

Outdoor Science! Week 1: Grades K-2

Day	Topics	Related Standards
1	Investigating Living vs Non-Living	<u>Observe, ask questions, and explain</u> the differences between the characteristics of living and non-living things.
2	Investigating Energy Distribution	<u>Develop a model</u> representing how life on Earth depends on energy from the Sun and energy from other organisms.
3	Investigating Plant and Animal Structures	<u>Observe, ask questions, and explain</u> how specialized structures found on a variety of plants and animals (including humans) help them sense and respond to their environment.
4	Investigating Growth and Survival	<u>Develop and use models</u> about how living things use resources to grow and survive.
5	Investigating Organism Resources	<u>Obtain, analyze, and communicate</u> evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.

Outdoor Science! Week 1

Day 1: Investigating Living vs Non-living

Teacher/Parent Background

Young learners often have difficulty characterizing things as living or non-living. For example, they tend to describe anything that moves as alive. They also do not yet understand the cycle of life (birth, growth, death), and therefore classify as non-living anything that has died. In science, *living* is used to describe anything that *is or has ever been alive* (dog, flower, seed, road kill, log); *non-living* is used to describe anything that *is not now nor has ever been alive* (rock, mountain, glass, wristwatch).

Overview:

In this activity, students learn about the characteristics that distinguish living things from non-living things. By taking a walk around the house and backyard, students will document characteristics of a variety of objects and organisms. From there, students will be able to determine what is living vs non-living.

Related Standards

- Observe, ask questions, and explain the differences between the characteristics of living and non-living things.

Key Terms

- Living
- Non-Living
- Organism
- Nutrients

Materials List

- Pencil
- Parental/adult supervision
- Safe, outdoor areas
 - Frontyard, backyard, neighborhood sidewalks, nearby field or park, etc.
- Journal
- Colored pencils/crayons
- Computer/phone with audio - optional for *Extension* resource

Activity Description

1. Ask your students to name one living thing and one non-living thing. Write all their contributions below, or on your own piece of paper.

Living	Non-living

2. Tell students that they will be studying living things, or organisms. Have students reflect on the list of organisms they generated and think about all the features that make organisms "alive." Have them brainstorm answers to these questions:

- *What are some characteristics of living things?*
- *What are some characteristics of non-living things?*
- *What makes living things different from non-living things?*

If your students are not reading or writing yet, use pictures or symbols to represent written text.

Write all ideas down. This student-generated list can be used as a reflection tool throughout the unit. **Avoid telling students the correct answers.**

3. Explain to students the scientific definition of *living* (anything that is or has ever been alive) and *non-living* (anything that is not now nor has ever been alive). Remember that the difference between non-living and dead can be confusing to young learners. Give an example of something that is dead but still classified as living, such as a log. Use the image below to assist:



5. After the characteristics have been established, determine a few objects or organisms around the house or outside to document. Using the table, check the boxes that apply to determine if it's living or non-living. See the examples in the tables. To simplify the task of recording their observations, young students can draw pictures or use symbols to represent the things they examine.

- *You may want to choose one example and model the process of scientific inquiry for students. Ask questions (Does this example reproduce? Does it grow?), make observations (The river is definitely moving.), and carefully record the results. Point out the importance of thinking like a scientist.*

As students explore the examples, they may discover other characteristics of life they hadn't thought of earlier. Encourage them to add these characteristics to the chart.

Closure

6. Have students reflect on their findings by discussing the following questions:

- *What characteristics did ALL of the living things have in common?*
- *Did any non-living things possess some of the same characteristics as living things? Which ones?*
- *How were the living things different from the non-living things?*

7. Assess students' understanding (and identify possible misconceptions) by asking:

- *Are all things that move "alive"? Have them defend their ideas by referring to the results of their explorations.*
- *What kinds of non-living things move?*

Extension:

[Generation Genius Video](#)

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Day 2: Investigating Energy Distribution

Teacher/Parent Background:

All living things need food as their source of energy as well as air, water, and certain temperature conditions. Plants containing chlorophyll can use sunlight to make the food they need and can store food that they do not immediately use

All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Overview

In this activity, students will discover food chains and food webs and explore the differences between the two. Through exploration students will do a card sort activity that helps identify the process of a food web and how many organisms have food paths that cross to create a food web.

Related Standards

- Develop a model representing how life on Earth depends on energy from the Sun and energy from other organisms.

Key Terms

- Nutrients
- Energy
- Food Chain
- Food Web
- Herbivore
- Carnivore
- Omnivore

Materials List

- Pencil
- Journal
- Card sort (See activity below)
- Paper

Activity Description

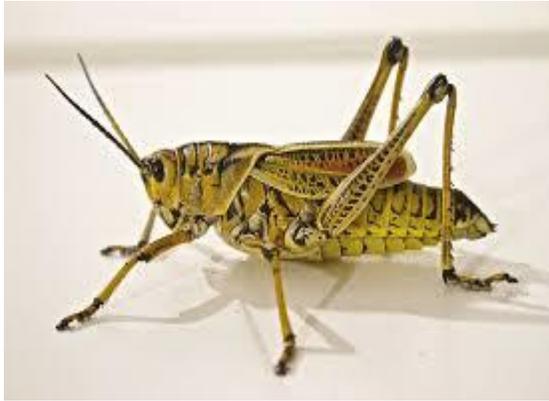
- With your students, brainstorm a list below of what plants and animals need to survive.
 - Ask the students if they believe the plants and animal survival depend on one another?

	Plants	Animals
What they need to survive		

- Card sort activity. Using the images below, prompt students to arrange the cards in the order they believe a food chain should go.
 - Ask the students why there may be more than one card of something? Can one thing consume another in order to get energy?
 - Ask the students to identify what is the predator and prey

Food Chain Energy Cards

	
<p style="text-align: center;">Sun</p>	<p style="text-align: center;">Grass</p>



Grasshopper



Snake



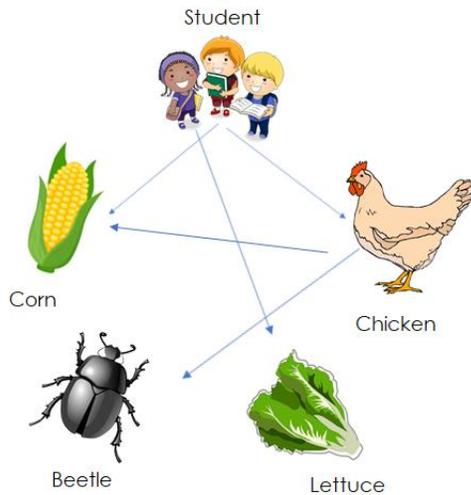
Fox



Coyote

3. Activity: A Food Web for Lunch. After understanding how a food chain works, ask the student what they are having for lunch. Next, have them

draw what they are having for lunch, and draw lines to the points they think are connected. See below for an example:



- Be sure to ask the students to make connections between a food chain and a food web, and to articulate the differences.
- Ask the student, "are you and omnivore, carnivore, or herbivore?" "Have them explain why."

Closure

4. To see what the children understood from the lesson, ask them to open their journals and use their pictures to draw and sketch out a model of a food chain. Allow them time to complete their sketches. While they are busy

working, circulate throughout the room observing the models in action.

Extension

BrainPop Jr: [Food Chain](#)

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4	Investigating Growth and Survival	<u>Develop and use models</u> about how living things use resources to grow and survive.
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Day 3: Investigating Plant and Animal Structures

Teacher/Parent Background

Living things have certain *structures*, or body parts that serve a purpose/help accomplish a “job” or *function*. These structures can either be found inside the bodies of living things, called ***internal structures***, or found outside the bodies of living things, called ***external structures***. Students will observe examples of flora (plants) and fauna (animals) in which they share a habitat with! It is easier for young learners to understand how fauna gather resources, they use their arms, legs, and/or wings to move and collect them. Flora are a bit more complicated for young learners, as they do not (noticeably) move and it is easy to think that they “do nothing”.

Overview

In this activity, students will make connections to various internal and external structures of flora and fauna and how these structures aid in carrying out necessary life functions. Through digital resources, students will be able to closely observe crucial structures of the flora and fauna in their very own urban habitat!

Related Standards

- Observe, ask questions, and explain how specialized structures found on a variety of plants and animals (including humans) help them sense and respond to their environment.

Key Terms

- Structure - something that is made up of parts that are connected in a certain way
- Function - a purpose for a specific need/job
- Internal structure - structures found on the inside of living things
- External structure - structures found on the outside of living things

Materials List

- Internet access
- *Urban/Desert Flora & Fauna Pictures & Videos* - included in the *Activity Description* section
- Computer/phone with audio
- Journal
- Pen/pencil
- Colored pencils/crayons

Activity Description

1. Prompt students to review the plant and animal observations in their journals from *Day 1: Living vs. Non-living* and *Day 2: Investigation Energy Distribution*.
 - *What plants and animals did we observe on our tour? What did they look/act like?*
 - *What was their habitat like? How was their habitat supportive of their needs?*
 - *As we have seen, different habitats support the needs of certain types of plants and animals. But, how do these plants and animals survive in their supportive habitats? What about them/what do they do that helps them survive?*
 - *What kind of basic life functions (movement, growth, etc.) need to be carried out by the plants and animals we observed?*
 - *What kinds of internal and external structures do they have that help them carry out these functions?*
 - Prompt students to discuss and share ideas, referencing their recorded observations in journals.
2. To best help us identify the types of structures and functions of our habitat's plants and animals, let's take a closer look!
 - *Show students the Urban/Desert Plant and Animal Pictures & Videos below.*
 - *Prompt students to discuss and record in their journals the structures and functions they can observe in each picture and/or video and by referencing prior experiences.*
 - *Picture and video examples are as follows:*
 - **Dog** - uses legs to move/run, uses strong teeth to chew hard food, uses lungs to breath, etc.



- **Rose** - moves/bends towards sunlight to grow/make food, uses stem to transport water, uses roots to soak up water, etc.



- [Parts of a Plant](#)
 - *BrainPOP jr Resource: Request **free** access during the school closure period using this [link](#).*
- [Plant Time-Lapse Bending Towards Light](#)
- [Bean Roots Time-Lapse Soil Cross Section](#)
- **Pigeon** - uses wings to move/fly, uses beak to pick up small pieces of food, uses lungs to breath, etc.



- **Cactus** - uses long roots that grow close to the surface to soak up water, uses stem to store water and grow/make food using sunlight, uses spines to protect itself from predators, etc.



- [Cactus Stem Structure & Function](#)
- **Grasshopper** - uses legs to move/jump, uses tong-like mouthpart to chew food like leaves, uses wings to move/fly, etc.



Closure

3. Based on our observations and picture/video evidence, it seems as though these plants and animals have internal and external structures that help them carry out basic life functions, like moving, growing, etc.! Let's continue these conversations by considering the following:

- *Do any of the plants and animals have similar structures? If so, what are the structures?*
- *Do these similar structures serve similar functions? If so, what are the functions?*
- *What would happen if these plants and animals did not have the structures they need to carry out basic life functions or if the structures were damaged?*

Extensions

Watch!

- National Geographic Kids - [Pigeon Genius](#)
- National Geographic Kids - [Dog Genius](#)
- National Geographic Kids - [Twisting Trees](#)

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Outdoor Science! Week 1

Day 4: Investigating Growth and Survival

Teacher/Parent Background

In order to survive, all living things need air, water, and food. Animals obtain their food from plants and other animals, which provides them with the energy they need to move and grow. An animal's home (habitat) must provide these basic needs (air, water and food) along with shelter from bad weather and predators.

Overview

In this activity, students will learn about plant and animal survival, and how they adapt to their habitat to help them meet their basic needs. After learning how different plants and animals adapt they will create their own “super human” with adaptations they learned about that will give them super powers.

Related Standards

- Develop and use models about how living things use resources to grow and survive.

Key Terms

- Adaptation
- Habitat

Materials List

- Journal
- Computer or tablet with internet access (for extension activities)
- Crayons, colored pencils, or markers

Activity Description

Activity 1: Name that Adaptation

1. Prompt learner to think about the last thing that they ate or drank and ask them the following questions:
 - *How did you get [food or drink]?*

- *How did you know where to find [food or drink]?*
 - *Why did you choose [food or drink] instead of something else?*
2. Refer back to students explorations of plant and animal structures. Using your knowledge about plant and animal structures, answer these same questions:
- *How does [plant or animal] get food and water?*
 - *How does [plant or animal] know where to get food and water?*
 - *Why does [plant or animal] eat this type of food and not something else?*
 - *How do living things survive besides eating and drinking?*
3. The strategy or way that living things survive in their habitat are their **ADAPTATIONS**. Adaptations can be structures, internal or external, or behaviors.
- *Look at the following animals below. How do you think they have adapted to their habitats and basic needs?*
 - *Can you spot where they might have adapted to survive against bigger and stronger organisms?*



Elephant



Scorpion



Cactus



Desert Horned Lizard

Activity 2: Design your SUPER Adapted Hero!



1. Explain to the student that adaptations are like the plants' and animals' super powers. Adaptations help them to survive.
 - Ask the learner, "If you could have any adaptation, what would you have? Why?"
2. Ask the student to brainstorm about super heroes.
 - What do you know?
 - How do their powers help people?
 - If you could be a superhero, what would your powers be?
3. In their journal, have the student work on a list of adaptations they would create for their own super hero.
 - As they brainstorm be sure to ask why they chose one thing over another.
 - Example" I noticed you chose fins as an adaptation for your superhero, why not _____?"
4. Next, have the student draw in their notebook using crayons, markers, or colored pencils an image of their own superhero.

Closure

Check for understanding by using their super hero to start the conversation about today lessons on survival and adaptations.

- How did your SUPER adapted super hero adapt to help people?
- What parts of your hero do you get ideas from plants or animals?
- How will their adaptation impact their environment?

Extension

Play and Learn!

- Arizona-Sonora Desert Museum's [Desert Animal Adaptations Game](#)

Read!

- We Can't All Be Rattlesnakes- Patrick Jennings

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Day 5: Investigating Organism Resources

Teacher/Parent Background

In order to survive, all living things need air, water, and food. Animals obtain their food from plants and other animals, which provides them with the energy they need to move and grow. An animal's home (habitat) must provide these basic needs (air, water and food) along with shelter from bad weather and predators.

Overview

In this activity, students will reflect on day 4 and learn about what animals and plants do and need to survive. Using outdoor materials such as leaves, rocks and sticks, young learners will construct their own small model of a shelter for a plant or animal of their choosing, taking into consideration their basic needs.

Related Standards

- Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.

Key Terms

- Predators
- Prey
- Desert
- Habitat
- Shelter

Materials List

- Computer or tablet with internet access and sound
- Sticks, rocks, leaves, or any other outdoor material found
- Journal

Activity Description

1. Review from the previous days what plants and animals need to survive.
 - *Be sure to ask them for specific examples*
2. Listen to [The Three Javelinas by Susan Lowell read aloud.](#)
 - *Ask the learner what they noticed about the three shelters.*
 - *What are some other ways animals use shelter or adaptations to survive?*
3. Brainstorm what kinds of materials they think they would need to create a shelter for a javelina.
4. Take a walk outside with your journal. Look at what resources are available outside on your walk. Collect anything you think would be useful for structure building later.
 - *Prompt the students to think about the story.*
 - *What materials do you see that are similar to the book?*
 - *What would you use to create your own shelter?*



5. After your walk outside, take some time to draw what a shelter for an animal looks like.
 - *What types of things do you need to use for your structure to make it strong?*
 - *How will they be close to the things they need to survive?*

Closure

Reflect

- *What types of things do you use for your structure to make it strong?*
- *How will the flora or fauna be close to the things they need to survive?*
- *If you could do this again, what would you change?*

Extension

- Watch and Learn! [3-2-Wonder: Animal Habitats](#)
- Read! *In the Tall, Tall, Grass*- Denise Fleming
- Play! [Animal Habitat Game](#)