Life Science Lesson Plan: Venomous Snakes of North America

Subjects

Fine Arts
--Visual arts
Language Arts
--English
----Creative Writing
Science
--Life science
Technology
--Photo Editing

Grade

5-8

Brief Description

Students learn about North America's venomous snakes, use artistic skills to create a specific snake, and write a short story about an encounter with that snake.

Objectives

Students will:

- Deepen their understanding of North America's venomous snakes, including the effects of the poison they produce.

- Express themselves through a creative visual arts task.
- Become an expert in a particular snake species.
- Write a short piece of first-person fiction.

Keywords

Snakes, reptiles, venom, science, writing, drawing, art

Materials Needed

- Computer with Internet access and printer
- Art supplies (Choose from any of the following: pens, pencils, colored pencils, crayons, markers, paint and paintbrushes; white paper or construction paper; scrapbooking, tissue or decorative paper; glue; scissors; modeling clay; googly eyes, pompoms, buttons, pipe cleaners, craft sticks and other "3-D" decorations; recycled and scrap materials of different textures, etc.)
- Photo-editing software (optional)
- Method of projecting and playing a short Web-based video clip in class (optional)

Lesson Plan

Preparation

Consider how your students will be creating their snakes and gather the art materials necessary for Part 2: Snake Creation. Choose from one of many methods including paper and glue; paper and pencils, crayons, or paint; recycled material and glue; or photo-editing software on computers or personal devices.

<u>Part 1: Learning About Snakes</u>

Snakes are often associated with the spookier things in life. With scary depictions ranging from Christianity's Lucifer in the Book of Genesis to the movie *Anaconda*, it's no wonder that many of us approach these slithery reptiles with fear.

Dangerous or fatal snake bites are, however, relatively rare in North America. While there are 1,500 to 8,000 reported snake bites in North America per year, less than a fifth come from species that are venomous. The average number of deaths caused per year by these bites is between one and five.

Use the summaries below to help students get the real facts on four venomous snake species that make North America their home.

Before learning about specific species, you may want to dig deeper by learning about venom. There are three types of snake venom:

1. *Neurotoxins* paralyze the victim, causing respiration to stop.
2. *Cytotoxins* begin to digest the victim, causing tissue collapse and organ failure.
3. *Hemotoxins* target blood cells and vessels, causing internal bleeding and clotting.

Most snake species use a combination of the three types of venom, and the danger to humans varies widely based on (1) how likely the snake is to attack (most snakes will not bite unless provoked), (2) the potency (strength) of the venom, (3) how much venom the snake delivers in a bite and (4) how quickly the venom acts on the victim.

Cottonmouth (Agkistrodon Piscivorus)

Cottonmouths, also known as Water Moccasins, are defensive snakes that show their open mouths to warn enemies. The snake's name derives from this action, since the inside of its mouth resembles cotton. The cottonmouth is a type of pit viper—a snake named for the distinctive-looking, heat-sensitive holes (pits) between its eyes and nostrils. The pits help the snakes find warm-blooded prey. When pushed to bite, the cottonmouth will deliver a good amount of hemotoxic venom, which will make its victim extremely susceptible to infection and gangrene. These snakes are typically 25 to 50 inches in length, and they spend a fair amount of time in the water.

Where to Find Cottonmouths:

- Found In - Alabama, Florida, Georgia, Illinois, Kentucky, North Carolina, Oklahoma, South Carolina, Texas and Virginia
- Found Mostly In - Florida
- Habitat - Rivers, lakes, swamps and ponds

Copperhead (Agkistrodon Contortrix)

Copperheads are another type of pit viper. Also known as Highland Moccasins, copperheads are shorter snakes with copper coloring on the tops of their heads. When threatened, the copperhead uses camouflage and the surrounding area to hide, remaining frozen until it feels safe. Copperheads typical don't bite unless physical contact is made. Unfortunately for many hikers perceived as threats, these snakes are easy to simply step on, and because of their large population near human civilization, copperheads are the most common human-biters on the Eastern side of the U.S. Fortunately, their hemotoxic venom isn't potent and is rarely fatal. It can, however, cause serious damage.

Where to Find Copperheads:

- Found In - Alabama, Arkansas, Florida, Illinois, Kansas, Louisiana, Maryland, Massachusetts, Mississippi, New York, Ohio, Oklahoma, Tennessee and Texas
- Found Mostly In - Alabama
- Habitat - Both rocky and wooded locations, where they can easily blend in

Rattlesnake (Crotalus, Sistrurus)

Also pit vipers, rattlesnakes include the Crotalus genus and the Sistrurus genus. Crotalus, with 32 species, have many smaller scales covering their heads. Sistrurus, with only three species, have larger scales that plate their heads. Rattlesnakes are named for the rattling sound made by their vibrating tails. Some are very aggressive, such as Western Diamondback rattlesnakes, which mostly live in grasslands and deserts. The Western Diamondback's bite injects a large amount of hemotoxic venom that typically causes tissue damage and severe pain. Some, like the Mojave Rattlesnake, named after the Mojave Desert in California, have mostly neurotoxic venom that attacks the central nervous system. With bites that range from moderately venomous to deadly, rattlesnakes can be as small as the 18-inch Pygmy or as large as the 84-inch Eastern Diamondback.

Where to Find Rattlesnakes:

- Found In - Numerous states
- Found Mostly In - Deserts and rocky areas
- Habitats - Wooded locations, swamps, deserts, rocky areas, grasslands and lakes

Coral Snake (Micrurus Fulvius)

Less than one percent of the poisonous snakebites that occur in the United States are from coral snakes, and bites happen mostly when the snakes are being handled intentionally. Corals are not quick to bite, but are very venomous, and are actually a relative of the cobra family. No one in the United States has died from a coral snake bite since the creation of its anti-venom.

Coral snakes are short, typically less than 42 inches in length, and they must hang from their tails for some time to create venom while biting their prey. The snake's short fangs are set in a stiff position, and it must gnaw at its victim, creating an open wound into which it secretes venom. Only about six out of 10 bites receive the snake's powerful neurotoxic venom, which causes the prey's cardiovascular and respiratory systems to fail.

North America is home to three species of coral snakes. The Eastern Coral Snake—found in Florida, Mississippi and North Carolina—lives in a variety of habitats including wooded areas and swamps. The Coral Snake—found in Arkansas, Louisiana and Texas—is sometimes considered the same species as the Eastern Coral, but typically viewed as a separate, but similar, species.

The Arizona Coral Snake, also called the Western Coral Snake and the Sonoran Coral Snake, likes deserts and despite its name, lives mostly in New Mexico. These snakes live in wooded areas, grasslands, deserts and xeric scrublands. Coral snakes are almost always nocturnal, and they range from 13 to 21 inches in length.

Where to Find Coral Snakes:

- Found In - Arkansas, Florida, Louisiana, Mississippi, North Carolina, New Mexico and Texas
- Found Mostly In - Wooded and rocky deserts and xeric scrublands
- Habitats - Wooded and rocky locations, swamps, deserts and xeric scrublands, and grasslands

This broad overview of North American snakes is a nice introduction, but to get a comprehensive look at snakes, including specific species and information about them, you'll

need to slither deeper into their world. Encourage students to learn about a few additional snakes, gathering information about their habitats, venom potency and more.

Part 2: Snake Creation

After your students have learned about snakes, have them view images of snakes by species. Then ask your class to find images of a specific species that they can use as a basis for their snake creations. Try highlighting the ones you discussed in Part 1: Learning About Snakes. If you prefer, students also can choose a snake not covered in Part 1.

Provide a variety of art supplies (suggestions include pens, pencils, colored pencils, crayons, markers, paint and paintbrushes; white paper or construction paper; scrapbooking, tissue or decorative paper; glue; scissors; modeling clay; googly eyes, pompoms, buttons, pipe cleaners, craft sticks and other "3-D" decorations; recycled and scrap materials of different textures, etc.). Alternately, provide photo-editing software on computers or personal devices. Do not give them specific instructions; simply let students use creativity to represent their snakes. When they're done, display students' creations around the classroom.

Part 3: Snake Story

As homework, have your students briefly research one snake from this source or another trustworthy source. Encourage each student to learn about the snake that s/he created in Part 2, so that he or she can become an expert on a specific species. Students should take notes and select a few interesting facts to share.

Have students include facts on the species (appearance, habitat, venom effects, likelihood of attack, etc.) as they write a brief fictional account of their encounter with that particular snake.

Part 4: Sharing

Have students show off their creations and share their stories. If desired, for inspiration, share a video clip, such as this one about the bite of the cottonmouth.

Assessment

Grade students on:

- Creativity

- Research accuracy
- Writing (factual and fictional)
- Presentation skills

Lesson Plan Source

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