

Tim Hall

Biodiversity Inquiry Activity
LABS

I. Title

“Now You See Me....”

II. Lesson Summary:

Students will investigate the cryptic coloration and shape (crypsis) of insects in their habitats.

III. General Goal

The purpose of this activity is for students to investigate, through inquiry, insect shape and coloration to introduce them to biodiversity.

IV. Duration

Total of 70 minutes.

One 50 minute class period for introduction and observation, followed by 20 minutes of another class period for summary.

V. Specific Learning Objectives

Content Goals

1. Insects show variation in color, size, shape and choice of habitat.
2. Not all insects are alike, they show variation that allows them to survive as a species.

Process Goals

3. Apply the concept of variation in insects to other organisms like birds, mammals, reptiles, amphibians, trees, etc.
4. Organization skills, recording data, drawing.
5. Synthesizing information from observations.
6. Lab report

Standards

(Lakota Standards from district curriculum.)

The Student will analyze the role of adaptation that allows the animal to survive in its environment.

VI. Prerequisite Knowledge/ Skills for Students

No prerequisites required.

VII. Background Information

Students must be able to identify insects as arthropods that typically have segmented bodies with an external chitinous exoskeleton, a pair of compound eyes, a pair of antennae, three pairs of mouth parts, and two pairs of wings.

VIII. Preparation for Lesson

Materials for students:

1. pencil, colored pencils
2. Student handout
3. Lab Report Outline, RERUN form.

Materials for teacher:

1. Teacher generated Student Handout of instructions.
2. Previously identified areas for students to investigate. (ie. lawn, tree line, water area, soil etc.)

IX. Instructional Strategy:

50 minute class period:

1. Have students define “Insect”, then form a group definition, discuss insect characteristics.
2. Give each student a “Handout” for recording data and for making drawings. Handout should include areas for six different insects.
* If activity is used on a day different from day 1 of school, students can create their own data table.
3. Questions on handout should include the location (habitat) of where the insect was found, color, size, markings, shape etc. (behaviors like flying, crawling, digging, sitting, etc. can be included)

(Questions I used)

- a. What is the insect like?
-observe physical characteristics such as size, shape, and color.
- b. What behaviors does the insect exhibit?
-observe behavioral characteristics such as what the insect is doing when you see it.
- c. In what type of environment does the insect live?
-observe environmental characteristics such as if the insect is found in the sun or shade, in hot or cold temperature, in dry or wet location, and the color of the foliage in which it is found.
-observe the shape of the insect and its environment. Does there appear to be a relationship?

X. Assessment

1. Students will turn in “Handout” for review by instructor.
2. The student will form a hypothesis, based on shape and coloration, from their observations.
3. Students will answer the questions:
 - a. Did the insects that you observed use camouflage as an adaptation for survival? If yes, explain.
 - b. Did the insects that you observed use the same or different adaptations for survival? Explain.
 - c. Using the insects that you observed, what characteristics varied?
 - d. Why would varying color and/or shape be beneficial to insects?
 - e. How does variation in color and shape of insects demonstrate biodiversity ?

4. Students will use this activity to generate a lab report using the “Lab Report Outline, RERUN” given in class.

XI. Comments

I use this inquiry activity the first day of school with my Biology II students. In this way, students do science immediately instead of taking care of introductions as is done in most other classes. I have students use this activity to generate their first lab report at a later date. The activity proved successful as an icebreaker and for the instruction of creating lab reports.

This lesson can be used when discussing community ecology, as a lead-in for crypsis and adaptations of other organisms like birds, amphibians, reptiles, etc. , under the topic of predator-prey relationships.

This year I used a courtyard area connected to my room. This area is one-year old and contains a large pond, a grassy area, a rock area, and assorted perennial beds. The numbers and varieties of insects were plentiful, including aquatics.

*Other useful vocabulary/topics are:

- Cryptic coloration
- Aposematic coloration
- Mimicry
- Batesian mimicry
- Mullerian mimicry