Battle of the beaks

Further resource links :
https://www.stem.org.uk/resources/elibrary/resource/32696/battle-beaks
https://www.linnean.org/learning/teaching/secondary/practicals/02-ks4-battle-of-the-beaks
https://www.nhm.ac.uk/schools/teaching-resources/galapagos-finches-show-beak-differences.html
L.O. To understand how adaptation has lead to survival and evolution of species.

Prediction
Which beak do you think will be best at picking up which type of food?
Why do you think that?

My results

	Paper clips (insects)	Rubber bands(worms)	Dried peas (nuts)	Pasta (nuts)
Beak type :				

Family results

	Paper clips (insects)	Rubber bands(worms)	Dried peas (nuts)	Pasta (nuts)
Tweezers				
Spoon				
Pegs				
Scissors				
Cocktail sticks				
Bull dog clip				

Create a graph to show your results more clearly.

Things to discuss and think about:

- What did you notice about how your beak worked?
- Did the rest of your family with the same beak type as you have the same success with the same food? Why?
- Did you notice any differences about the behaviour of people with certain beak types?
- Which beak was best overall?
- What kind of beak would you want to have?
- Would you want a different type of beak if you only had worms (rubber bands) to eat?

How many beany beetles? - The evolution game

(Adapted from Earth Learning Ideas- https://www.earthlearningidea.com/)

Topic: Investigating evolution by adaptation and natural selection; a game to provide an introduction to the theory of evolution.

Activity: Discuss the video with the children and the results and consequences of the beak activity for those birds which had an unsuccessful ability to catch food . As new groups of animals and plants are born or develop, they may be a little different from their parents. This changes over time and the natural processes that caused it, is called evolution. Explain that there are several processes by which evolution can occur, but this game will focus on adaptation and natural selection.

Adaptation is a trait or characteristic which helps an organism survive and reproduce more successfully than other members in the same population of that species. For example, in the game, the white Beany Beetles are better camouflaged on white paper than the black, so are not eaten by the birds in such great numbers. The white colour will be inherited and the inheritance of this colour will help the new generation of Beetles to survive. It is an advantageous trait. The white Beany Beetles have adapted to their conditions and those adaptations have been naturally selected and can (if chance permits) continue to evolve over time.

How to play the game:

1. Give each child a piece of white paper and a selection of white and black beads, seeds or rolled pieces of playdough to represent the beetles.
2. Place a starting population of 30 beany beetles on to the paper. 15 should be a contrasting colour to the paper (e.g. black) and 15 the same colour as the paper (e.g. white), i.e. camouflaged.
3. For each round, each child (representing a bird) throws the dice three times. Each time - EITHER - if they throw a number between 2 and 6 they 'eat' (remove) that number of black beany beetles, OR - if they throw a 1, they 'eat' (remove) one white beany beetle .
4. Fill in the Results Table as the game proceeds.
5. After the third dice throw, it is time for the survivors to reproduce. For each survivor, add one new beany beetle of the same colour. These are the new generation of beetles.
6. Start a new round of three dice throws.
7. Complete at least four rounds unless one population gets completely eaten before then.
8. You can then repeat this game with a different background e.g. black paper or with different starting populations.

Things to discuss and think about:

- Which population increased on the white paper? Why?
- Which population increased on the black paper? Why?
- Did the camouflaged population increase or decrease in proportion to the more visible population?
- So can camouflage be considered an advantageous or disadvantageous trait ?

	Black beanie beetles		White beanie beetles	
Starting population	15		15	
	Calculations	**Totals**	**Calculations**	**Totals**
Example round		15		15
Eaten (subtract) dice roll 1=6	15-6=9	9		15
Eaten (subtract) dice roll 2=4	9-4=5	5		15
Eaten (subtract) dice roll 3=2	5-2=	3		15
Survivors		3		15
Offspring (add)		3		15
Total population for next round	3+3=6	6	15+15=30	30
	Black beanie beetles		**White beanie beetles**	
	Calculations	**Totals**	**Calculations**	**Totals**
Round 1				
Eaten (subtract) dice roll 1				
Eaten (subtract) dice roll 2				
Eaten (subtract) dice roll 3				
Survivors				
Offspring (add)				
Total population for next round				

	Black beanie beetles		White beanie beetles	
	Calculations	**Totals**	**Calculations**	**Totals**
Round 2				
Eaten (subtract) dice roll 1				
Eaten (subtract) dice roll 2				
Eaten (subtract) dice roll 3				
Survivors				
Offspring (add)				
Total population for next round				

Further evolution resources:
https://www.stem.org.uk/resources/collection/4354/primary-evolution