NATURAL SELECTION

This inquiry-based learning activity on natural selection will help students establish a basic understanding of natural selection. Discussion of current happenings involving the concepts of natural selection and evolution will illustrate the importance of an animals ability to adapt in order to survive.

ARIZONA SCIENCE STANDARDS

SC-S1C1-01

SC S1C2-01, 02, 03

SC-S1C3-01, 02, 03

SC-S4C2-03

SC-S4C3-01, 02, 03

OBJECTIVES

Students will:

Explain natural selection—how certain individuals survived due to their adaptations and passed on their genetic information to their offspring.

SUPPLIES NEEDED

* Enough cloth pieces for teams of 3-4 students'
* Items to simulate prey (pom-poms, beans, rice paper circles)
* Paper to record results

GETTING STARTED

Have all of the supplies already in place at the tables. Tell students that they are going to perform an experiment showing how the adaptation of camouflage helps animals to survive.

Have the students write their definition of camouflage and how it might help an animal survive and reproduce.

Each station should have:

- Groups of 3-4 students
- One piece of fabric or carpet for each group about a square yard in size that will serve as the habitat. Try to select pieces with different colors, textures, or patterns.
- A bag of 60 identical items of different colors (20 items of each color) made from the leftover pieces of paper from hole-punches, small colored pom-poms, beans of 3 varieties, construction paper, colored rice grains etc. These items are now the "prey."
- One person is the "game keeper" who has control over the prey
- Two people will be the predators (hunting the prey.)
- Another person will be the recorder taking notes of the number of prey of each color.

BEGIN THE HUNT

- The two predators look away as the gamekeeper lays out the fabric and scatters the "prey" from the start bag. Instructor is the time keeper. When the instructor says start, the predators have 20 seconds to pick up as many "prey pieces" as they can one at a time (only using one hand).
- When the instructor says stop, the group members separate out the different colored prey pieces that are left on the fabric and determine how many of each color remain or "survived."
- Simulate reproduction by adding one prey piece for each remaining prey of that color. (There are bags of extra prey pieces for each color) At the start of round two the recorder should record the number of prey pieces of each color.
- Repeat the predation using the second generation of prey. Players can switch job roles.
- Count the remaining prey and simulate reproduction. Record the number of prey in the third generation.

DISCUSSION QUESTIONS

Each group will report their findings.

The prey population started with an equal number of individuals of each color and type. What color/type became more common in the population over time? Why? (Answers: different colors were easier to spot and thus be captured)

Which, if any, colors of prey survived better than others in the second and third generation? (Answers will vary depending on the color/type of fabric the group had. There should be fewer prey of those colors that stood out against the fabric.)

What might be the reason that predators did not select these colors as much as they did other colors? Some colors were better camouflaged than other colors – blended into the habitat and were harder to find.

What effect did capturing a particular colored prey have on the numbers of that color in the following generation? No longer reproduces, can't pass on its genes.