Science Math

Bird Beak Lab

Grade Level
3-8

Length of Lesson
45 minutes

Objective
By the end of this lesson, students will understand how different bird beaks have adapted to the food they eat.

Materials
- Copies of student worksheets
- Tweezers (5)
- Binder Clip or Chip Clip (5)
- Slotted Spoon (5)
- Dropper (5)
- Toothpick (5)
- Rice
- Sunflower Seeds
- Rubber Bands
- Water
- Food Coloring
- Marshmallows
- Small plates & bowls
- Clear plastic cups (5)
- Graduated medicine cups (5)

Standards
Common Core
CCSS.Math-3.MD.1, 3.MD.2, CC.3.RI.1

NGSS
3-LS3-2, 3-LS4-2, 3-LS4-3, 4-LS1-1, MS-LS4-6

Lesson Summary
This lesson is designed to provide an introduction to animal adaptations. In this activity, students will use a variety of household objects to represent different types of bird beaks and identify which types of food can be picked up with each beak.

Suggested Sequence of Events:
1. Set Up: Add a few drops of food coloring - any color - to some water. Set up stations around the room with plates, bowls, or cups of “bird food”:
   - Uncooked Rice (representing bugs)
   - Sunflower Seeds (representing seeds)
   - Rubber Bands (representing worms) - float these in a bowl of water. *Optional: cut the rubber bands*
   - Marshmallows (representing soft foods like fruits and fish)
   - Colored Water (representing nectar from a flower)
2. Read through the IAITC Poultry Ag Mag to learn more about poultry! Interactive online versions can be found on our website.
3. Read “A Peak at Beaks: Tools Birds Use” by Sara Levine to gather student interest about bird beak adaptations.
4. Complete the activity following the procedures:
   - Hand out student worksheets to each student.
   - Place students in groups of 3-5, depending on class size.
   - Give each group one of each “bird food” (listed above) and one of each “bird beak”:
     - Tweezers (representing Insect-Catching beaks)
     - Binder Clip or Chip Clip (representing Seed-Cracking beaks)
     - Slotted Spoon (representing Straining beaks)
     - Toothpick (representing Striking beaks)
     - Dropper (representing Nectar-Sipping beaks)
       - Each group will also need several small plates and a graduated medicine cup.
   - Have students read and complete the table on the front/first page of the student worksheet before beginning the lab.

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Continued Suggested Sequence of Events:

5. Complete the activity following the procedures:
   - Set a timer on the board for 20 seconds.
   - Have each student use one “beak” to try and pick up one “food” for 20 seconds, transferring the “food” to a smaller paper plate (solid foods) or a graduated medicine cup (liquid food).
   - When time is called, have them record the amount of food they collected on their student worksheet.
   - Reset the timer.
   - Have students continue to use the same beak but try to collect a different food for 20 seconds. When time is called, have them record their food collected. Repeat for all “foods.”
   - After students have tried to collect all “foods” with their first “beak,” have them pass their beaks to the next person in the group so each student now has a different beak.
   - Repeat all steps above until all students have collected all “foods” with all “beaks” and the table on their student worksheet is complete.
   - Students should now complete the last two questions on the student worksheet.
   - Reveal to students what each beak object and food object were intended to represent in this activity.
6. Group discussion and reflection of activity.

Extension Idea:

Visit projectbeak.org for more information and interactive activities related to bird adaptations!

TEACHER RESOURCES

Bird Beak Examples

Insect-Catching Beak
(Tweezers)
Yellow Warbler

Striking Beak (Toothpick)
Great Blue Heron

Straining Beak (Slotted Spoon)
Mallard Duck

Nectar-Sipping Beak
(Dropper)
Hummingbird

Seed-Cracking Beak
(Binder / Chip Clip)
Northern Cardinal

For your reference: Chicken and Turkey beaks are considered Generalist or Grain-Eating beaks. They have adapted to be longer than Seed-Cracking beaks but shorter than Insect-Catching beaks so they can be used to sift through dirt to find grain or slow-moving bugs.

Suggested Results

While many "beaks" *should* be able to pick up more than one "food," these are the suggested answers for which "food" is optimal for each "beak," if only one can be identified.

	Suggested Result: Optimal "Food"
Tweezers	Rice (representing bugs)
Binder/Chip Clip	Sunflower Seeds (representing seeds)
Dropper	Colored Water (representing nectar)
Toothpick	Marshmallows (representing soft foods like fruits and fish)
Slotted Spoon	Rubber Bands (representing worms)

Extension Ideas

- Hatch chicken eggs in your classroom and have students complete the Embryology Exploration Student Workbook during your chick embryology unit.
- Have students research one unique bird beak and complete a research project on it.
- Have students use classroom or household objects to create a replica of their favorite unique bird beak.
- Go to agintheclassroom.org to contact your County Ag Literacy Coordinator for free classroom sets of our Ag Mags!

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Student Worksheet

Name: _____

There are over 18,000 species of birds worldwide, and many of them have unique beak types that have evolved over time for their survival. For example: hummingbirds have long, narrow beaks to reach deep into flowers to drink their nectar. Ducks have beaks that act like strainers, picking up food and straining out the water. Bird beaks have also adapted to have a sharp "egg tooth" to help them break through the shell during hatching. This "egg tooth" falls off in the first days of life. Learn more about unique bird beaks in this activity!

In this activity, you will use a variety of household objects as makeshift "beaks" to try and pick up a variety of different types of "food."

"Beak" Objects:

Tweezers | Binder Clip or Chip Clip

Dropper | Toothpick

Slotted Spoon

"Food" Objects:

Rubber Bands | Marshmallows

Rice | Colored Water

Sunflower Seeds

In the table below, predict which types of "food" listed above you will be able to pick up with each type of "beak."

	Predict: Which foods will I be able to pick up?	**Brainstorm: What types of birds might have this type of beak?**
Tweezers		
Binder Clip / Chip Clip		
Dropper		
Toothpick		
Slotted Spoon		

Record how much of each "food" you can collect with each "beak" in 20 seconds.

	Rubber Bands Collected (# of pieces)	**Marshmallows Collected** (# of pieces)	**Rice Collected** (# of pieces)	**Colored Water Collected** (mL in graduated cup)	**Sunflower Seeds Collected** (# of pieces)
Tweezers					
Binder Clip or Chip Clip					
Dropper					
Toothpick					
Slotted Spoon					

In this box, identify which type of "food" is best for each type of "beak."

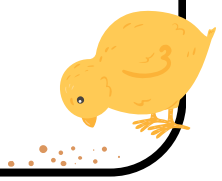
Tweezers:

Dropper:

Toothpick:

Slotted Spoon:

Binder Clip / Chip Clip:



What would happen to a population of birds if their beaks were not able to pick up the food that was available to them?