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| **Session 14:**  | **NATURAL SELECTION** |

##

**Skills developed**

* Use of simulations
* Plotting graphs.

## Assessed criteria

Criteria E: AIE

**Research Question**

“How can we model evolution in the lab?”

**Objective**: To observe the process of natural selection by simulating a predator prey relationship in a given environment.

**Materials**

(per group):

30 Pinto beans (the environment)

30 White kidney beans (the small white ones) (organism #1)

30 Lima beans (the big white ones) (organism #2)

Paper bag

Stop watch

**Method**

1. Acquire the necessary materials per group
2. Study the difference between the 3 types of beans
3. Put all the pinto beans into the bag. These represent the environment that the organisms will “hide”
4. Put now the 30 kidney beans and 30 lima beans into the bag too.
5. Each group member will be given **one (1) minute** to go “hunting”. In order to “kill” your prey, you must feel around in the bag without looking. Pull only ONE organism out at a time!! If you pull out a piece of the environment, you must put it back into the bag. **Set aside any organisms pulled out**. After the time is up, count the number of each organism killed. Report this in your data table.
6. Begin trial #2, **DO NOT** put your “kills” back into the bag!!
7. After four trials, empty the bag and look at the remaining beans. Describe the remaining LIMA beans (if any) compared to ones killed. ***Record*** in the **observations box** below.
8. Create a bar graph of the number of beans **remaining** for each type of bean.

The X-axis is **trial #,** and the Y axis **is # of beans remaining**. You should have two plotted bars for each trial on your graph: lima beans, and kidney beans (use different colours)

**Results** (*Complete this section*)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TRIAL # | # KIDNEY KILLED | # KIDNEY REMAINING | # LIMA KILLED | # LIMA REMAINING |
| 1st trial: 1 min |  |  |  |  |
| 2nd trial: 1 min |  |  |  |  |
| 3rd trial: 1 min |  |  |  |  |
| 4rd trial: 1 min |  |  |  |  |
| TOTAL |  |  |  |  |

**Observations:**

**QUESTIONS**:

1. What is natural selection?

2. Which bean is better adapted to the environment? Why?

1. In the bean population, what is the most desired trait? Why?
2. What changes to the environment could you make to alter the dropping population of the lima bean?
3. Did the colour of the beans influence the outcome of this activity? Explain?
4. Did you kill all 30 lima beans during this experiment? If not, why did some survive (check the observation box)?
5. Of the remaining lima beans, what **traits** will be passed on to their offspring?
6. Explain how a giraffe’s neck has evolved to over three meters long?