Activity: Bird Beak Adaptation Lab

Goal:
To learn about the advantages and disadvantages of
variations, by simulating birds with different types of beaks
competing for various foods.

Background Information:
       Darwin was amazed by the variation in the characteristics of plants and animals
he encountered on his journey. In any habitat, food is limited and the types of foods
available may vary. Animals that have variations that enable them to take advantage of
available foods will be more likely to survive. We call beneficial inherited variations
adaptations. Adaptations are inherited characteristics that increase an organism's
chance of survival. Those with the most helpful adaptations will be the most likely to live
long enough to pass on their genes to the next generation. This process ensures that
beneficial adaptations will continue in future generations, while disadvantageous
characteristics will not.

Materials
scissors, plastic spoons, tweezers, chopsticks, paper clips, rubber bands, toothpicks,
dried macaroni, plastic cups, cardboard box lids or trays

Procedure:
1. **What We Know:** Write a sentence or two about what you already know about
    adaptations.

2. Each student will be given either a spoon, tweezers, chopsticks, OR pair of scissors.
    Each student will also get a plastic cup.
3. You are now a very hungry bird. The tool you have selected is your "beak".
    You can only use your beak to pick up food.
4. The cup is your stomach. It must remain upright at all times. You must hold
    your beak in one hand, and your stomach in your other hand, close to your
    body. Only food that is placed in the cup by the beak has been "eaten".
5. Food items will be placed in your "habitat". Set a timer for 20 seconds, you
    will have 20 seconds to feed (or until the food runs out). Collect as much food
    in your stomach as possible until the timer runs out.
6. When the timer runs out, students will empty their stomachs and count
    the contents. Record data in *Group Data Table*.
7. Repeat 3 times, each time with a different beak. You will collect data from the
    group and you will record it in the *Group Data Table*.
8. Calculate the totals for each beak and food type. Write down totals in the *Group Data
Table*. Clean up food items.

9. **Prediction:** Make a prediction that states which will be the best type of bird beak for each type of food and explain why you think that. (Food types: paper clips, rubber bands, toothpicks, or macaroni),

Food Type	Best Bird Beak Type for Food Type
Paper clips	
Rubber Bands	
Toothpicks	
Macaroni	

10. **What We Observed:** Complete the group data table.

Group Data:

Beak	Paper clips	Rubber bands	Toothpicks	Macaroni
1. Spoon				
2. Chopsticks				
3. Tweezers				
4.Scissors				

11. **What We Learned:** Write a summary that describes what you learned from completing this activity. Remember to refer to the learning goal and to include examples from your data.

12. **What We Wonder:** Pose a "how" or "why" question that you may still have concerning the topic of this activity.

13. **Questions:** Answer the questions posed in complete sentences.
   a. Which beak was best adapted to each type of food?

   Which beak was least adapted to each type of food?

   b. Would you change your feeding strategy if you had another opportunity to "feed?" Explain.

   c. What would happen if all of the bird types in this activity flew to an island where no birds had been before and the only food available was macaroni? Which birds would be most successful? Which birds would be least successful?

   d. If you came back to this island (from c) in 50 years, what should you expect to see? (What type of birds will live on the island?)

   e. How does this lab simulation provide support for the theory of evolution?