National Park Service
U.S. Department of the Interior

Zion National Park

Living and Non-Living

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Living and non-living things co-exist together to create healthy habitats.

Core Connections

Utah Core Curriculum
Third Grade Science

Standard 2: Students will understand that organisms depend on living and nonliving things within their environment.

Objective 1: Classify living and nonliving things in an environment.

Objective 2: Describe the interactions between living and nonliving things in a small environment.

Introduction

This guide contains background information about the differences and roles of living and non-living things, and directions for three activities that will help students better understand how living and non-living things both have important roles in places such as Zion National park. This guide is specifically designed for third grade classrooms, but the activities can be modified for students at other levels.

Theme

Living and non-living things may have very different characteristics, but they rely on each other and both are important to habitats.

Focus

The relationship between living and non-living things in a habitat.

Activities

Living or Non-Living?

By classifying things found in a classroom, students will learn to identify living versus non-living things.

Everything Is Connected

By taking on the roles of producers, herbivores, carnivores, omnivores and non-living things in a habitat, students will create a food web to see the role of living and non-living things in a habitat.

Living or Non-living Lapsit

Students form an interconnected circle to demonstrate habitat components and the impacts of change to the habitat by non-living things.

Background

Life thrives on Earth as plants, animals, and other living things such as bacteria and fungi in a variety of natural habitats on land and in water.

The natural world supplies habitats, or homes, for living things. A natural habitat is the place where a population (e.g., human, animal, plant, microorganism) lives and its surroundings, both living and non-living.

Non-living things are inanimate objects or forces with the ability to influence, shape, alter a habitat, and impact its life. Some examples of non-living things include rocks, water, weather, climate, and natural events such as rockfalls or earthquakes.

Living things are defined by a set of characteristics including the ability to reproduce, grow, move, breathe, adapt or respond to their environment. Living things also all need food and water and have one or more cells.

Living or Non-Living?

Duration
45 minutes

Location
Indoors

Key Vocabulary
living, non-living

Objectives
After this activity, students will be able to classify living and non-living things.

Method
By classifying things found in a classroom, students will learn to identify living versus non-living things.

Background
Living things have very specific characteristics. All living things need FOOD, water, reproduce, grow, move, breathe, adapt or respond to their environment, and produce waste, though they do these things in very different ways. Living things also include dead organisms that used to be alive such as dead trees and fossils.

Materials
- paper and pencils for each student

Suggested Procedures
1. Divide students into four groups. Send each group to one quadrant of the classroom. Have the kids fold the paper in thirds, then in half.

2. Ask the students to pick three things in their section of the classroom that illustrate or represent a living or non-living thing. It could be a person, picture, object, or a word. Then have them draw one item in each of the top sections of the folded paper. One thing should be smaller than a penny, one larger than a dog and one in between. Have them write what it is and whether it is living or non-living.

3. Have students share what they drew or described. Have students help group all the items as either living or non-living and list the items on the board

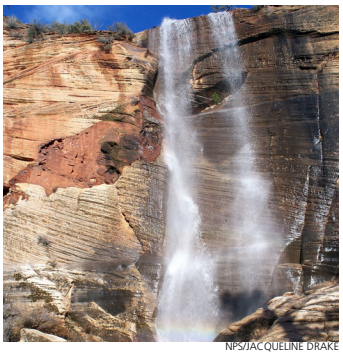
4. Have students help brainstorm the characteristics of each group and what makes a living thing living. All plants and animals are living because they can grow and reproduce, need food, water, and air, move and respond or adapt to their environment.

Evaluation
Ask students whether they think a river is living or not and discuss why it is non-living.

NPS/CAITLIN CECI

The Zion shooting star is a living thing, one of more than 900 species of plants in Zion National Park.


NPS/BRYANNA PLOG


NPS/JACQUELINE DRAKE


NPS/MARC NEIDIG

Sun and water are two important non-living components to any habitat, while plants are an integral living component.

Everything is Connected

Duration
45 minutes

Location
Indoors or outdoors in an area with enough space for the students to stand in a semi-circle

Key Vocabulary
carnivore, food chain, habitat, herbivore, living, non-living, omnivore, producer

Objectives
After this activity, students will be able to a) describe a simple food chain, b) name at least one producer, one herbivore, one omnivore, and one carnivore, and c) name one non–living thing and discuss how it affects its habitat.

Method
By taking on the roles of producers, herbivores, carnivores, omnivores, and non-living things in a habitat, students will create a food chain to better understand habitat connections.

Background
Everything in the natural world is connected in a web of life.

Our sun is the initial source of heat and energy for our planet and the life that thrives on it. Solar energy is used to support the life of producers, species such as plants that produce their own food from sunlight through the process of photosynthesis. In turn, producers may be consumed by herbivores (plant eaters). Carnivores (meat eaters), in turn, may eat herbivores. Omnivores consume both plants and animals.

Non-living things, such as rocks, rivers, waterfalls, rockfalls, weather, fire, and pollution influence a habitat positively or negatively. The web of life is created by relationships not only between living things, but also between living and non-living things.

Materials
- Everything is Connected Images
- yellow ball
- string
- paper and pencils for each student

Suggested Procedures
1. Print and cut out the image cards. Inform students they are going to make a food chain. The class will be adding different components to make up the food chain. After each, ask if that component is living or non-living.

2. Attach the string to the ball and place the yellow ball, which represents the sun, in a tree or have a volunteer hold it. The string from the ball represents the energy from sun to Earth.

3. Pass out one image to each student. Ask those who think they are producers, who get energy directly from the sun, to stand up. Briefly discuss each of their images, and have the group confirm that each organism is a producer. As each is confirmed, have them line up next to the sun, hold onto the string (energy) from the sun, and hold up their images.

4. Repeat the exercise with herbivores, omnivores, and carnivores, and discuss the differences. Have students make a half circle for best group viewing.

5. The students left sitting should be holding cards for non-living things. Have this group stand up across from the others and discuss why these things are non-living and why they don't rely on energy to exist (whether from the sun or another food source further along the food web).

6. Have students go back to their desks. Tell the students that non-living things and events can change a habitat. As an example, ask the students to think of something that might affect everything in a desert habitat (drought, flood, pollution, etc.). Explain how a flash flood can occur when a large amount of rainfall occurs in an area.

7. Have students use their carnivore, herbivore, omnivore, producer, or non-living object cards to see how their part of the habitat might be affected by a flash flood. They should discuss their predictions with their group. Remind them to think of the food web they created earlier.

8. Ask students to predict how flood effects could be carried up the food chain. Start by having the group of non-living things share their thoughts on what would happen to them in a flood. Have the producers, herbivores, omnivores, and carnivores share their thoughts. Have each group present their questions and predictions. Discuss how they could confirm their predictions.

NPS/BRYANNA PLOG

Flash floods, caused by heavy rains and/or snow melt, are both a destructive and important part of how Zion's habitats are shaped.

Living or Non-Living Lapsit

Duration
25 minutes

Location
Classroom with a cleared space or outdoors

Key Vocabulary
drought, food, habitat, interdependence, shelter, space, suitable arrangement, pollution, water

Objectives
After completing this activity, students will be able to: a) identify habitat components, b) recognize how humans and other animals depend on habitats, and c) understand that loss or change in habitat may impact people and wildlife.

Method
Students form an interconnected circle to demonstrate habitat components and the impacts of change to the habitat.

Background
People and other animals share basic needs. Every animal needs a place to live and this place is called a habitat. A habitat includes food, water, shelter, and space combined in a suitable arrangement to meet the animal's needs. An animal will be affected if any of their habitat components are missing or adversely affected by an arrangement of components unsuitable for the animal.

Natural events like disease, drought, or flash floods cause changes to habitats. Human actions create changes as well, for example, pollution, construction, and use of pesticides and herbicides. Changes to one part of the habitat can impact other parts because everything is interconnected and related. Interrelations between plants, animals, non-living things and their surroundings are important to the survival of all life forms.

Materials
None

Suggested Procedure

1. Have students form a circle, standing shoulder to shoulder. Ask each student to name one of the four habitat components (food, water, shelter, and space), continue around the circle until every student has said one component. These components will be their roles in the rest of the activity.

2. Ask students to turn right so that they face the back of the student in front of them. Then have everyone take one step in towards the center of the circle. They should all be standing quite close together.

3. Ask everyone to place their hands on the shoulders of the person in front of them. On the count of three, have the students sit down slowly on the knees of the student behind them, keeping their own knees together to support the person in front of them. Point out to them that all the components of a habitat, represented by the students, have now been put together in a proper arrangement where everything is interconnected, i.e., the linked lapsit circle in which they are now sitting. Discuss how each component is important to habitat stability and whether it is living or non-living.

4. Repeat the activity. Once everyone is in the lapsit position, call on all the students that represent water. Explain that this is a drought year. Say "water is reduced in the habitat by drought conditions." Now have students representing water remove themselves from the lapsit circle. At this point, the circle will either collapse or suffer disruption. The balance is lost.

5. Now have the remaining students reform the lapsit circle. After the circle has been reformed have water students play the role of a flash flood. Have them try, as a group, to create an opening and work their way back into the circle. This should not be easy, but the stability of the lap sit circle should be lost again.

6. Discuss with the students other ways that habitat stability might be disrupted. What natural events in addition to droughts or flash floods may impact survival? Talk about rockfalls, road construction, development, water pollution, storms, and weather.

Glossary

carnivore: any animal that consumes other animals.

components: an element or ingredient .

drought: a long period of dry weather; lack of rain.

elevation: height above a surface, such as the earth.

environment: the surroundings or conditions in which a person, animal or plant lives.

food: any substance taken in by a plant or animal to keep it alive and help it grow.

food chain: a sequence of organisms in which each member feeds on the one below it, for example: grass, rabbit, fox.

food web: all the individual food chains in a community.

habitat: the region where a plant or animal naturally grows or lives.

herbivore: an animal that feeds on grass and other plants.

inanimate: non-moving; lifeless.

interaction: action on each other; the process of interacting.

interdependence: depending on each other

interrelations: mutual relationship; interconnection.

living: a plant, animal, or other organism that can move, reproduce, grow, and respond to its environment. Living things also need air and food and water to survive.

metabolized: substances are broken down to make energy necessary for life.

microhabitat: a habitat which is small and different from its surrounding habitat, such as a seep or spring.

microorganism: an organism so small it can only be seen with a microscope, such as bacteria or algae.

mountain: a natural raised part of the earth's surface, generally has steep sides and is larger than a hill.

non-living: something that cannot move, reproduce, or grow and is inanimate.

nourishing: food or other substances necessary for life or growth.

observe: to watch closely.

omnivore: an animal or person that eats both plants and animals.

organism: an individual form of life, such as a plant, animal or bacterium.

photosynthesis: process by which green plants use sunlight to make food using carbon dioxide and water.

pollution: a poisonous or harmful substance in the air, soil or water.

population: all the individuals of a particular town, area or country.

producer: an organism that is able to produce its own food using photosynthesis; that is using the energy of the sun, carbon dioxide and water to produce sugars.

shelter: something that covers or protects.

small-scale: limited or small size.

space: a continuous area that is free, available or unoccupied; an area provided for a particular purpose.

species: a kind, variety or type, for example, a type or species of bear is a black bear.

suitable arrangement: good amounts of food, water, shelter and space so an animal can survive.

survive: to remain alive; outlive.

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