



Bird Beak-Tro

STEM Focus Area: Ecology

Learning Goal: Youth will understand why birds have beaks of varying shapes and sizes.

LEARNING ENVIRONMENT

Activity Duration: 45 minutes

Class Size: Small

Minimum Group Size: 2-4

Type of Space: Indoor or Outdoor

Age of Youth: 3-4 grade

Guiding Question: *What is the question to explore OR the problem or challenge to solve?*

Why do birds have beaks of varying shapes and sizes?

Youth will investigate bird beaks by exploring and observing different tools that represent different birds with different foods.

Through this activity, youth will:

- Predict and hypothesize which tool represents each of the different types of bird beaks.
- Investigate and observe how each tool works with the different materials.
- Record observations, analyze and infer which tool represents the bird's beak.
- Share and communicate the data they have collected with the large group.
- Draw conclusions and relationships between the type of beak and the diet of the bird.

Facilitator Checklist in the Learning Environment:

- ✓ **Predict and hypothesize**
Develop and use models
Measure materials
- ✓ **Observe**
- ✓ **Investigate**
- ✓ **Record observations**
- ✓ **Analyze and infer**
- ✓ **Share and communicate data**
Interpret data
Test and revise
- ✓ **Draw conclusions and relationships**
- ✓ **Have voice and agency, make decisions and guide their own learning**

PREPARATION

Facilitator prep: Stations should be set up prior to youth arrival.

Literacy Connection: Great preschool books to get youth excited about birds! (*available on Amazon*).

- Have You Seen Birds? By Joanne Oppenheim
- Unbeatable Beaks by Stephen Swinburne
- How and Why Birds Use Their Bills by Elaine Pascoe

Materials

- Introduction materials: fork, knife, spoon, bowl of soup, cooked spaghetti, uncut pizza (pictures of food items will work if you do not have the ability of the actual food items), chart paper or white board, permanent marker or dry erase marker
- Station 1: empty plastic bottle with screw top cap with a hole large enough for pipette, construction paper, water, food coloring
- Station 2: pan of sand or soil (such as an aluminum baking dish), cooked pasta noodles or lengths of yarn (2-3 inches long)
- Station 3: pan of water, sequins
- Station 4: pan of water, marshmallows or acorns
- Station 5: play clay wrapped around sticks
- Tools for each station: pipette, scissors, tweezers, cup or scoop, small strainer
- Photos of each bird at each station. Photo link:
https://drive.google.com/drive/folders/1wOeqr5hBph-hapbEGvv_aN9wQ1BVmUqi?usp=sharing

Room: This activity is most ideally set up indoors on table tops so each station can be separated, however you it can take place in any setting. This activity works best in small groups for 2 youth. The number of each type of tool at each station should be equivalent to the number of youth in each group so youth can have equal access to each tool. Small groups can rotate through the different stations every 5 minutes.

Content: Bird beaks or bills are a bird's mouth and nose parts. Each bird has a different shaped beak or bill specialized for the type of food they eat. Carnivorous birds have sharper beaks than herbivorous birds, designed for tearing. Waterfowl have built in straining systems to drain their bills of water but keep food in.

Inquiry:

Your primary goal as facilitator is to encourage youth to explore and talk about bird beaks. You can prompt those discussions with questions like the following:

- Which tool works best at this station?
- Which bird do you think this tool represents?
- Why do you think that?
- Why do you think their beak is designed this way?
- What do you think this tells you about where this bird lives?
- What other kinds of tools do we use that we could compare with bird beaks?

Facilitator Checklist for Preparation:

- ✓ Organization: I practiced the activity/technology, prepared materials/extras/place to record youth ideas, completed an activity (including timings).
- ✓ Materials: Materials are appropriate for teaching the learning goals; youth will be able to use them and will think they are appealing.
- ✓ Space Utilization: The space is set up appropriately for the activity and there will be no safety issues or distractions.
- ✓ Relevance: I have researched why the content matters to youth's everyday lives.
- ✓ Content Learning: I have become familiar with the content.
- ✓ Inquiry: I have become familiar with how authentic, age-appropriate inquiry practices look in this activity.

INTRODUCTION TO ACTIVITY (10 MINUTES)

Have youth sit on the floor in a circle (or at tables where stations are set up but provide a visual to prompt the youth not to play with station materials until told to do so such as a stop sign). Show the youth a fork, knife and spoon, then show them a bowl of soup, an uncut pizza, and some spaghetti (pictures of food items will work if you do not have the ability to provide the actual food items). Ask youth to raise their hands to vote on which tool would be best to help serve or eat each of the foods. Record their answers on a chart using tallies or let youth vote using stickers.

			
			
			
			

Call on different youth to ask why they voted the way that they did. If you have the actual food items, ask for youth volunteers to come up and test the different tools on each of the food items after they have voted.

Introduce bird beaks by showing a few different photos of birds (can be the same birds as used at the stations). Ask youth what part of the bird is the beak. Explain that bird beaks or bills are the mouth and nose parts of the birds. Ask youth to describe how each bird beak shown looks different (remember to call on different youth than ones that have answered already).

Read the book: Beaks! By Sneed B. Collard III

Facilitator Checklist for Introduction to Activity:

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Purposeful Activities: This intro section gets youth on track for the learning goal.
- ✓ Content Learning: If age appropriate, I will accurately present content.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Relationships: I will make each youth feel welcome.



Active Learning Community Partnership

- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

ACTIVITY ENGAGEMENT (25 MINUTES)

Split youth into small groups of 2-4. Youth will pick a station to start (or be assigned to start) and decide as a group which tool they would like to test first. They will test each tool and pretend to be birds picking up the food items in each tray. After testing each tool, youth can discuss which tool works best to collect the food at each station. Then they can discuss which bird they think the tool represents. As a group they can discuss where they think this bird might live and what it might eat. After 5 minutes, they will rotate to another station and repeat testing.

Questions you can ask to prompt discussions are:

- What do you notice about how the strainer (cup/scissors/tweezers/etc.) works for this station?
- Is it easy to pick up the food with this tool?
- Which bird do you think this tool represents?
- What does this experiment tell you about where this bird might live?

Facilitator Checklist for Activity Engagement:

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Participation: All youth will have access to the activity.
- ✓ Purposeful Activities: This core section helps youth to move toward the learning goal.
- ✓ Engagement: This activity has youth physically engaged with their hands and their minds.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection: If appropriate, I will ask youth questions during the core activity that will help them make sense of what they are learning.
- ✓ Relationships: I will take steps to share my enthusiasm and create a nurturing, safe learning environment.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

FINAL REFLECTION AND RELEVANCE (5 MINUTES)

Bring youth back together as a large group for discussion.

Discuss each station asking the following questions of the group as a whole – reflecting on the questions facilitators and youth should have been discussing in small groups at each station:

- Which tool worked best at this station?
- Which bird do you think this tool represents?
- Why do you think that?
- What do you notice about their beak that helps you determine what kind of food this bird eats?
- What do you think this tells us about where this bird lives?
- What other kinds of tools do we use that we could compare bird beaks to?

Show youth pictures of local birds that are often seen around the facility (sparrows, robins, starlings, mourning doves, etc.). Looking at these birds' beaks, what kinds of food might they like to eat? What kinds of food would we want to provide at a feeding station if we wanted to attract these birds? Provide youth ideas to hand bird feeders (seeds and nuts with shells for sparrows, shelled seeds or grain for mourning doves, dried meal worms for robins, etc.)

Facilitator Checklist for Activity Reflection & Relevance:

- ✓ Space Utilization: Again, I will use the space informally.
- ✓ Participation: I will prompt youth who do not have access to the activity to participate.
- ✓ Purposeful Activities: The closing section helps youth to reach the learning goal.
- ✓ Content Learning: I will help youth make connections between different ideas. I will create opportunities for youth to ask questions/provide ideas that show a deeper level of understanding.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection. I will provide youth with a sustained opportunity to make sense of their learning.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

ACTIVITIES TO EXTEND LESSON:

Bird Walk: Take youth outside to look for birds. Walk quietly and listen for bird calls. When you see a bird, watch it and see if you can see its beak. Talk about the shape of the beak and see if you can guess what it eats.

Feeding Station: Set up a bird feeding station with different types of food (dried insects, seed, sliced fruit, nectar feeder, etc.)

Videos about birds:

<https://www.youtube.com/watch?v=MFU-KtQkD8s>

<https://www.youtube.com/watch?v=avbPf4oyqVo>

<https://www.youtube.com/watch?v=41xznkjJoVY>

References:

Council for Environmental Education, 2014, [Growing Up Wild: Exploring Nature with Young Children](#),

Photos of birds for activity:



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Least Sandpiper – Hennessy, Ray, Least Sandpiper, The Cornell Lab of Ornithology, Ithaca, New York, accessed 15 March 2021, https://www.allaboutbirds.org/guide/Least_Sandpiper



Red-tailed Hawk – Lamoreaux, Alex, 2016, Adult (borealis), The Cornell Lab of Ornithology, Ithaca, New York, accessed 15 March 2021, https://www.allaboutbirds.org/guide/Red-tailed_Hawk/media-browser-overview/60384771



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Trumpeter Swan – Percival, Steve, 2015, Adult, The Cornell Lab of Ornithology, Ithaca, New York, accessed 15 March 2021, https://www.allaboutbirds.org/guide/Trumpeter_Swan/media-browser-overview/59954771