Sci 20 Bird Beak Adaptation Lab

Purpose
The purpose of this lab is 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, large binder clip, paper clips, rubber bands, toothpicks, dried macaroni, plastic cups, cardboard box lids or trays

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

2. Each student will be given a spoon, tweezers, binder clip, 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". When the teacher says "go", you will have 20 seconds to feed (or until the food runs out). Collect as much food in your stomach as possible until the teacher says "stop".
6. When the teacher says "stop", students will empty their stomachs and count the contents. Record data in *Individual Data Table*. We will collect data from the class and you will record it in the *Class Data Table*. Clean up food items.

Hypothesis: 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	

Observations: Complete the individual and class data tables.

Individual Data Table:

Individual Data	Paper Clips	Rubber bands	Toothpicks	Macaroni
Type of Beak				

Class Data:

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

Analysis Questions:

1. Which beak was best adapted to each type of food?

2. Which beak was least adapted to each type of food?

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

4. 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?

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

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