



Minds in Motion

Best Beak Challenge

Activity Rundown:

Evolution is a driving factor in natural selection! Organisms have different adaptations that allow them to be successful in their environments. Today we will be exploring what some of those adaptations are and how they change between different animals!

You will need:

- + Fork
- + Toothpicks
- + Straws
- + Spoons
- + Clothespin
- + Pipe cleaners
- + (Small) Marshmallows
- + Cheerios
- + Rice
- + Corn Meal
- + Crackers
- + Dried pasta
- + Scale
- + Sandwich
- + Tupperware containers or small cups x5

Let's do it!

- 1) Before we begin let's think about some of the different adaptations that organisms have, starting with ourselves.
- 2) Tuck your thumb inside close to the palm of your hand and try to pick up a glass of water. This is where the adaptation of opposable thumbs come into play for humans and apes.
- 3) Go outside and find a tree. Try to reach the highest leaf at the top of the tree (don't climb it). Here we see where the adaptation of a long neck for giraffes would be vital for eating.
- 4) As you can see adaptations within organisms are vital for their survival including humans!
- 5) Now we will be exploring the adaptation of beaks on birds!
- 6) First you will need to fill five containers or small cups. Each cup will be filled with one of the different food items listed above. (rice, corn meal, dried pasta, crackers) If you



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do not have some of these materials feel free to substitute them for something else you can find in your household.

- 7) Label each cup and place a blank sheet of paper in front of each cup.
- 8) On a separate sheet of paper you will create a graph that looks just like the one below:

	Fork	Spoon	Toothpick	Straw	Clothes pin	Pipecleaners
Marshmallow						
Cheerios						
Rice						
Corn Meal						
Raisins						
Dried Pasta						
Total						

- 9) The different “beaks” you will be testing include a fork, spoon, toothpick, straw, clothespin and pipe cleaner.
- 10) You will be given 30 seconds at each feeding hole (cheerios, rice, etc) to pick up as much food as possible and put it into your stomach. Your stomach in this instance will be a small sandwich ziplock back.
- 11) After your 30 seconds is up, weigh out your findings on a scale if possible or count the amount of pieces you picked up as an alternative.
- 12) Be sure to record your findings.
- 13) You will eventually find that there is no such thing as a best beak! Some beaks work better in certain environments in contrast to others.



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Background:

- Evolution: change in heritable traits over time, which will appear gradually in various generations
 - Allows an organism to better survive in their environment
- Phylogenetic tree: a route that follows the development of organism's traits and can explain why traits are similar to each other
 - Traces back to a common ancestor
- Genetics: study of the mode of inheritance of specific traits
 - Genes: a segment of DNA that codes for a trait
 - Traits: characteristics expressed by genes and/or influenced by the environment
 - Heredity: passing of genes from parent to offspring (generation to generation)
- Natural Selection: genotypic characteristics that made them better adjusted to an environment tend to survive, reproduce, increase in number or frequency, and therefore are able to transmit and perpetuate their essential genotypic qualities to succeeding generations
 - Requires: variation in traits of organisms, not all offspring can survive (due to carrying capacity of environment), those who survive can pass on traits, best traits survive
- Adaptation: occurs through natural selection, where there is a change in the traits of organisms over time to make it better suited for the environment

Resources:

- http://evolution.berkeley.edu/evolibrary/article/evo_14
- http://evolution.berkeley.edu/evolibrary/article/evo_25



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Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please [click here](#) to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

Twitter: **@MyMindsInMotion**

Facebook: **@mindsinmotion2014 & @ucactiveliving**

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Please use the following hashtags!
#ucalgarycamps #ucalgarytogether