

GOPHER SNAKE LESSON

GRADE LEVEL: This lesson is designed for first grade. Students in the first grade learn about different ways that plants and animals meet their basic needs for survival. Observational skills will be used to look at the specific way a gopher snake eats its prey.

SCIENCE CONCEPT: This lesson is aimed at helping students identify features that help a gopher snake eat its prey. This lesson also provides the students a good opportunity to develop observation skills and to discuss their ideas within a group and individually.

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 OBJECTIVE: Students will complete a series of cloze sentences that incorporates the proper use of new vocabulary (word bank provided). Extension Activity: Students will author a snake book.

EVALUATION IDEAS:

1. Formative: Group will be asked to discuss concepts and then share verbally with the class.
2. Summative: Students will be asked to complete a series of cloze sentences that incorporates the proper use of new vocabulary (word bank provided).

CONCEPTUAL BACKGROUND: A unique part of the snake skeleton is the makeup of the skull and teeth. Adaptations in the skull allow snakes to eat prey much larger than themselves. The bones are connected by elastic ligaments, allowing a lot of stretch. The joint of the upper and lower jaws is placed very posterior (far back) in the skull, allowing the mouth to open as wide as possible. Also, the bones of the lower jaw are not fused together at the front, which means, they can move apart when the snake is swallowing large prey. In addition, a snake has an additional loosely-attached bone called a "quadrate" on each side. This provides a "double hinge" at the joint and as a snake swallows, it alternately moves the jaws on each side of the face and "walks" the prey into its mouth. Another adaptation that helps the snake to swallow prey is the backwards curve of the teeth. They are angled toward the throat and act as hooks to prevent live prey from wiggling loose. Snake teeth are both acrodont (attached to the bone) and polyphydont (able to grow back when lost), and a snake may have several sets of teeth throughout its lifetime. This is necessary, because teeth are often lost while feeding. The type of teeth a snake has differs depending on the method used to capture and kill prey.

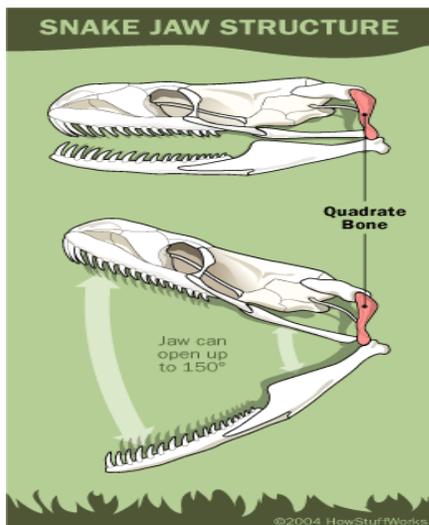
LESSON IMPLEMENTATION PLAN: This lesson is designed to be a group inquiry. Each group will be comprised of 4 students. Each group will assign a recorder, facilitator, reporter and materials manager.

ENGAGE: I will show the students various images of a gopher snake eating a meal that is much wider than itself. I will then say the following, “How is the snake able to open its mouth so wide? Think about how your jaw works and how wide you can open your own mouth. Now, try and think about how it’s possible for a snake to open its mouth so wide.”

EXPLORE: Each group will be allowed to spend time watching the gopher snake during meal-time. During this time, they will observe and take note of any ideas and thoughts they have concerning how the gopher snake is able to eat such large prey and how the prey does not escape. During this time I will ask guiding questions as a formative assessment and also to guide their understanding and inquiry.

EXPLAIN: Once all the groups have a had a chance to witness the gopher snake eating, each group will be allowed to share their thoughts about how a gopher snake is able to open its mouth so wide while eating. At this point I will present an illustration that shows the bone and ligament structure of a gopher snakes jaw and how it allows the snake to unhinge its jaw, allowing it to open really wide. I will also point out how the snake’s teeth are curved in a backward direction, towards the throat, which keeps the prey from backing out of the snake’s mouth.

ELABORATE: This can be accomplished by showing the students an illustration that shows how the jaw is able to accommodate a meal that is much larger than the snake itself. A unique part of the snake skeleton is the makeup of the skull and teeth. Adaptations in the skull allow snakes to eat prey much larger than themselves. The bones are connected by elastic ligaments, allowing a lot of stretch. The joint of the upper and lower jaws is placed very posterior (far back) in the skull, allowing the mouth to open as wide as possible. Also, the bones of the lower jaw are not fused together at the front, which means, they can move apart when the snake is swallowing large prey.



EVALUATE:
Summative:

- a. Students will be given a short paragraph containing cloze sentences (word bank provide).
- b. Students will also make a snake book; where they will write about what they know about snakes, what they learned, and what they would like to know about snakes.

Formative:

- a. Taken throughout the lesson by means of guided questions and class discussions.

DIFFERENTIATION PLANS:

Behavioral Student(s):

Know before hand what triggers the disruptive behavior. Reinforce good behavior with positive reinforcement (reward).

Cognitive A,B,C:

Strategies to enhance instruction would be:

- Activities (observation
- Intensive scaffolding (one on one instruction with the snake)
- Explicit instruction
- Visual representations, multimedia
- Graphic organizers (to illustrate how the snake is able to eat such large prey)

Affective D:

Have these students work closely with a general education peer to help them learn science effectively.

Language Demands for Students E, F, and G:

- Speak clearly and slowly.
- Employ pauses, short sentences, simple syntax, few pronouns, and idioms.
- Use redundancy and discourse markers, keywords, and outlines.
- Provide examples and descriptions, not definitions.
- Use verbal, hands-on resources, gestures, and graphic organizers.

LIST OF MATERIALS PER GROUP:

1. Scheduled time to view the snake during meal time.
2. Notebook to write down observations and thoughts.
3. Gopher Snake worksheet.

Suggested Reading:

Mattison, C. (2007). *The New Encyclopedia of Snakes* . Princeton, NJ: Princeton University Press.