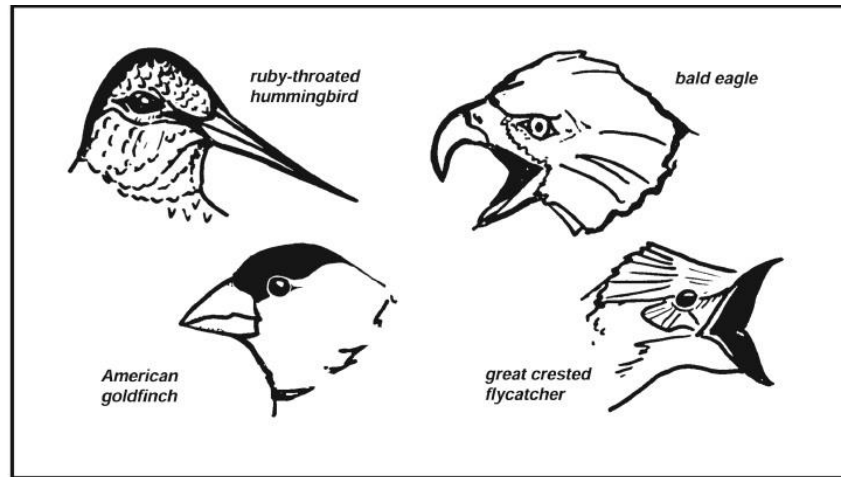


Bird Beaks



Purpose-

The purpose of this activity is to explore the relationship between a bird's beak and its ability to adapt, find food, and survive in a particular environment.

TN State Standards-

7.LS1.6 Develop an argument based on empirical evidence and scientific reasoning to explain how behavioral and structural adaptations in animals and plants affect the probability of survival and reproductive success.

8.LS4.3 Analyze evidence from geology, paleontology, and comparative anatomy to support that specific phenotypes within a population can increase the probability of survival of that species and lead to adaptation.

Context-

This particular lesson is being taught along with a larger unit on animal adaptations.

Students should be encouraged to explore how various organisms satisfy their needs in the environments in which they are typically found. They can

examine the survival needs of different organisms and consider how the conditions in particular habitats can limit what kinds of living things can survive. Studies of interactions among organisms within an environment should start with relationships that students can directly observe. Students should look for ways in which organisms in one habitat differ from those in another and consider how some of those differences are helpful to survival. The focus should be on different features of organisms and how these features impact the organism's chances for survival and reproduction.

Gathering Materials-

Bird Beaks:

- 1) Water droppers (pipettes)- 3-5 droppers
- 2) Forceps- 3-5 sets
- 3) Clothes pins- 3-5 sets
- 4) Plastic spoons- 3-5 spoons

Food Items:

- 1) Water with food coloring
- 2) Different kinds of beans- 1 bag
- 3) Rice- 1 bag
- 4) Elbow macaroni- 1 box

You will need two separate containers for each food source:

- 1) You will need a cup and graduated cylinder for the nectar transfer (food coloring and water).
- 2) You will need two plates to hold and transfer the dry food samples.

During the Lesson-

Design a chart on the board. At the end of each 60 second round, you can ask the students how much food each bird beak transferred from one place to the other. You can also ask them the following questions while recording the class results.

- Which beak collected the most of which food item?

- What do you think would happen to your bird if only one food item was available?
- Which of beak type feeds most successfully on which food item?
- Was one beak type successful with more than one food item?
- Did your earlier observations about beak types help you understand how birds feed on particular types of food?

You could have students predict some places (or habitats) in which birds with particular beak types could survive. Then they could research actual birds with beaks that resemble those modeled in the activity.

Lesson Overview-

Engage:

Have students discuss birds with which they are familiar, and then focus the discussion on beaks. What do birds use their beaks for? Do all beaks look the same? What beak shapes have students seen? Then ask students to discuss why each beak type is compared to a specific tool. What are some uses of the tools? Of beaks?

Explore:

1. Divide the classroom into 4-8 groups.
2. Disperse the food items one food type per group station. The groups should each have one type of beak and one type of food.
3. For round 1, using a timer, give the students one minute to transfer as much of their food item using their beak type. At the end of the minute, have the students count or measure the amount of food “consumed.” Document the amount of food consumed in a chart on the board for each group so that the whole class can notice trends.
4. For round 2, have the students trade food types with a group near them. Have them KEEP the beak they originally started out with. Start the timer and see how effectively they can “consume” the new food item with the same beak from round 1. After one minute, record the data for each group in the chart on the board. *It would be good to have the students assign a recorder and record their consumption each round and make a note of the beak type used.*
5. Do round 3 and round 4 by switching food items again, timing the

food consumption with the same beak as round 1 and round 2, then document the results on a class chart on the board.

Explain:

After rounds 3 and 4, have a discussion about the data. What trends do we see? What beaks were most efficient with what food source? How do these beaks and food types relate to animal adaptations in nature?

Literacy Connection:

Have the students write in a science journal about why they were more successful in one round as compared to the other three rounds. Would they have lived or died in nature? Why?

Assessment-

To assess student understanding, have each student do an activity in which they build a bird. Pass out the [Build a Bird Kit](#) that you printed out before class. The object of this activity is to design a real or imaginary bird that is adapted by its feet and beak for a particular environment. Students should use the different bird parts on the page to build their bird. After students have constructed their bird, they should select and describe a habitat in which they think that bird would thrive.

Finally, have the students present their new species to the class and explain how it's adapted for its particular environment.

Extensions-

-The Science NetLinks lesson, [Animal Adaptations](#) can help extend the ideas in this lesson by expanding students' knowledge of animal features and behaviors that can help or hinder their survival in a particular habitat.

-[All About Birds](#) is the Cornell Laboratory of Ornithology site that provides a wealth of information about birds.

-At-home activity...Have the students design and build their own beaks that will be more effective than the ones used during the lab.