

Photo Description



A child is carefully holding a colorful snake with bright red, black, and yellow stripes wrapped around their hand. The snake has smooth scales that shine in the light, and you can see its head with a small eye looking at the camera. This snake is a king snake, which is a type of animal that lives on the ground and eats other snakes!

Scientific Phenomena

Anchoring Phenomenon: Why do some snakes have bright colors?

This image captures a snake with distinctive color banding—a pattern called aposematism (warning coloration). King snakes display these bold red, black, and yellow bands as a defense strategy. Scientifically, these stripes serve as a visual warning to predators that the snake may be dangerous or unpalatable. Interestingly, king snakes are actually harmless to humans and non-venomous, but their coloring mimics venomous species (like coral snakes), which protects them through a phenomenon called Batesian mimicry. For Kindergarteners, the key idea is: Bright colors on animals can mean "stay away!" or help them hide and stay safe.

Core Science Concepts

- * Animal Characteristics and Features: Snakes have no legs, smooth scaly skin, and move by wiggling their bodies. They are reptiles that breathe air and live in different environments.
- * Colors in Nature: Many animals have colors and patterns that help them survive. Some colors warn predators, while others help animals blend in or stay safe.
- * Animal Behavior & Handling: Snakes are living creatures that need calm, gentle treatment. Understanding safe interaction with animals teaches responsibility and respect.
- * Biodiversity: Different snakes look different and live in different places. A king snake is just one type of snake among many kinds in the world.

Pedagogical Tip:

For Kindergarten, avoid using the terms "venomous" or "mimicry" directly. Instead, focus on observable features: "This snake has pretty stripes. The bright colors tell other animals, 'Be careful!' Even though this king snake is friendly, its colors look like snakes that are NOT friendly, so predators stay away." Use hand motions and colorful visuals to reinforce the concept.

UDL Suggestions:

Multiple Means of Representation: Provide high-quality images of snakes in different colors and patterns alongside real or realistic snake models. Use repetitive, predictable language ("This snake is red and black and yellow"). Allow students to wear or touch colored ribbons to physically represent stripe patterns.

Multiple Means of Engagement: Invite a local naturalist or reptile educator to bring a live (or high-fidelity robotic) snake for supervised, hands-on observation. If a live snake visit isn't possible, create a "snake sensory bin" with smooth objects (river rocks, silk scarves) that mimic snake textures. Celebrate curiosity without pressure to touch.

Multiple Means of Expression: Allow students to show their learning through drawing snakes with patterns, arranging colored strips of paper to make snake stripes, or creating their bodies like snakes. Assess on work samples and student responses.

Zoom In / Zoom Out

Zoom In: Microscopic Level

If we could look very, very close at a snake's scales under a special magnifying glass, we would see that each scale is made of tiny cells. These cells work together to make the scale smooth and shiny so the snake can slide through grass and dirt without getting hurt. The bright colors (red, black, and yellow) come from special pigments—tiny colored particles—inside the scales that reflect light. This is why the snake's stripes look so bright and pretty!

Zoom Out: Ecosystem Level

The king snake doesn't live alone! In nature, it's part of a big community called an ecosystem. The king snake lives in a habitat (like a forest, field, or prairie) where it hunts for food, hides from bigger predators, and uses its colorful stripes as a warning. Other animals in the same ecosystem—like birds, larger snakes, and rodents—all interact with the king snake. The bright colors help the king snake communicate with all the other animals: "Don't eat me!" This shows how one animal's colors affect the whole ecosystem around it.

Discussion Questions

1. What colors do you see on this snake? (Bloom's: Remember | DOK: 1)
2. Why do you think this snake has such bright, colorful stripes? (Bloom's: Infer | DOK: 2)
3. How might the snake's bright colors help it stay safe in the wild? (Bloom's: Analyze | DOK: 2)
4. If you were a big animal that eats snakes, what would the bright colors tell you? (Bloom's: Evaluate | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Snakes are slimy and wet like fish."

- Clarification: Snakes have dry, smooth scales, not slime. Their skin feels cool and smooth to the touch, almost like touching a silk scarf or a smooth river rock. Snakes are reptiles, not fish! The smooth scales help them move quickly through grass and soil.

Misconception 2: "All snakes with red, black, and yellow stripes are dangerous and will bite me."

- Clarification: King snakes are actually friendly and do not bite people when handled gently and kindly. Their bright colors look like a dangerous snake called a coral snake (which is dangerous), but king snakes are not dangerous at all. The bright colors are a disguise that keeps them safe by fooling predators into thinking they're dangerous.

Misconception 3: "Snakes don't have eyes or ears because they look different from humans."

- Clarification: Snakes do have eyes! You can see the king snake's eye in the photo. Snakes also have ears, but they don't look like human ears on the outside. Instead, snakes have tiny ear openings on the sides of their heads. Snakes use their eyes and a special forked tongue to sense their world.

Extension Activities

1. Snake Stripe Craft: Provide students with paper strips in red, black, and yellow. Have them glue or tape the strips onto a paper snake cutout to recreate the king snake's pattern. Talk about how the colors repeat: "Red, black, yellow, red, black, yellow!" This reinforces pattern recognition and fine motor skills.

2. Sensory Texture Exploration: Create a sensory bin with smooth rocks, silk scarves, yarn, and other smooth/slippery items. Hide a plastic or rubber snake model in the bin. Invite students (with hand-washing supplies nearby) to feel the textures and discover the snake. Discuss: "What does a snake's skin feel like? Smooth? Cold? Shiny?"

3. Snake Movement Dance: Play soft music and invite students to move like snakes—wiggling on the floor, slithering across the classroom, or moving to a designated "snake habitat" (a marked-off area with green cloth). Pause and ask: "What do you notice about how snakes move without legs?" This builds body awareness and kinesthetic learning.

Cross-Curricular Ideas

Math Connection: Pattern & Sequences

Students can extend the king snake's color pattern by completing a pattern strip: "Red, black, yellow, red, black, yellow, ____?" Provide colored blocks, beads, or paper strips and have students create their own snake stripe patterns. Count the stripes and compare: "Whose snake has more stripes?" This builds early patterning and counting skills.

ELA Connection: Descriptive Language & Storytelling

Read a picture book about snakes (such as *Hiss!* by Jeanne Willis or *The Smallest Snake* by Sheila Hamanaka). Have students dictate or draw a story about the king snake in the photo: "Where does this snake live? What does it eat? What happens when a big animal sees its bright stripes?" Create a classroom "snake story" by having each student add one sentence. This builds vocabulary, oral language, and narrative skills.

Art Connection: Color Mixing & Pattern Creation

Provide red, black, and yellow paint or markers and invite students to create their own striped snakes on paper or a long paper scroll. Discuss warm colors (red, yellow) versus cool colors (black). Students can also use collage materials—construction paper, fabric scraps, ribbon—to design a three-dimensional snake. Display the snakes in a "snake gallery" around the classroom.

Social Studies Connection: Animal Homes & Habitats

Discuss where king snakes live in the wild (forests, fields, deserts, grasslands). Show students a map or globe and point to different regions where snakes live. Talk about how the snake's bright colors help it fit into its natural home. Create a classroom habitat diorama with students using a shoebox, construction paper, and toy snakes. Ask: "What does a snake need to survive in its home?"

STEM Career Connection

1. Herpetologist (Snake Scientist)

A herpetologist is a scientist who studies snakes, lizards, turtles, and other reptiles. They watch snakes in the wild, learn about their colors and behaviors, and help protect snakes so they don't disappear. Some herpetologists work in zoos or museums where they care for snakes and teach people like you about them. They ask questions like: "Why are these snakes colorful? Where do they live? What do they eat?"

- Average Annual Salary: \$45,000–\$65,000 USD

2. Zoo or Wildlife Educator

A zoo educator is someone who works at a zoo or nature center and teaches visitors (like your class!) about animals, including snakes. They handle snakes carefully, show them to people, and answer questions like "Why does this snake have such pretty stripes?" They help people feel excited and curious about snakes and other animals.

- Average Annual Salary: \$28,000–\$42,000 USD

3. Veterinarian (Animal Doctor for Reptiles)

A reptile veterinarian is a doctor who takes care of sick or injured snakes, lizards, and other reptiles. They might work at a zoo, a wildlife rescue center, or even treat pet snakes. They examine snakes, help them feel better, and make sure they stay healthy and happy.

- Average Annual Salary: \$90,000–\$110,000 USD

NGSS Connections

Grade: K (Kindergarten)

Performance Expectation: K-LS1-1

Develop models to describe that organisms have observable features and behaviors that help them survive, grow, and meet their needs in their environment.

Disciplinary Core Ideas:

- K-LS1.A (Structure and Function) — Snakes have body parts (scales, eyes, mouth) that help them survive.
- K-LS1.D (Information Processing) — Snakes use their eyes and body to sense their environment.

Crosscutting Concepts:

- Patterns — The stripes on the king snake follow a repeating pattern (red, black, yellow, red, black, yellow...).
- Structure and Function — The smooth scales help the snake move through grass and soil.

Science Vocabulary

- * Snake: A long animal with no legs that moves by wiggling and has smooth, shiny scales all over its body.
- * Scales: Tiny, smooth pieces that cover a snake's skin like a suit of armor to keep it safe.
- * Stripes: Long lines of color that run down the snake's body in a repeating pattern.
- * Reptile: An animal with dry, scaly skin that lays eggs and is cold-blooded (like snakes, lizards, and turtles).
- * Pattern: A design that repeats over and over, like the red-black-yellow-red-black-yellow stripes on a king snake.
- * Predator: An animal that hunts and eats other animals for food.

External Resources

Children's Books

- * Hiss! by Jeanne Willis (illustrated by Adrian