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| Teachers: *Ms. Price, Ms. Scherer, Dr. Smee, Ms. Ybarra* |
| **Date: 11/17/2015** |
| **Subject / grade level: 7th Grade Science** |
| **Materials:**1. **Beaks: spoons, forks, tweezers, hooks (one of each per group)**
2. **For demo: pistachio nuts, tweezers, pliers**
3. **Food: marshmallows, marbles, paper clips, rubber bands (10 per group)**
4. **Bird Beaks and Food Sources matching hand-out**
5. **Data Collection Chart**
6. **Graph**
7. **Cups (one per student)**
8. **Plates (one per group)**
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| **TEKS: (11)  Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations. The student is expected to:** **(B)  explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb; and****(C)  identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals.****Vocabulary: adaptation, variation, selection, population,****.** |
| **ENGAGEMENT**1. **Today we are going to watch a brief video called Galapogos: the Finches.** [**https://www.youtube.com/watch?v=l25MBq8T77w**](https://www.youtube.com/watch?v=l25MBq8T77w) **Show students a map of where the Galapogos Islands are. As you are watching the video, think about the following questions:**
	* **Why did scientists such as Charles Darwin find these birds so interesting?**
	* **What is unique about the woodpecker that helps it to survive?**
2. **Demonstration with pistachio nuts and tweezers/pliers:**
* **Challenge students to open a pistachio with tweezers.**
* **Challenge students to open a pistachio with pliers.**
* **Pose the question: how can this relate to birds, beaks, food supply, and conditions such as a drought?**
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| **EXPLORATION**1. **Students will be in groups of four. Hand each student a tool: select either a spoon, fork, tweezers or monkey hook, and a plastic cup.**
2. **Explain to them that they are now birds. They are very hungry birds. They can only eat with the implement they have selected and they can only use that implement for eating. The cup represents their stomach. It must remain upright at all times. They must hold their beak in one hand and their stomach in the other. They can only place food in their stomachs with their beaks.**
3. **Explain to them that certain food items will be placed in the feeding area (their desks). When you say “go” they are to collect as much food and place it in their stomachs as possible until you say “stop.”**
4. **Take one of the food items (paper clip beetles) and distribute the clips within the feeding area. Say “go” and allow birds to feed for 1–2 minutes or until all of the food is gone. [NOTE: Depending upon your students you may need to caution about behavior. Even adults doing this activity become a bit more aggressive as the activity proceeds, but obviously safety is foremost. If some students are not responsible enough for this, have them be observers and take notes on the birds’ behaviors.]**
5. **Once you have said “stop” have students empty their stomachs and count the contents. Hand each a Recording Sheet to fill in. Have them return all food items.**
6. **Repeat this activity using each of the other food items (toothpick twigs, rubber band worms, marble munchies). By the end of the activity, each of the students should have completed his/her row for the beak type and filled in the total amount of food.**
7. **Make a class chart of the total amount of food items collected by each bird: (Spoonbill, Forkbill, Tweezerbill, Hookbill). Students will share how many of each item they were able to collect. Teacher will add up totals for each category. (16 boxes in all)**
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| **EXPLANATION**1. **Conduct a class discussion based on the class data chart. Ask:**
2. **According to the data, what type of food does each beak pick up the best?**
3. **Which beak was able to pick up more than one type of food?**
4. **Why would it be useful for a bird to be able to pick up more than one type of food?**
5. **Did everyone with your type of beak have the same success rate with the same foods? Why or why not**
6. **What did you notice about your behavior and the behavior of others?**
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| **ELABORATION****PART ONE**1. **Explain that obviously most habitats have more than one kind of food available. Ask: What will your strategy be if *all* of the food types are available?**
2. **Spread out all of the materials into the feeding circle. Allow about 4 minutes for feeding. Gather the data and have students help to sort out the food items once again for clean up.**
3. **Again continue with the class discussion. What were your strategies? How was this different from the previous eating experiences?**

**PART TWO**1. **Powerpoint on Bird Beaks and Their Uses**
2. **We know that in nature, birds don’t actually have tweezers, forks, spoons, and monkey honks. They do have beaks. This powerpoint is going to go into more detail about specific birds, their beaks, and what kinds of foods they may eat.**
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| **EVALUATION**1. **Matching bird beaks to their food. Students will individually complete the following matching hand-out: http://www.slideshare.net/MillsCbst/match-each-beak-to-the-food-the-bird-eats-exercise**

**They will have colored pictures of the birds to refer to.****Extra Activities for Extension:** [**http://projectbeak.org/adaptations/beaks\_test.htm**](http://projectbeak.org/adaptations/beaks_test.htm)[**http://projectbeak.org/adaptations/build.htm**](http://projectbeak.org/adaptations/build.htm) |