

Adaptation Exploration: Bird Beaks



Ideal for Grades: 1-2

Appropriate for grades: K-4

Materials Needed: writing materials, nature journals, activity materials (see page 3), worksheets

Activity Categories: pre-visit, post-visit, needs of living things, adaptations, hand-eye coordination

This activity is a staple in many junior elementary classes. It can be adapted to different themes and body parts. In this example, we are discussing bird beaks and food. You could discuss mouths of other animals, different leg adaptations, different ways birds use beaks, etc. Get creative!

Before the activity: visit the museum or go on a nature walk, looking for birds. Have each student draw or write about the birds they saw in a nature journal or on a piece of paper. In the museum, read the labels for clues on each bird's habitat and draw their beaks closely. For older students, have them measure the proportions of the beak. Record length, width, height, and how symmetrical the halves are. Also note any strange characteristics like serrations, tongues, colour or hardness.

If you choose to go on a nature walk, observe what the birds are doing, specifically with their beaks. What are they eating? Do they use it to transport items, drill, or help them move? Record all of the ideas in a mind map or journal. If your students are up to the challenge, have them document each species of bird and what it does with its beak.

Back in the classroom: students will experiment with beak sizes and types of food. You can also showcase different actions like drilling, defense, digging, movement, or transporting items. Have students share their ideas of what birds could eat. As they do so, bring out your demonstration version of each food item. If they suggest things that aren't on your list, improvise! See page 3 for a suggested material list.

During the activity, students will become birds. You can frame it in a few ways:

- Give children a beak and have them try to find the best food for their beak by trying their beak on each type of food. Set up stations of food and give a set amount of time for each student to experiment. Students may trade beaks later, depending on time. After they have tried all of the food, link the students with the same beak together, and decide what type of food they were the best at eating.
- Have stations with one type of beak and all types of food and get students to record which beak works the best with each food type. Students can work in pairs or by themselves. Encourage sharing of tasks – one person can demonstrate while the other takes notes, and vice versa. Create a chart on the board or a worksheet. See page 4 for worksheet.

Use guidelines with your class to keep them on-task. Our suggestions are:

- Only one hand allowed – the one that is operating the "beak".
- If an item drops on the floor, it didn't get eaten. Students can then use hands to pick it up and put it back.
- You cannot take a food item out of another person's beak.
- Have a set time for the activity.

Students should look for the following in deciding which beak and food go together:

- Is it easy to pick up?
- Can you hold on to it? Try shaking your beak!
- Could you fly around with it in your beak?
- Are you able to get a lot at once or just one?
- Can you pick up exactly one food item from one exact spot? (Dexterity)
- Are you quick?

Encourage discussion:

- Discuss findings as a class.
 - What beak shape is best for round objects?
 - What beak shape is best for flat objects?
 - What beak shape is best for slippery objects?
 - What beak shape is best for tiny objects? Big objects?
- Go through some bird photos and talk about what their beak from this activity was.
 - Our suggestions:
 - Hummingbird = pipette + “nectar”
 - Tweezers = chickadee or small songbird + small “seeds” or “insects”
 - Tongs (with serrations) = merganser + “fish”
 - Ladle/sieves = pelican + “fish”
 - Tongs (with no serrations) or pliers = large birds + “nuts”
 - There will be many more - be creative!
- Did some beaks work equally well on one type of food? Does this happen in real life?
 - Yes, sometimes birds compete for food!
 - Some birds are generalists (one type of beak with several types of food)
- How many different sizes of food and beaks are there? Do you think big food always goes into a big beak? Why or why not?
- Do birds that are specialized (hummingbirds, woodpeckers) have different beaks than general eaters (gulls, crows)?
 - How are they the same or different?
 - Do you think the general ones are the best at eating all types of food, or just OK at eating?
 - Do you think the specialized eaters are able to eat other types of food?

After the activity: re-visit the museum or go on a nature walk again. Can you predict what a bird you see will do with the beak, just according to shape and size? What do you think it eats, and why?

Can you remember which beak you had during the activity (or which was your favourite)? What bird do you think you were?

Optional extension: give each student a photo of a bird and have them write or draw about what they might eat and why. This is a good activity to add into their nature journals.

After they have hypothesized their food, have students research that particular bird through guidebooks, encyclopedias, or online. Present each student’s findings as a writing activity, poster, or verbal presentation.

Suggested Materials

Feel free to use whatever materials you have available in your classroom.

Food analogs and real-life equivalents:

Man-made item	Equivalent
Elastics (cut or whole, varying sizes)	Worms
Small beads or dried seeds	Seeds
Small plastic bottles (or model fish) in a large bin of water	Fish
Large beads or dried nuts and beans	Nuts
X-shaped beads or plastic insects	Insects and spiders
Water in a plastic test tube, supported by a glass or jar	Nectar
Other materials: cut up straws, paperclips, foam pieces, fruit, pinecones, pom-poms, etc.	

Beaks:

Tongs (coat the teeth with tape on one set to make each side slippery)
Tongs (leave the teeth exposed on one set)
Ladles
Sieves
Tweezers of varying sizes
Nets
Pipettes
Spoons
Pliers
Other household items: magnets and straws can be used to discuss suction. If you use straws, tape a piece of pantyhose over the openings to prevent choking. Sticky balls of tape could be used to discuss barbed or sticky tongues.

Other Materials:

Enough bins/boxes/cups to put each food type into one bin.	If desired, use more complex food-holders, like egg cartons or holes in a Styrofoam block to mimic real life. Think of insects in tree bark or the ground.
Pictures of birds and beaks	Merganser
	Hummingbird
	Robin
	Steller's jay
	Chickadee
	Pelican
	Gull
	Others with interesting beak shapes
Note paper or charts to fill in	
Assorted bird images for extension activity	Drawings, magazine cut outs, or printed images all work well
Reference materials	Guide books, internet, encyclopedias

Beak Worksheet

Rate each beak's ability to "eat" each type of food.

Write down the types of beaks down the left column. Write the types of food along the top row. Put a number in the box that intersects between the beak and food type. Use the following guide:

- 1 = Does not work
- 2 = Poor
- 3 = OK (works half of the time)
- 4 = Good
- 5 = Always works

Beak Descriptions ↓	Food Types →										

- Is it easy to pick up?
- Can you hold on to it? Try shaking your beak!
- Could you fly around with it in your beak?
- Is the food too heavy?
- Are you able to get a lot at once or just one? Is that good or bad?
- Can you pick up exactly one food item from one exact spot?
- Are you quick?