

Defense Mechanisms

GRADE LEVEL: First Grade

SCIENCE CONCEPT: Adaptations are physical features that help animals obtain food, keep safe, build homes, withstand weather, and attract mates. This lesson focuses on how snakes keep safe from predators, called defense mechanisms.

RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS:

2. Plants and animals meet their needs in different ways. As a basis for understanding this concept: a. *Students know* different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

LEARNING OBJECTIVES:

1. Students will name 3 defense mechanisms of snakes and how these defense mechanisms protect them from predators.

EVALUATION IDEAS:

1. Formative: Assess students during the class discussion. Were they able to understand how each defense mechanism protected the snake from predators?
2. Summative: Students will write about 3 defense mechanisms and how the defense mechanism protects the snake from a predator in their science journals.

CONCEPTUAL BACKGROUND:

Snakes as with other animals use different methods to protect themselves from predators. These are known as defense mechanisms. Defense mechanisms are a type of adaptation. Predators are animals that naturally prey on other animals.

Mimicry is when a harmless animal looks like another animal that is harmful. An example is the King Snake, which is harmless, looks like a Coral Snake which is a venomous snake. King Snakes will also mimic rattlesnakes by shaking its tail.

Disguise is when an animal blends into its environment by looking like another object.

Disruptive camouflage is when an animal has stripes, lines, or patterns to break up their outline so they don't stick out from their background. The bands on a King Snake are an example of disruptive camouflage.

“Balling” is when a snake rolls up into a ball and hides its head and pokes out its tail that looks like its head. Rubber Boas use this technique.

Hiding-some snakes will spend most of their time under things such as rocks, logs, leaves, or underground. The shape of their body makes it easy for them to hide in many places.

Playing Dead-some snakes, including King Snakes, will pretend to be dead.

Foul smelling odors-some snakes, including the King Snake, will discharge a foul smelling odor to ward off predators.

Hissing-some snakes use hissing is used to intimidate predators.

Biting-even non-venomous snakes will bite to ward off predators.

Venom-some snakes have poisonous saliva called venom that helps them capture and kill prey and it helps them digest the prey.

LESSON IMPLEMENTATION PLAN:

ENGAGE – Ask students what they or their parents do to keep them safe from people or animals that could harm them. (Possible answers: Lock doors, don't walk home alone, don't pet animals that they are not familiar with, don't play outside at night, use crosswalks, etc.)

EXPLORE – Have students observe the snake and discuss with a partner what things that the snake might do to protect it from predators. Explain what a predator is. Have students share out to the class the things that they came up.

EXPLAIN – Explain each of the defense mechanisms written above in the conceptual background section one by one (Perhaps the students named some of these things already). After explaining each one, ask students if they know how each mechanism would help protect the snake from a predator. Write each one on the board and draw a picture to help students that may be lower level readers.

Students will then pick a place outside that they are familiar with. This could be their backyard, a park, a friend's backyard, etc. They will draw a picture of this place. They will then make up their own snake that will live in this environment and draw a picture of this fictional snake and write about its defense mechanisms. They should include at least 4 different defense mechanisms and write how the defense mechanisms protect it from a specific predator. For example, a snake that hisses will protect it from their dog by scaring it away. Or the pattern on the snake makes it so it can easily hide in some leaves hiding from birds.

ELABORATE – Students could research a snake or another animal and report to the class their defense mechanisms. Students could do further study on adaptations of the snake like how they obtain food or how they survive in extremely hot or cold environments.

EVALUATE –

(a) summative -

✓ Assess

- Defense mechanisms that they chose for the snake.
- How the defense mechanisms protect them from the predator.

(b) formative - Assess students during the class discussions. Were they able to explain how each defense mechanism helped the snake from harm?

DIFFERENTIATION PLANS:

Behavioral for Student A:

- Positive Reinforcement for correct behavior

Cognitive for Student B,C:

- Supply Graphic Organizers
- Explicit Instruction of Concepts
- Use extensive modeling

Affective for Student D

- Give the student more time to get work done

Language Demands for Students E, F, G

- Use several pictures
- Use movies to show how snakes defend themselves
- Talk slowly and clearly
- Use scaffolding or graphic organizers

LIST OF MATERIALS (PER GROUP):

- Science Journals
- Pencils

Suggested Reading:

Ernst, C., & Zug, G. (1996). *Snakes in Question: The Smithsonian Answer Book*. Washington DC and London: The Smithsonian Institute.

Example of camouflage:

