

Curriculum topics:

- Natural Selection
- Ecosystems
- Probability
- Design

Subject:

Life Science

Grade range: K-12

Who we are:

Resource Area for Teaching (RAFT) helps educators transform the learning experience through affordable “hands-on” activities that engage students and inspire the joy and discovery of learning.

For more ideas and to see RAFT Locations

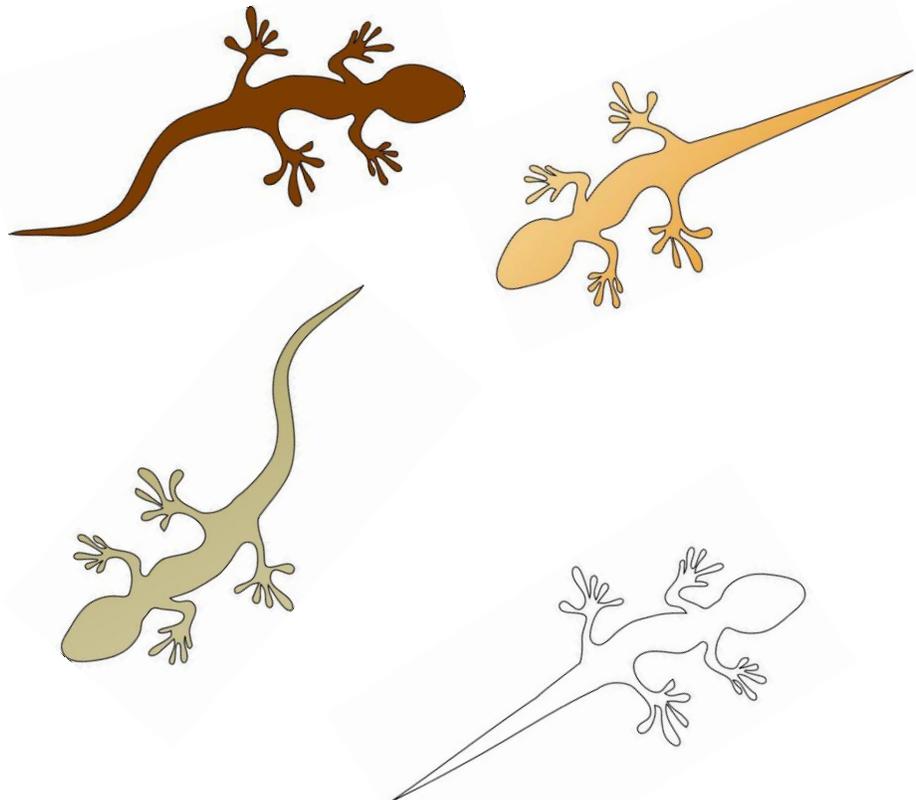
www.raft.net/visit-raft-locations

CAMOUFLAGE

Learn how coloration helps animals hide from predators.



Noticing small details not only helps birds find bugs, it helps inventors spot creative opportunities! While doing this activity, students will see the benefits of taking a closer look at the world around them.



Materials required

Per Student:

- Insects, lizards, or other shapes, cut out of paper, fabric or foam, in a variety of colors and/or patterns, 6
- Masking tape
- Field Journal sheet (see Blackline master) (download at <http://www.raft.net/raft-idea?isid=722>)
- Optional: Clipboard or binder cover with binder clamp to hold field journal sheet

Before the activity

- 1 Cut out all the pieces. Make them identical in size and shape, but be sure to use materials with a variety of colors, patterns, and/or textures. Small shapes, less than 5 cm (2") across, work best. Cut three shapes per student. Record the total number of shapes made.
- 2 Place a small loop of folded tape on the back of each shape.
- 3 Before the students enter the room, place the shapes on the walls and other surfaces. Place the shapes where the students can see them without moving anything.

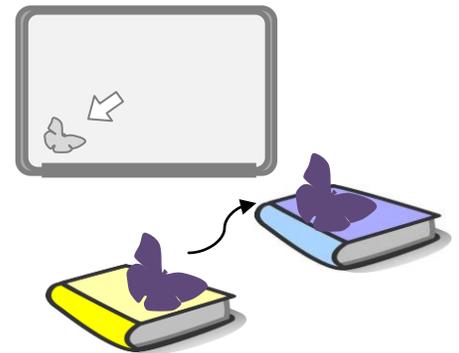
Teacher tip: Place most of the shapes on surfaces that closely match their colors. For example, put a yellow shape on a yellow bookcase. Place a few shapes on surfaces that are very different in color. For example, place a red shape on a white wall.

- 4 Print one Field Journal sheet per student and attach to clipboards (optional).

To do and notice

- 1 **At the beginning of the activity, hold up a sample shape (insect or animal) that is a bright color.** Ask the students to observe what happens as it moves from place to place in the room. Where should it stop if it wants to hide from predators? Put it where they suggest.
- 2 **Hold up a second shape of another color.** Tell the students shapes like this one are hiding all around the room! Can they see one from where they are sitting?
- 3 **Give each student a Field Journal.** Explain that each student should make notes in their field journal listing the time, shape color and background color for each shape they find. Challenge them to find three shapes in five minutes. Release the students to start the search!

Teacher tip: If some students find shapes quickly, ask them to help those that have not found any.



Camouflage Field Journal		
Location found & notes	Location found & notes	Location found & notes
Time found	Time found	Time found
Camouflage - Field journal		© 2014, RAFT

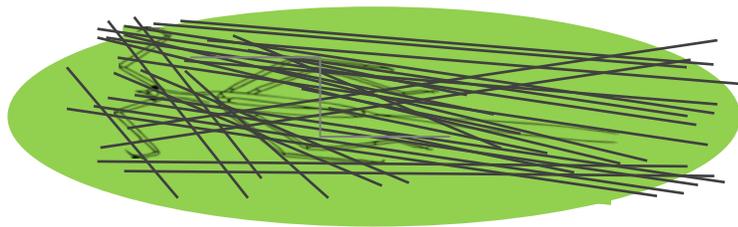
4 At the end of the search period, **gather the students and have them share the notes from their Field Journals.**

What did they notice about the shapes that were easiest to find? Where were they located? Were the shapes and backgrounds the same color, or different colors?

Were some color combinations harder to find?

Ask the students to look around the room and speculate about the variations in their observations. What does this suggest about camouflage and survival?

The science behind the activity



Camouflage means “to veil, hide, or disguise.” Soldiers and hunters often wear patterned outfits designed to make them disappear into their surroundings. Animals have many forms of natural camouflage. Many blend into their **habitat**, such as a brown snake hiding among the brown rocks where it lives. An octopus can change color to blend into different environments. Some animals, like zebras, are covered with wild patterns that make their outlines hard to see. Animals use **mimesis** (imitation) to copy the shapes around them. A “Walking Stick” insect is very hard to find among the branches of a small bush!

Over time, changes in camouflage occur as a result of **natural selection**. Nature selects phenotypes (individuals) that can avoid predators more readily, and thus the survivor’s characteristics (such as their coloring) are passed on to future generations. The color distribution in a certain population of moths gradually shifted from white to gray when the amount of smoke and ash in their forest increased. The white moths were easier for the birds to find on the darkened trees. When pollution was reduced, the white coloration once again became more common!



Camouflage, alone, is not enough. Blending in with the background is good, but since many predators’ vision is based on movement, the trick is “Don’t Move”! Once a well-camouflaged prey starts moving, a predator might spot them quickly. So, nature would also select an animal with the “freeze” instinct, like this bunny.

Curriculum Standards:

Traits of organisms are influenced by the environment
(Next Generation Science Standards: Grade 3, Life Science 3-2; Middle School, Life Science 4-4)

Characteristics & survival
(Next Generation Science Standards: Grade 3, Life Science 4-2 & 4-3)

Science & Engineering Practices
(Next Generation Science Standards: Grades K – 12)

Additional standards at:
<http://www.raft.net/raft-idea?isid=722>

Learn more

- Count the “found shapes” and share with the students the number of shapes that are still waiting to be found. Do not point them out! Challenge students to be on the look-out for them. The well-camouflaged shapes might not be found for hours, weeks, or (in some cases) ever!
- Have students create “camouflage placemats”. Cut shapes from posters, calendars, and/ or magazine pictures and tape/glue to a placemat sized piece cut from a poster or calendar page. Students then search each other’s placemats to find the shapes.

Invite students to take some shapes home and do this activity with their families. (Make it a game, like hiding and finding Easter eggs.)
- Have students create a camouflage activity for a class of younger students.
- Vary the shapes used as well as the colors and/or patterns used.
- Have students take field trip into nature (school yard, park) and find “real” examples of camouflage. Student should make drawings in the frames on the field journals.
- Re-purpose this activity to be part of a “creative thinking” activity. Why is it valuable to see details? How can noticing little things make us more creative and inventive?

Related activities: See RAFT Idea Sheets:

Evolution by Natural Selection –

[http://www.raft.net/ideas/Evolution by Natural Selection.pdf](http://www.raft.net/ideas/Evolution%20by%20Natural%20Selection.pdf)

Nesting Like a Birdbrain –

[http://www.raft.net/ideas/Nesting Like a Birdbrain.pdf](http://www.raft.net/ideas/Nesting%20Like%20a%20Birdbrain.pdf)

Resources

Visit www.raft.net/raft-idea?isid=722 for “how-to” video demos & more ideas!

See these websites for more information on the following topics:

- **Photos** - <http://dsc.discovery.com/tv-shows/curiosity/topics/animal-camouflage-pictures.htm>
- **“Where’s Waldo?” (on-line game)** - <http://art-sci.blogspot.com/2011/07/10-wheres-waldo-puzzles.html>
- **Insect Camouflage** - [http://www.harrysbigadventure.com/default/documents/Insect Camouflage Lesson Plan.pdf](http://www.harrysbigadventure.com/default/documents/Insect%20Camouflage%20Lesson%20Plan.pdf)
- **Videos on evolution and natural selection from the Khan Academy** - <https://www.khanacademy.org/science/biology/evolution-and-natural-selection>