

How to Hide a Frog (or Not)!

Benchmarks:

B: Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.

Organizer: Diversity and Interdependence of Life

Indicators:

2. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).
3. Classify animals according to their characteristics (e.g., body coverings and body structure).

C: Compare changes in an organism's ecosystem/habitat that affect its survival.

Organizer: Diversity and Interdependence of Life

Indicators:

6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.

Materials:

- Bag of colored toothpicks
- (optional) Live frog and toad (you can collect these in advance to keep for 1 or 2 days in your classroom in 2-five gallon tanks with dechlorinated water – release them at the point of collection when your class is complete).
- Flip chart
- Flip chart markers
- Frog cutout
- Computer
- Video projector
- JPEG Images of the following:
 - 3 images of a frog with cryptic coloration
 - 3 images of a frog with warning coloration
 - 2 images of habitat destruction
 - 2 images of people “saving” frogs
- Cardboard stop sign (shape and color only)

Objectives:

- Students will be able to articulate how camouflage (e.g., cryptic coloration, etc.) functions to help frogs survive in the wild.
- Students will be able to articulate how warning coloration functions to help frogs survive in the wild.
- Students will be able to describe how changes that occur in a frog's habitat may affect its ability to survive

5-E Lesson

Engagement:

Start the activity by telling the students, “We’re going to play a game called “Twenty Questions. Here’s how to play: I will be thinking of an animal (for this game, it will be an amphibian). In order to guess what the animal is, you will be asking me a series of questions that I can answer only three ways: ‘yes’, ‘no’ or ‘sometimes’. For example, you might ask ‘does the animal have a backbone?’ I might answer by saying ‘yes’. I will be recording the questions and answers on the flip chart. Your class is allowed a maximum of 20 questions to guess the animal. Does everyone understand? If there are no questions, let’s begin the game.”

Possible questions with **yes** answers.

- Does it have legs?
- Does it have four legs?
- Does it have bones?
- Does it hatch from an egg?
- Is it an amphibian?
- Are the eggs laid in water?
- Does the baby look different from the adult?
- Does it change in shape during its lifetime?
- Is it a carnivore?
- Can it be eaten?
- Does it make a noise?
- Is the skin slippery?

Possible questions with **sometimes** answers.

- Does it breathe air?
- Does it have gills?
- Does it have lungs?
- Does it live on land?
- Does it live in water?

Exploration:

Once the students have guessed that the animal is a frog or salamander, use the list that they made to discuss some of the characteristics of frogs in general.

In the discussion related to amphibians, end with a general discussion about adaptations. Ask a question “What is the word that describes a type of coloration that hides the animal?” Hopefully, someone will answer with the word “camouflage”.

Now show the images of the camouflaged frogs. Have the a student come up to the screen to point out the frogs (some may be hard to distinguish).

Now show the images of the frogs with warning coloration. Ask the students these questions. Why would a frog be brightly colored instead of camouflaged? Wouldn’t a predator (may have to explain this word) be able to easily see these frogs in their habitat? Is there any reason you can think of why a frog would want to be seen by a predator?

At this point, you can get out the red stop sign (no word on the sign – just the shape and the color). Ask the students what it is. How do they know it means “Stop”, after all there is nothing written on the sign? Explain that some frogs colors do something similar. The color and the shape of the frog may mean “stop” to would-be predators. Ask the students “Can you think of a reason why the predators wouldn’t want to eat the frog?”

Explanation

Explain to the students that many frogs have warning colors instead of camouflage. The warning colors protect the frog from predators as well or even better than the camouflage. These frogs often are colored red, yellow, orange or blue. When a potential predator sees the frog’s color, it is a warning, like a stop sign, to stay away. Otherwise, the predator may get very sick or even die from the poison that oozes from the frog’s skin.

Extension

Tell the students that they are going to play a game to test which color toothpick “frog” would survive the best in the classroom habitat. If you can go outside, you can do this activity on the lawn. The toothpicks represent frogs that are using camouflage to hide from predators. Hold up each colored toothpick and ask the students to predict the one that will be easy to see and hard to see on the ground (either the floor in the classroom or the grass/dirt outside). Follow up these predictions by asking the students to predict the colors that will be collected most and those that will be collected the least number of times

Mark off an area in the classroom (do the same thing on the lawn if you’re outside). Explain the rules of the game. Colored toothpick “frogs” will be scattered on the floor. The students will have 10 seconds to collect as many of the “frogs” as they can. When the 10 seconds are up, the instructor will yell the word “STOP” at which point the students are to immediately stop collecting and return to their seat. The group of students at each table will sort the toothpick “frogs” by color and count the total number of each colored “frog” that was collected. Next, have the students put their heads down on the desks or hide their eyes. With the students not looking, distribute an equal number of each color toothpick on the floor or ground. Tell them that at the signal, the students will begin collecting for 5 seconds. “Ready, set...GO!”

Using a flip chart or chalkboard, record the total number of each color of toothpick for each group. Add the numbers for each group to determine the total. Why was one color of “frog” collected more than another? Which color “frog” was the most vulnerable? Which one was the best protected?

Extend and Evaluate (optional)

Take out the live frogs to show the students. Start with the camouflaged frog. Ask the students about the frog. How is the frog protected from predators? Where do you think that the frog lives? What kind of habitat does it live in? Next, show the students the frog with warning coloration. How is this frog protected from predators? Where do you think the frog lives?