

Animal Adaptations

Lesson Plans and Activities for your Classroom and
while Visiting the Zoo.





Animal Adaptations

“It is not the strongest species that survive, nor the most intelligent, but the ones most responsive to change.”

Subject

Science

Grade

4th -8th

Standards:

Key Idea 3: Individual organisms and species change over time.

Performance Indicator

3.1 Describe how the structures of plants and animals complement the environment of the plant or animal

3.1c In order to survive in their environment, plants and animals must be adapted to that environment.

3.2b All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing

Materials:

- * Pictures of animals with physical adaptations
- * Pictures of animals with behavioral adaptations
- * Worksheets for the stations

Overview:

This activity will help students recognize the many ways that plants and animals adapt to their environments. Students will explore how an animal’s environment affects the way they look, as well as identify challenges that they face. Students will also compare endangered or extinct animals with animals that are successful. In doing this, they will attempt to discern why certain animals thrive while others do not. This lesson can be done before your visit to the zoo and the Scavenger Hunt and Bingo can be used to enhance your zoo visit.

Objectives:

- ◆ Students will understand what an adaptation is.
- ◆ Students will know the difference between physical and behavioral adaptations.
- ◆ Students will understand factors that cause an animal to become endangered.
- ◆ Students will recognize and describe an animal’s adaptations.

Vocabulary:

Adaptation: a change or the process of change by which an organism becomes better suited to its environment

Physical adaptation: a physical feature of an organism that has changed over time

Camouflage: something (such as color or shape) that protects an animal from attack by making the animal difficult to see in the area around it

Mimicry: the superficial resemblance of two or more organisms that are not closely related

Behavioral adaptation: something an organism does to survive

Hibernation: when an animal spends the winter sleeping or resting

Migration: when an animal moves from one area to another at different times of the year.

Endangered: a species seriously at risk of extinction

Extinct: a species, family, or other larger group having no living members

Essential Questions:

Why do some organisms become endangered or extinct and others do not?

How does a particular environment affect how a species looks or acts?

Background

Plants and animals have lived in the wild for millions of years. In order to thrive, they developed specialized adaptations. **Adaptation** is a change or the process of change by which an organism becomes better suited to its environment. These adaptations can be physical or behavioral.

A **physical or structural adaptation** is a physical feature of an organism that has changed over time. Often these develop due to the environment of the animal. A bird has feathers to help it fly, bears have fur to keep them warm in the winter, and arctic marine mammals have blubber to keep them warm in the icy water. Camouflage and mimicry are other physical adaptations. These help animals blend in with their environment to avoid predators. A lizard's body can change color, a praying mantis looks like a leaf, and many butterflies blend in with the flowers or trees they land on.

A **behavioral adaptation** is something an organism does to survive. Animals do this as a reaction to the changes in climate in their environment. Bears, skunks, bats, and snakes will hibernate (go into a deep sleep) during the coldest months of the year. On the other hand, birds, deer, elk, and moose will migrate to warmer climates as the temperature. Nocturnal and diurnal are also examples of behavioral adaptations.

In a perfect world, animals would not need to adapt. However, with constant changes to their environment, food chain and climate, animals must adapt or face extinction. The problem is, adaptation is a very slow process and sometime the changes happen too rapidly for the species to adapt. Adapting too slowly does not always mean certain death. Some species can relocate, but due to habitat destruction and other factors, not all species can move. If a rodent lives on a mountain and warmer temperatures compel the animal to climb higher, it may run out of mountain while temperatures keep rising.

Classroom Activity

Discuss adaptations with your students. Show them pictures of animals with physical and behavioral adaptations. Divide students into pairs or small groups. Tell students they will work with a partner in different activity stations to further understand animal adaptations. Have the students bring a notebook and pencil to record their responses and observations to each activity.

Activity Stations:

Station #1-Compare/Contrast Adaptations

Students will look at five sets of photos of animals from the same families. They will compare and contrast the animals' adaptations. Ex: sea turtle and snapping turtle; pelican and albatross; frog and toad; gecko and lizard; etc.

Station #2-Behavioral or Structural Adaptation?

Students will divide pictures of animals into behavioral adaptation or structural adaptation. They will record responses in notebooks to justify why each animal was placed in each category. Ex.: bear, skunk, goose, rabbit, owl, hawk etc.

Station #3-Hibernate, Migrate, or Hang out?

Students will divide pictures of animals into the three categories of hibernate, migrate, or hang out. Ex.: bear, skunk, bat, goose, hummingbird, elk, deer, squirrel, etc.

Station #4-Camouflage or Mimicry?

Students will divide pictures of animals into categories of camouflage or mimicry and explain why those animals fall into each category. Ex.: butterfly, stick bug, owl, moth, etc.

Extension:

Have the students pick an animal and research it's habitat. What would happen if their habitat changes due to climate change or destruction? How could the animal adapt to survive in its new habitat? Could the animals move to another habitat?



Animal Adaptations

Subject

Science

Grade

2 - 6

Standards: (NGSS)

LS1.A: Structure and Function

All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air.

LS4.C: Adaptation

For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.

LS4.D: Biodiversity and Humans

Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

Materials:

Zoo Adaptation Hunt

Introducing the Topic – Pre Visit Activity

All animals live in habitats. Habitats provide the food, water and shelter which animals need to survive, but there is more to survival than just the habitat. Animals also depend on their physical features to help them obtain food, keep safe, build homes, withstand weather, and attract mates. These physical features are called physical adaptations.

To begin, write the word adaptation on the board. Ask the students to discuss what the word means. Define the word adaptation for the students, explaining to them that an adaptation is a type of “special feature” an animal has to help them eat, get around and protect themselves.

Together look at some pictures of a few animals and discuss the different adaptations they represent. As you look at the pictures create a chart of the animals, their adaptations, and how the adaptation is useful. Here are some examples:

Animal	Adaptation	How is it Useful?
Giraffe	Long neck	Can eat leaves in tall trees
Arctic Fox	Thick fur	Warmth
Porcupine	Sharp quills	Defense against predators
Camels	Store fat in humps	Food/water supply
Owls	Sharp talons	Catch their prey

At the Zoo Activity

While at the Zoo have students visit each exhibit and identify the animal in each exhibit.

Ask the students to closely observe the animals. See if the students can identify what type of physical adaptation the animal has. As the students go around the zoo have them work on the **At the Zoo Activity Sheet**. They will be going on an adaptation scavenger hunt throughout the zoo.



Name _____

Date _____

At the Zoo Activity Sheet

Animals come in all shapes and sizes, live in all types of habitats, and eat a variety of different foods. The special characteristics an animals has that helps them survive and thrive in their habitats are called *adaptations*. Some are *physical characteristics* such as the webbed feet of a duck. Other adaptations are *behavioral*, these are things the animals do. Migration is a good example of this (Chaperones: please guide students through activity as needed)

Find an animal adapted for:

Digging in the sand _____

Swinging quickly through trees _____

Catching insects and picking up seeds from the ground _____

Swimming fast through the water _____

Walking through deep sand _____

Running from predators _____

Leaping up and grabbing prey from the air _____

Stalking and ambushing prey _____

Eating bark, leaves and branches _____

Finding and eating decomposing animals _____

Killing prey with venom _____

Surviving desert droughts _____

Catching prey at night _____

Extension: Describe the adaptation and decide if it is a physical or behavioral. (A duck has webbed feet for swimming - physical adaptation)



The Story of Adaptations

“The Dog was wild, and the Horse was wild, and the Cow was wild, and the Sheep was wild, and the Pig was wild—as wild as wild could be—and they walked in the Wet Wild Woods by their wild lones. But the wildest of all the wild animals was the Cat. He walked by himself, and all places were alike to him.” Rudyard Kipling

Subject

Science

Grade

2nd-6th

Standards:

Key Idea 3: Individual organisms and species change over time.

Performance Indicator

3.1 Describe how the structures of plants and animals complement the environment of the plant or animal

3.1c In order to survive in their environment, plants and animals must be adapted to that environment.

3.2b All individuals have variations, and because of these variations, individuals of a species may have an advantage in surviving and reproducing

Materials:

- * Copy of *Just So Stories* by Rudyard Kipling
- * Chalkboard or easel paper
- * Paper and pencils
- * Reference books
- * Crayons or markers

Objectives:

- * Students will be able to define adaptations.
- * Students will be able to compare mammal adaptations for finding food and escaping from predators.
- * Students will write and illustrate a story describing how a certain mammal adaptation arose.

Activities:

1. Begin by discussing with the children some of the ways mammals and other animals are adapted to survive. Explain that adaptations are characteristics or behaviors that help an animal survive in its environment. For example, have kids think of ways that a fish is adapted to live in water. (Gills, fins, and a streamlined body could be examples.) Then, ask them to think of other animal adaptations. Write these answers on the chalkboard/easel.
2. Ask the children if they are familiar with Rudyard Kipling's *Just So Stories*. If not, explain that Kipling was a famous author who wrote short stories, poems, and novels. He lived in India during the late 1800s and early 1900s. In his book, Kipling used descriptive tales of imagination to explain how some animals came to look or act the way they do. Read one or two of these stories to the children. You also may want to read a myth by another author (in this example, "Why the Possum's Tail is Bare" by James Connolly).
3. Allow the children time to brainstorm a mammal that they think has some interesting adaptation. Then let the kids write and illustrate their own "just so" story about one of their favorite mammals. (Some suggestions include: "How the Platypus Got Its Duck Bill," "How the Zebra Got Its Stripes," and "How the Vampire Bat Got Its Wings.") These stories should combine some fact and some fiction. For example, Kipling's "The Beginning of the Armadillos" explains that the hedgehog and the tortoise changed into armadillos by borrowing characteristics from one another. Of course, this is not true, but the story does explain that the armadillo has protective armor and can roll up into a ball to defend itself from predators -- which are all facts.
4. When the children have finished, have them share their stories and illustrations with others.



(Source: *Amazing Mammals II*, p. 70)