

6b using information about a simple food web to determine how basic needs (e.g. shelter and water) are met by the habitat/environment.

Clarifying the Standards

Prior Learning

Students in kindergarten and first grade demonstrated an understanding of energy flow in an ecosystem by caring for plants and animals by identifying and providing for their needs, and by experimenting with a plant’s growth under different conditions, including light and no light.

Current Learning

At the developmental level to the reinforcement level of instruction, second-grade students act out or construct simple diagrams (pictures and/or words) that show a simple food web, and they use information about a simple food web to determine how basic needs (e.g., shelter and water) are met by the habitat/environment.

During this unit of study, students can engage in the following sample activities.

- Make models of simple food chains. (It is easier for second-grade students to start with understanding a food chain before being introduced to simple food webs, which are more complex.)
- When given pictures of the various links of a food chain, students sequence them in the correct order.
- Working in groups of five, students use index cards—each illustrated with a different picture of an organism in a food chain (e.g., grass, grasshopper, frog, snake, hawk). Students arrange themselves in order to create a food chain. Then, one group member is removed from the food chain, and students explain the effect this might have on the organisms that remain in the food chain.
- When given pictures of the various links of a food web, students sequence them in the correct order.

Future Learning

The content in this unit of study is not addressed in grade 3.

In grade 4, students will demonstrate an understanding of energy flow in an ecosystem by identifying sources of energy for survival of organisms. They will demonstrate an understanding of food webs in an ecosystem by demonstrating in a food web that all animals' food begins with the sun. Students will also use information about organisms to design a habitat and explain how the habitat provides for the needs of the organisms that live there. They will also explain the way that plants and animals in that habitat depend on each other.

Additional Findings

According to the *National Science Education Standards*, young children think of animals as pets or creatures in a zoo. The idea that organisms depend on their environment and on other organisms within that environment is not well developed in young children. The focus should be on associating animals with their environments, animal dependence on the environment, behaviors that help them survive, and the food link between organisms (p. 128).

A fundamental concept for this unit is that all animals depend on plants to survive. Students should know that some animals eat plants and others eat animals that have eaten the plants. Lower elementary students are easily able to understand the food link between two organisms. Organisms have basic needs and can only survive in environments in which their basic needs are met. The world has many different environments and certain environments support the life of certain organisms. Making sense of the way organisms live in their habitats will develop understanding of the diversity of life and how all living organisms depend on living and nonliving components for survival. (*National Science Education Standards*, p. 129)

According to *Making Sense of Secondary Science*, most children recognize that plants need soil, water, and sunlight in their habitat. However, students do not always understand the need for air, oxygen, or carbon dioxide by plants. Many children identify food and shelter links between organisms in terms of the needs of individual organisms rather than populations. Many students seemed unable to think of organisms and their environments without human involvement, and younger children often have the misconception that all organisms are fed by humans (p. 63).

Every species is linked either directly or indirectly to a multitude of other species in an ecosystem. (*Atlas of Science Literacy, Volume 2*, p. 32) Two commonly confused concepts associated with this unit are food chains and food webs. A food chain is linear representation of a series of organisms each dependent on the next as a source of food. A food web shows the interlocking connections between and among organisms to illustrate species interdependence. Young children should be aware of the basic parts of a food chain: plants need sunlight to grow (though seeds can germinate without light); plants are eaten by animals, and animals are eaten by other animals. The concept of plants producing their own food (photosynthesis) is very difficult for elementary students to comprehend and should be reserved for middle school instruction. Since food webs are often confused with food chains at this grade level, it is crucial to provide multiple experiences with simple food webs. Visits to habitats, creating visual representations with photographs and yarn, and explicit whole class instruction are suggestions to facilitate understanding. Ideally, students should investigate the habitats of many different kinds of local plants and animals and the ways these organisms depend on each other (*Benchmarks for Science Literacy*, p. 116).

Notes About Resources and Materials

Materials:

- Pictures of plants and animals from a particular food web

Trade Books:

- Lauber, P. (1994). *Who Eats What? Food Chains and Food Webs*. New York: Harper Collins.
- Relf, P. (1996). *The Magic School Bus Gets Eaten: A Book About Food Chains*. New York: Harper Collins.
- Kalman, B., Crossingham, J. (2005). *Seashore Food Chains*. New York: Crabtree Publishing Co.
- Kalman, B. (2005). *Food Chains and You*. New York: Crabtree Publishing Co.
- Riley, P. (1998). *Food Chains* (Straightforward Science). CT Grolier Publishing Co.
- Hauth, K. (2001). *What's for Dinner? Quirky, Squirmy Poems from the Animal World*. MA: Charlesbridge Publishing Co.
- Franco B., & Vitale S. (2009). *Pond Circle*. McElderry Books Publisher.
- Pennypacker, S. (2009). *Sparrow Girl*. New York. Disney – Hyperion Books.
- George, J. C., Minor, W. (2008). *The Wolves are Back*. Penguin Young Readers Group Publisher.

Video

- “Eat and Be Eaten: Food Chains” Children’s Television Workshop
- <http://magma.nationalgeographic.com/ngexplorer/0309/quickflicks/>

Websites

- Discovery Education website
- Kidsknowit.com
- Videos.howstuffworks.com
- [Magma.nationalgeographic.com/ngexplorer/0309/quickflicks/](http://magma.nationalgeographic.com/ngexplorer/0309/quickflicks/)
- <http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm>

Grade 2 Science, Quarter 4, Unit 4.2
Human Traits

Overview

Number of instructional days: 5 (1 day = 40 minutes)

Content to be learned

- Observe, identify, and record external features of humans and other animals.
- Identify the senses needed to meet survival needs for a given situation.
- Observe and compare physical features with those of parents, classmates, and other organisms.
- Identify that some behaviors are learned.

Science processes to be integrated

- Observe, identify, compare, and record external features of organisms.
- Observe and describe behaviors of organisms.

Essential questions

- How do external features help humans survive?
- How do your features compare with those of other animals?
- What are some similarities and differences between you and your parents? What about between you and your classmates?
- What are some behaviors you have learned? Describe how and why you learned those behaviors.

Written Curriculum

Grade-Span Expectations

LS 4 - Humans are similar to other species in many ways, and yet are unique among Earth’s life forms.

LS4 (K-4) FAF -8

Identify what the physical structures of humans do (e.g., sense organs – eyes, ears, skin, etc.) or compare physical structures of humans to similar structures of animals.

LS4 (K-2)-8 Students demonstrate an understanding of human body systems by ...

8b observing, identifying, and recording external features of humans and other animals.

8c identifying the senses needed to meet survival needs for a given situation.

LS4 (K-4) POC -9

Distinguish between characteristics of humans that are inherited from parents (i.e., hair color, height, skin color, eye color) and others that are learned (e.g., riding a bike, singing a song, playing a game, reading).

LS4 (K-2) –9 Students demonstrate an understanding of human heredity by ...

9a observing and comparing their physical features with those of parents, classmates and other organisms.

9b identifying that some behaviors are learned.

Clarifying the Standards

Prior Learning

In kindergarten, students identified the five senses and used the senses to identify objects in the environment. In first grade, students observed, identified, and recorded the external features of humans, and they observed and compared their physical features with those of their parents and classmates.

Current Learning

At the reinforcement level of instruction, students in grade 2 observe, identify, and record the external features of humans and other animals, and they observe and compare their physical features with those of parents, classmates, and other organisms.

At the developmental level of instruction, students in grade 2 identify the senses needed to meet survival needs for a given situation. They also identify that some behaviors are learned.

During this unit of study, students can engage in the following sample activities.

- Using a chart, students observe and record their own external physical features.
- Using a chart or table, students observe and record the similarities and differences between themselves and their classmates and parents.
- Using a chart or table, students observe and record the similarities and differences between humans and two animals (e.g., pictures of a dog and an ant).
- Through a class discussion and using a chart, students brainstorm how humans and animals use their senses to meet their survival needs.
- Students identify and generate a list of behaviors that are learned from parents and other people. Then students discuss each behavior, explaining how they know that a behavior is learned, as well as how and why it was learned.

Future Learning

The content in this unit of study is not addressed in grade 3.

In grade 4, students will demonstrate an understanding of human body systems by showing connections between external and internal body structures (i.e., organs and systems) and how they help humans survive. Students will also compare and analyze external features and characteristics of humans and other animals. They will demonstrate an understanding of human heredity by identifying similarities that are inherited from a biological parent and by identifying that some behaviors are learned while others are instinctive.

Additional Findings

In grades K–2, children should be finding out about themselves and other animals, developing ideas about how people and other animals live, grow, feed, move, and use their senses. They should concentrate mainly on external features. They may be able to identify some major internal organs and have simple views of their functions, but those should not be emphasized. Young children should also explore similarities and differences among humans and between humans and other animals. This will help them to see where animal classification is usefully applied to people and where it is not. (*Benchmarks for Science Literacy*, p. 128)

Young children should know that people need water, food, and air, waste removal, and a particular range of temperatures in their environment for survival, just as other animals do. People have different external features, such as the size, shape, and color of hair, skin, and eyes, but they are more like one another than like animals. In addition, people tend to live in families and communities in which individuals have different roles. (*Benchmarks*, p. 128)

Primary students think that each organ has its own independent function. The eyes are for seeing, the brain is for thinking, the stomach is for digesting food, and so forth. Only later will students learn how organs work in coordinated ways to make system. Young children can understand that the human body has parts that help it seek, find, and take in food when hungry—eyes and noses for detecting food, legs to get to it, arms to carry it away, and a mouth to eat it. In addition, the senses warn us about danger, and muscles help us to fight, hide, or get out of danger (*Benchmarks*, p. 136).

By the end of second grade, students should know that different senses give different information and that humans use their senses to learn about themselves and their physical surroundings. Sometimes a person can get different information about the same thing by moving closer to it or further away from it. Some of the things people do, like playing soccer, reading, and writing, must be deliberately learned. Practicing helps people to improve. How well one learns can depend on how one does it and how often and how hard one tries to learn. In addition, people can learn from each other by telling and listening, showing and watching, and imitating others (*Benchmarks*, p. 140).

Notes About Resources and Materials

Books

- Aiki. (1989). *My Five Senses*. New York: Harper Collins.
- Cole, J. (1999). *The Magic School Bus Explores the Senses*. New York: Scholastic.
- Treays, R. (2004). *Understanding your Senses*. Eveleth, MN: Usborne Books.