

Insect Adaptation

Objectives:

- Define the term “adaptation”
- Analyze skull adaptations of various animals

Missouri Curriculum Frameworks:

K-2:

Strand VIII. Ecology (A. Interactions)

1a. give examples of how living things affect their environment and other living things (1.3, 1.6, 4.1)

4a. predict how specific changes in the environment will affect people and other organisms found in this environment (1.1, 1.3, 2.4, 3.2, 3.4, 3.5, 4.1, 4.6)

4b. identify behavior and physical adaptations that help organisms adapt to changing conditions (1.2, 1.5, 2.4)

4c. identify the physical attributes and behavior of living organisms that enable them to survive (1.2, 1.5, 2.4)

5a. identify and discuss the nature of relationships between two or more living organisms (1.2, 2.3, 2.7, 3.5)

Strand VIII. Ecology (B. Changes)

2a. identify positive adaptations of organisms to a given environment that increase chances for survival (1.3, 1.4, 2.3, 3.5, 4.1)

Materials:

30 green paper squares

15 white paper squares

Box marked “Green Insects” containing 24 “Survivor” cards and 8 “Eaten by Birds” cards

Box marked “White Insects” containing 24 “Eaten by Birds” cards and 8 “Survivor” cards

Skulls from various animals, such as a fox, deer, pocket mouse, and beaver

Activity:

1. Give each member of half of the class a green paper square and each member of the other half a white paper square. Tell the students that they are insects in a pasture.
2. In two boxes marked “Green Insects” and “White Insects,” place cards on which you have written “Eaten by Birds” or “Survivor.” (For green insects there should be a ratio of three “Survivor” cards for each “Eaten by Birds” card. The ratio of cards for the white insects should be three “Eaten by Birds” cards for each “Survivor” card.)
3. Mix the cards thoroughly in each box, and permit each “insect” to draw a card from the appropriate box. Record the number of surviving insects of each color on a chart on the chalkboard.

4. Now redistribute “Green Insect” and “White Insect” squares to the entire class in the same ratio of green to white survivors; that is, give out three “Green” Insect” squares for each “White Insect” square.
5. Reshuffle the “Survivor” and “Eaten by Birds” cards. These should remain in the same ratio. Again, permit the children to draw a card from the appropriate box. Record the number of survivors of the second generation.
6. Continue the game until the last “White Insect” has been “Eaten by Birds.”

Discussion:

Discuss the results of the game by asking the following question: “Why did the white insects get eaten more often than the green insects?” Guide students to understand that this activity demonstrates adaptation. Tell them that when the population of green and white insects in the pasture change so that the majority of the insects are green, adaptation has taken place. The insects are now, by coloration, better able to survive in their environment. Adaptation will produce tall deer in deep snow belts and long-rooted plants in dry climates. Stress to the students that adaptation is not planned and carried out by animals and plants. It occurs because the environment places a stress upon the species. The individuals whose characteristics enable them to meet this stress survive.

Ask the following questions:

- “What happens to animals or plants that are not well adapted to their environment?”
- “In what environment would a white insect survive best?”
- “How do spots on a leopard and the stripes on a tiger help them to survive?”

Discuss with the students various animals and plants whose physical features make them well suited to their environment. This includes animals that are camouflaged to their habitat, animals that have features to survive in their climate, and animals with features that allow them to get food and defend themselves. For example, elephant—trunk; shark—sense of smell; giraffe—neck; lion—color and claws; hunting dogs—ears; polar bear—coat, color, and claws; skunk—smell; kangaroo—hind legs; animals that are brightly colored to indicate that they are poisonous)

If available, show live examples, as well as skulls of various animals, such as deer. Talk to the students about each specimen’s physical and behavioral adaptations. Guide students to notice variations in the eye sockets, noses, and teeth. Mention how these adaptations affect predator/prey relationships.