

Natural Selection Lab: Utensil Competition

Objective: Using the materials of your choosing, create a utensil that will collect more food in a given time than any other species.

Materials: Materials may vary, ideas include

- Spoons, knives, & forks
- Clothespins or chopsticks
- Straws
- Craft Sticks
- Tape
- Scissors
- Candy (food)
- Cup (stomach)
- Video Camera (phone, tablet, camera)



Research: Read the following summary from chapter four of Charles Darwin's book The Origin of Species:

- "...if there be, owing to the high geometrical powers of increase of each species, at some age, season, or year, a severe struggle for life, and this certainly cannot be disputed; then, considering the infinite complexity of the relations of all organic beings to each other and to their conditions of existence, causing an infinite diversity in structure, constitution, and habits, to be advantageous to them, I think it would be a most extraordinary fact if no variation ever had occurred useful to each being's own welfare, in the same way as so many variations have occurred useful to man. But if variations useful to any organic being do occur, assuredly individuals thus characterized will have the best chance of being preserved in the struggle for life; and from the strong principle of inheritance they will tend to produce offspring similarly characterized. This principle of preservation, I have called, for the sake of brevity, Natural Selection. "
- Answer the following questions in complete sentences:
 1. What does Darwin mean by a "struggle for life"? Provide an example.
 2. What does an "infinite diversity in structure, constitution, and habits" mean?
 3. Describe an example of an advantageous structure, constitution, or habit.
 4. Re-write the underlined sentence in your own words:

Procedure: As a group, create a utensil that will be advantageous (successful) in collecting food. The goal is to have the “best chance of being preserved in the struggle for life”.

- The Design:

1. Decide as a group what materials you will use to build your utensil and who is responsible for each material:

2. Make a sketch of your group’s final utensil design:

3. Get your teacher’s approval. Teacher signature here: _____

4. Formulate a hypothesis:

- The Hunt:

1. You will hunt with or compete in groups that include one member from each of the other groups (species) in the class.
2. You must collect at least 10 food items in the time provided to stay alive and move on to the next generation.
3. Run through several trials/generations until there is a utensil(s) that is clearly best adapted for obtaining the available food.
4. During the lab, one member of the original design group will be responsible for video taping the activity using the “Iron Chef” method:
 - a. The person taping will provide commentary on the activity, focusing mainly on the utensil design.
 - b. They will also interview lab participants during and after the hunt.
 - c. The idea is to better understand whether your utensil design has worked.
 - d. The video must be edited into a one-minute clip.
 - e. Post the video to our online collaboration site.

Data: Fill out the following table.

Utensil Description:	Number of food items eaten	Survive? (Put an X in the box if you have survived; leave it blank if you did not)
Generation 1		
Generation 2		
Generation 3		
Generation 4		
Generation 5		

Presentation: Share your data with your original utensil design group. Each group will prepare a presentation that includes the following:

- Your utensil and its design.
- Your 1-minute video clip.
- A summary of your findings:
 - Explain whether or not your utensil was successful in obtaining food and why.
 - Which food source was your utensil best and least adapted for hunting and why?

Conclusion: Answer the following questions individually in complete sentences.

1. Which utensils were the most and the least successful at capturing food and why do you think so?
2. What are some examples of successful hunting adaptations in the wild?
3. If only one or two utensils are considered most fit for this environment, then why are there so many variations among species in nature?
4. If you could revise your utensil and compete again, what features would it have and why? Draw and explain your sketch.