Anole

Life Science | Lesson Guide

5th Grade

Photo Description

This image shows a small lizard with gray and brown patterned skin displaying a bright orange and red throat flap called a dewlap. The lizard has detailed scales covering its body and a distinctive eye that helps it see in different directions. This colorful throat display is a special behavior that lizards use to communicate with other lizards in their environment.

Scientific Phenomena

The Anchoring Phenomenon demonstrated here is animal communication through visual displays. This lizard is extending its dewlap (throat fan) as a form of communication, likely to establish territory, attract mates, or warn off competitors. This behavior occurs because the lizard's nervous system triggers specific muscles to extend the hyoid apparatus, which unfurls the colorful skin flap. The bright coloration serves as a visual signal that other lizards of the same species can recognize and interpret, demonstrating how animals have evolved specialized structures and behaviors for intraspecies communication.

Core Science Concepts

1. Animal Adaptations for Communication: The dewlap is a specialized body structure that has evolved specifically for visual communication, showing how form follows function in nature.

2. Behavioral Responses to Environment: This display behavior is triggered by environmental stimuli such as the presence of other lizards, changes in territory, or mating season.

3. Structure and Function Relationships: The lizard's muscular system, skeletal support, and skin pigmentation all work together to create an effective communication tool.

4. Survival Strategies: Visual displays help lizards avoid physical confrontations while still communicating important information about territory and social status.

Pedagogical Tip:

Use this image to help students understand that communication isn't just about making sounds - animals have many different ways to "talk" to each other, including colors, movements, and body positions.

UDL Suggestions:

Provide multiple ways for students to demonstrate their understanding by allowing them to create their own animal communication displays through drawings, physical movements, or digital presentations showing different ways animals communicate.

Zoom In / Zoom Out

1. Zoom In: At the cellular level, specialized pigment cells called chromatophores contain different colored pigments that create the vibrant orange and red colors in the dewlap. These cells can be controlled by the nervous system to change color intensity.

2. Zoom Out: This communication behavior is part of a larger ecosystem web where multiple species use visual, auditory, and chemical signals to communicate, creating a complex network of information exchange that helps maintain ecological balance and species survival.

Discussion Questions

1. "What advantages might visual communication give this lizard compared to making sounds?" (Bloom's: Evaluate | DOK: 3)

2. "How might this lizard's communication method be different in a forest versus a desert environment?" (Bloom's: Analyze | DOK: 2)

3. "What other animals can you think of that use colorful displays to communicate, and why might this be an effective strategy?" (Bloom's: Apply | DOK: 2)

4. "If you were designing a communication system for a new animal species, what features would you include and why?" (Bloom's: Create | DOK: 4)

Potential Student Misconceptions

1. Misconception: "The lizard is angry or trying to hurt something when it shows its colorful throat."
Clarification: The dewlap display is primarily for communication, not aggression. It's more like holding up a sign than preparing to fight.

2. Misconception: "All lizards have the same type of throat display."
Clarification: Different lizard species have evolved different communication methods - some have dewlaps, others change body colors, and some use different behaviors entirely.

3. Misconception: "The bright colors are just for decoration."
Clarification: The colors serve specific survival functions like attracting mates, establishing territory, and avoiding conflicts with other lizards.

Cross-Curricular Ideas

1. Language Arts - Animal Communication Stories: Have students write a short fictional story from the perspective of the lizard using its dewlap to communicate. Students can describe what the lizard is "saying" through its display and how other lizards respond. This combines narrative writing with understanding animal behavior.

2. Math - Measuring and Comparing: Students can measure the length and width of the lizard's body and dewlap using a ruler or digital tools, then create graphs comparing dewlap sizes across different lizard species. This integrates measurement, data collection, and graphing skills with biological observations.

3. Art - Color and Communication Design: Have students create their own imaginary animal with a unique visual communication display. They can use colored pencils, paint, or digital tools to design an animal and explain what messages their creature's colors and patterns communicate. This connects art skills with understanding how form and color convey meaning.

4. Social Studies - Animal Territory and Community: Connect the concept of territorial behavior to human communities by discussing how different groups use symbols, signs, and displays to communicate identity and establish space. Students can research how humans use flags, uniforms, or logos similarly to how animals use visual displays.

STEM Career Connection

1. Herpetologist (Reptile Scientist): A herpetologist is a scientist who studies reptiles like lizards, snakes, and frogs. They observe how these animals behave, what they eat, where they live, and how they communicate with each other. Some herpetologists work in zoos, museums, or in nature studying wild animals to help protect endangered species. Average Annual Salary: $65,000 - $75,000

2. Animal Behaviorist: An animal behaviorist studies how and why animals act the way they do. They watch animals like this lizard to understand their communication methods, social patterns, and survival strategies. This information helps zoos care for animals better and helps protect wild animal populations. Average Annual Salary: $58,000 - $70,000

3. Wildlife Photographer or Videographer: These professionals use cameras and video equipment to capture images and footage of animals in their natural habitats, like this dewlap display. Their work helps scientists study animal behavior, educates the public about wildlife, and is used in documentaries, books, and educational materials. Average Annual Salary: $52,000 - $68,000

NGSS Connections

- Performance Expectation: 5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
- Disciplinary Core Ideas: 5-LS1.D - Information Processing, 5-LS2.A - Interdependent Relationships in Ecosystems
- Crosscutting Concepts: Structure and Function, Systems and System Models, Cause and Effect

Science Vocabulary

* Dewlap: A colorful flap of skin under an animal's throat used for communication
* Adaptation: A special feature that helps an animal survive in its environment
* Communication: The way animals share information with each other
* Territory: An area that an animal claims and defends as its own space
* Display behavior: Special actions animals do to send messages to other animals
* Pigmentation: The natural coloring in an animal's skin, fur, or feathers

External Resources

Children's Books:
- "What Do You Do With a Tail Like This?" by Steve Jenkins and Robin Page
- "Animal Communication" by Bobbie Kalman
- "Lizards" by Gail Gibbons