

Exploring Interdependence



Grades: 1-5

TEKS:

1: 2A, 9C

2: 1A, 9A, 9C

3: 2A, 9B

4: 2A, 9A, 9B

5: 2B, 9B, 9C

Topics:

Adaptations

Basic Needs

Food Chains/Webs

Habitats and Ecosystems

Interdependence

Methodologies:

Critical Thinking

Poster/Visual Aid

Setting: Classroom

Activity Time: 30 - 45 minutes

Objective:

Students will compare and give examples of ways living organisms depend on each other for their basic needs and survival. Students will create a simple food chain.

Materials:

Provided

PowerPoint

Food Chain cards

Not Provided

Manila paper

Chart paper or dry-erase board

Crayons

Glue

Vocabulary:

adapt, basic needs, carnivore, consumer, food chain, interdependence, omnivore, photosynthesis, producer, shelter, survive, symbiosis



Exploring Interdependence

Background:

All living things depend upon other living things to survive. This is known as interdependence. For example, animals need plants for shelter, such as nests and trees. In turn, plants help keep animals safe. Leaves protect animals from rainy weather and the heat of the sun. Leaves also help animals hide from larger animals. These interactions help living things meet their basic needs of food, water, shelter, air, and space. In addition, living things have adaptations or special body parts to help them meet their basic needs.

A food chain is identified as the path of energy transferred from one organism to another within an ecosystem. The path of energy begins with the sun. The energy path models the interdependence among living things within the chain. If a part of the food chain is broken, every other part of the chain is affected. As a result, living things may be forced to move to other locations or some may perish.

Activity Preparation:

- Print a copy of the food chain cards for each pair of students.

Procedure:

Discussion

1. Use the provided PowerPoint to introduce the following vocabulary words to students: shelter, basic needs, interdependence, and survive.
2. Show slide 1, and ask students why the bird is in the tree. Introduce the word “shelter” as something that provides cover or protection for organisms or living things. Connect shelter to the fact that people live in houses or apartments and that lizards live in between rocks and shrubs. Explain to students that some birds depend on trees for shelter and sometimes food. Some trees need birds to keep them free of insect pests and spread seeds.

For older students, explain that living things’ dependence upon one another creates a relationship known as symbiosis. In this type of relationship, one or both species may benefit. A more specific example of a symbiotic relationship is known as mutualism. In this relationship both species benefit.

3. Ask students how they depend on their homes for shelter. This should lead to a discussion about basic needs and survival. Ask students what they need to survive or to live. *Basic needs of food, water, shelter, and space.* Introduce the word “interdependence” by explaining that it occurs when different living things depend on or count on each other to survive.
4. Initiate a discussion about the interdependence that exists between plants and animals on the second slide of the PowerPoint. Ask students the following questions.
 - How do the rabbits and the grass depend on each other? *The rabbits get food from the grass and the grass gets nutrients from the rabbit’s feces.*
 - How do the squirrel and the tree depend on each other? *The squirrel uses the tree as shelter, possibly from the fox, and some trees provide food. Oak trees produce acorns, which squirrels sometimes bury to consume later, but they will forget some, which can grow into new trees.*

- How do the bird and the tree depend on each other? *The tree provides shelter for the bird and its eggs. The bird removes dead leaves and twigs from the tree to build a nest. The bird removes seeds from the tree to consume or will drop seeds which can grow into new trees.*
- To connect adaptations, ask students what structure or body part the squirrel has to help him climb a tree. Ask what adaptation the bird has to be able to fly, etc.

5. Ask the students, “How do you get energy?”
6. Record student responses on chart paper or a dry-erase board. Make sure the students understand that they get energy from food, as you introduce the word “energy.”
7. Ask the students where plants get food or energy. Expect answers such as water and soil. Explain to students that plants make their food using energy from the sun through a process called photosynthesis. Slide 3 of the PowerPoint is a simple illustration of photosynthesis.
8. Ask students where animals get their food or energy. Make sure they understand that animals, including humans, get their food from other living things. Food gives them energy.

Activity

1. Instruct students to create a simple food chain, using the Food Chain Cards. Inform students that there are two complete chains, with four items in each chain.
 - sun → sunflower → bird → snake
 - sun → fern → rabbit → coyote
2. Instruct students to place their items in the order of the flow of energy.
3. Ask students to pretend that the bird or the rabbit disappeared from the food chain. *What might happen to the snake or the coyote?*
4. Next, instruct them to paste their pictures on a piece of Manila paper or in their science journal.
5. Instruct students to draw arrows to connect pictures. Ask them to label plants as producers and animals as consumers.
6. Provide students with paper or instruct them to use their journals. Use slides 4 and 5 of the PowerPoint to guide students. Tell students that they are going to draw a simple food chain to show how energy passes from one living thing to another.
7. Ask students to draw a picture that includes the sun and a plant. Explain to students that scientists refer to plants as “producers.”
8. Next, instruct students to draw an arrow from the sun to the plant. Explain that the arrow is showing the sun giving energy or food to the plant. Point out to students that plants or producers depend on the sun’s energy to stay alive, or survive.
9. Next, instruct the students to draw a picture of an animal that eats plants. Explain that scientists refer to animals that eat plants as primary “consumers.” Instruct students to draw an arrow from the plant to the animal, showing that the plant is giving energy or food to the animal. Point out to students that animals, or consumers, depend on plants as food to survive.

10. Students may wish to add more consumers. If so, introduce secondary consumers as organisms that eat primary consumers for energy. These consumers may be omnivores (consumers that eat plants and meat) or carnivores (consumers that eat mostly meat).
11. Instruct students to take turns explaining to another student how their food chains show interdependence as an important way to stay alive.

Wrap-up

1. Ask students what might happen if one part of their food chain disappeared. *What would happen to the other parts of the chain?*
2. Ask students if they know what a steward is. Explain that it is a person who is responsible for protecting and caring for something. Ask students to imagine that they are one of the animals from your food chain. *What would you ask humans to do to protect you and your shelter?*
3. Explain to students that everyone is responsible for taking care of land and wildlife. *Ask students how a break in a food chain could have an effect on the land.*
4. Slides 6 and 7 of the PowerPoint to provide a review. Allow students to take turns reading the information on each of the slides.

Extension

Take the class on a walk around the schoolyard and look for evidence of interdependence among living things.

Have older students compare a food chain to a food web.