

Animal Adaptations: Physical Characteristics

Strand	Life Processes
Topic	Animal physical adaptations
Primary SOL	3.4 The student will investigate and understand that adaptations allow animals to satisfy life needs and respond to the environment. Key concepts include b) physical adaptations.
Related SOL	3.4 The student will investigate and understand that adaptations allow animals to satisfy life needs and respond to the environment. Key concepts include a) behavioral adaptations. 3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. Key concepts include a) aquatic ecosystems; b) terrestrial ecosystems.

Background Information

An *adaptation* can be described as a specialized characteristic or “tool” that an animal has that enables it to survive in its habitat or environment. These tools are part of the animal’s body, not something that it can choose to use the way a human chooses to use a hammer or an axe. These tools help the animal to find or catch food, move about in search of food or a mate, escape danger, see, breathe in air or water, or protect itself. It is important to note that adaptations develop gradually over long periods of time and through many generations of the species. Individuals with the strongest or more successful traits are usually the survivors who live on to reproduce and make further generations.

Eyes enable an animal to see, but they are not really an adaptation. Eyes on stalks, for instance, help a crab to see all around itself because it does not have a head and neck that it can turn. Stalked eyes would be considered an adaptation.

Distinguish for the class between more passive protection and active defense. Most animals are more likely to flee or hide than to engage in battle. Examples of protective “devices” might be camouflage coloring, a hard outer shell, ability to flee quickly, or outer spikes or spines that would not be palatable to a gobbling predator.

In this exercise, students will inspect drawings of animals and answer questions about them. This may be done as a class, or it may be an individual activity, given some preparation. If you have models and/or color photos of animals available, you might use these instead.

Materials

- Animal Adaptations activity sheet
- Models and/or color photos of various animals (optional)

Vocabulary

physical adaptations

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Begin with a class discussion of what animals need to survive — the four basic needs of animals: food, water, shelter, and space.
 - a. Do the things that satisfy these four needs differ for different animals?
 - b. Do they differ for animals that occupy different habitats?
 - c. Do all animals need the same type of food? Same amount of water? Same type of shelter? Same amount of space?
 - d. Why would a rabbit not survive if it had to stay underwater? Why would a fish not survive if it had to live in a tree?

Procedure

1. Once the class has discussed the above questions, introduce the idea of adaptations, or “special tools.” Have the students analyze their own adaptations, using the following activities:
 - a. Have a student demonstrate walking on four limbs instead of just two feet. Ask how this would limit his/her ability to do everyday human activities.
 - b. Have students work with partners to tape or tie (not too tight!) their thumbs to the palms of their hands and then try picking things up, writing, or tying shoes without the use of their thumbs. Discuss the motion of the human thumb and how it “opposes” the other fingers to help them grip objects.
2. Hand out copies of the Animal Adaptations activity sheet, and have the students work in small groups to examine the animals and complete the activity questions.
3. Discuss the answers to the questions with the whole class. Make a point to differentiate between physical and behavioral adaptations for each animal.
4. Following this discussion, list several different types of habitats on the board. Be sure to include the water-related and dry-land environments.
5. Have each student choose a habitat and create an animal that lives in that habitat. Students should draw a picture of the animal and list the types of adaptations the animal may have and why they are necessary. They should include physical and behavioral adaptations it would need to survive as well as camouflage that is necessary.
6. Have the students share the animals they designed with the rest of the class.

Assessment

- **Questions**
 - How do animals use physical adaptations to survive?
 - Name some types of physical adaptations.
- **Journal/Writing Prompts**
 - Have students select a Virginia animal, conduct research about that animal's habitat, and about any physical adaptations the animal has in order to survive. Have them write a paragraph about the animal and draw a picture of the animal.
- **Other**
 - Assess the completed activity sheets and animal designs.

Extensions and Connections (for all students)

- Before having students share their animals with the class, have each student trade his/her animal with another student to see if each student can determine what adaptations the animal has to live in its particular environment.
- Instead of having students design an animal for a specific habitat, have them design a habitat for an animal possessing certain adaptations.

Strategies for Differentiation

- Share pictures of animals and have the student identify the physical adaptations.
- Have the student work with a partner to complete the Animal Adaptations activity sheet.

Animal Adaptations Activity Sheet

Name: _____ Date: _____

Osprey

1. Circle the words that describe the osprey's beak.
sharp dull curved straight large small
2. Study the osprey's feet. Describe how the osprey might use its feet.
3. The osprey lives near water. Look at the beak and feet again. What do you think it eats?
little seeds twigs grass fish
4. Does this animal have any other special tools? _____ If so, name them.
5. To protect itself, the osprey would _____ away.



Duck



1. Is the duck's beak the same as the osprey's? Circle the words that describe the duck's beak.
sharp dull curved straight large small
2. Why are the duck's feet webbed?
3. When the duck wants something to eat, it can dive under the water. What might it eat?
4. If a larger animal were chasing the duck, how could the duck protect itself?

Blue Crab

1. Besides the mouth, what other part of the crab would help it to eat?
2. The crab has two claws. How many legs does it have? ____ Circle the two legs that are different than the rest. How do you think these are used?
3. How do you think the other legs are used?
4. What is special about the crab's eyes?
5. What protects the body of the crab?



Fish



1. How do fish move around?
2. Look at the shape of the mouth. How does this shape help the fish pick up small bits of food from the bottom?
3. Circle the part on the fish that lets it breathe in the water.