Fill the Bill

Grades K-1

Description:

Teams of students will conduct a simulation to determine which type of "bird beak" is best at catching worms.

Approximate Time: 30 minutes

Materials:

For each station

1 carpet square or 60" piece of string to serve as the "environment"

1 box of flat toothpicks	1 set of tweezers	1 set of tongs
1 metal serving spoon	1 fish net	1 eye dropper
Ziploc sandwich bag	1 plastic bowl or cup	Data Sheets
Pencils	Crayons	

Set Up:

Each station will consist of an environment, which will consist of the carpet square or the piece of string that has been connected and spread out on the floor. Room needs to be allowed for each team to move around during the simulation. A Ziploc sandwich bag full of toothpicks (which act as the "worms") and the implements listed above are also to be at each station. Each bird will use the bowl or cup as its "stomach" and place their worms there as they are gathered. Data sheets and extra pencils as well as at least 6 different colors of crayons should also be distributed.

Procedure:

It would be very helpful to have close up pictures of various birds with different types of beaks on hand to help the children visualize this simulation.

Every bird has a special beak that is adapted to eating a certain type of food. *Show pictures of birds whose beaks are adapted to eating different foods, such as a cardinal for seeds, a hummingbird for nectar, a hawk for meat, a pelican for fish, etc.*
You can see that it would be impossible for a hummingbird to gobble up a mouse, because its beak is designed to slurp up nectar. I would also be difficult for a pelican to crack a sunflower seed because its beak is designed to scoop up fish from the water; and a flamingo would have a difficult time catching and eating earthworms because of the shape of its beak.

For this challenge, you are going to pretend to be a bird-a very hungry bird! Each of you is going to have a different type of beak, and we are going to see which bird is best adapted or designed to live in this environment. The types of beaks we are using are: *(hold them up as you introduce the implements)*

- The long beak (tweezers)
- The broad beak (tongs)
- The short beak (thumb and pointer finger)
- The spoonbill (spoon)
- The hollow beak (eye dropper)
- The filter beak (fish net)

We are going to set up an environment for our birds. *Hold up the string or carpet square.* We will place it on the floor in our station. This is the place where our birds will live and hunt for food.

Here is your food. These are worms. *Hold up a baggie of toothpicks.* You will spread these worms randomly inside your environment. Just sprinkle them evenly around.

We will test all 6 different species of birds. For each test, the bird will have just 30 seconds to gather as many worms as possible. When time is up, your team will count the worms and you will then record the number on you chart. Then you will color in your bar graph. We will repeat this for each of the other bird species. Everyone will get a turn to be the bird.

Now let's make a prediction about which type of beak you think will be the best for catching worms. Writing your prediction on the data sheet. Could each parent guide select our first bird please? We will also need one team member to be the counter. Is everyone ready? You may begin!

At the end of 30 seconds...Time is up. Please count the worms that have been eaten. Record your data and return the worms to the environment. *Repeat for each bird. Watch your time. If all 6 types of birds do not get tested, that's o.k. Allow enough time to record and graph data after each 30 seconds. Also allow time for a brief follow up discussion.*

Discussion:

Which bird was the best at catching worms in your group? Why do you think this one was the best? Did you have any birds that did not catch any worms? What does this mean?

Many birds have developed very specialized beaks, or beaks that can only eat one certain type of food. How can specialized beaks help some birds to survive? *A bird with a specialized beak could eat a type of food that no other bird can eat, so there would be less competition for that food.*

How might a specialized beak hurt a bird's chance of survival? *If the bird's habitat or environment changes and its food is no longer available, the bird might die because it can't eat anything else. Some birds, such as crows have very versatile beaks that can eat lots of different food like fruits, nuts, dead animals and small rodents. If on type of food is not available, they can eat something else.*

Extensions:

- Try different food resources (uncooked shell macaroni, goldfish crackers, M&M® candies, gummy worms, chocolate sprinkles, peanuts, sunflower seeds, raisins, mini-marshmallows, cereals (you get the idea!)
- Invite a speaker from the local Audubon Society to share information and pictures about local bird varieties and how their beaks have adapted to the birds' diets.
- Draw a picture of what the bird might look like that was the most successful predator in your groups' simulation.

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Hypothesis: What type of bird beak do you think will be the best at catching worms? Circle one.

Tweezers Tongs Fish net Eyedropper Spoon Fingers

Data: Record the number of worms each bird captured on the chart.

	Long Beak (Tweezers)	Broad Beak (Tongs)	Filter Beak (Net)	Hollow Beak (Eyedropper)	Spoon Bill (Spoon)	Short Beak (Fingers)
Number Of Worms						

Results: Which bird was the best at catching worms?_____

What features of its beak help give it an advantage?_____

_____

Discussion:

- Did you have any birds that did not catch any food? What does this mean?
- Many birds have developed very specialized beaks, or beaks that can only eat one certain type of food. How can specialized beaks help some birds to survive?
- How might a specialized beak hurt a bird's chance of survival?

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How many worms did each bird catch?

> 20						
20						
19						
18						
17						
16						
15						
14						
13						
12						
11						
10						
9						
8						
7						
6						
5						
4						
3						
2						
1						
	Long Beak (Tweezers)	**Broad Beak** (Tongs)	**Filter Beak** (Net)	**Hollow Beak** (Eyedropper)	**Spoonbill** (Spoon)	**Short Beak** (Fingers)