Mutations & Variations Activity

(Adapted from "Monstrous Mutations," Morgan Park High School)

Objective

This hands-on activity is a simulation of how mutations can affect survival skills in animals.

4th IIA
5th IIB
6th IIA
7th IIA
8th I2A

Materials

- enough dry peanuts in the shell to supply nine peanuts per group of three students (Candies wrapped in plastic, such as SMARTIES, can be substituted for peanuts)
- blanket
- table or desk
- one cup for every group
- 30 wooden craft sticks
- six pairs of goggles
- cotton
- stopwatch
- duct or masking tape
- string
- paper bag containing the letters A through H on slips of paper

Background

Students form groups of three. Each student will simulate an animal with a mutation that can only digest peanuts (or candy) as its food source.

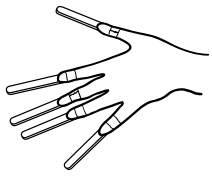
The goals of the group are to:

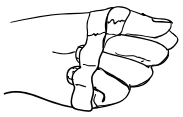
1. gather the food (nine peanuts per group).
2. store the food for later use (place the nine peanuts in your letter-designated container
3. retrieve the food at a later time (remove the nine peanuts from the container and return with the peanuts to the home location).
4. process and consume the food (remove the peanuts from the shells or candy from the wrapper, and consume them [or crush them to appear as eaten]).

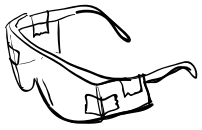
Procedure

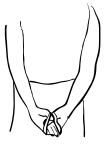
1. Each group finds out which mutation has occurred to their group by selecting a letter from the paper bag. The letter drawn will correspond to the characteristic listed on Chart 1 (page M-2). The letter also corresponds to the letter of each group's home location.

2. Each group prepares itself to represent the characteristic produced by their mutation. Do not force any child to be taped against his or her will. Allow him or her to suggest an alternative that will produce the same effect.





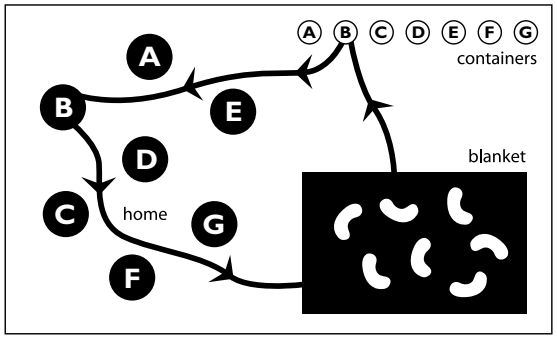




Letter	Characteristic produced by mutation
A	Extremely long fingernails (tape wooden craft sticks to fingers)
B	No fingers (tape each hand closed)
C	Lack of peripheral vision (attach long strips of cardboard to sides of goggles)
D	Hands fused together in front of body (place hands together in front of body and tape or tie them together)
E	Short stride (tie shoelaces together or string around ankles)
F	No arms (tape or tie arms to the side of body with tape)
G	Arms fused together behind back at the wrists (place arms behind back and tape or tie at the wrists)
H	Blind (place tape over goggles or use blindfold)

Procedure (cont'd)

3. Spread the peanuts or candies on the blanket. Containers marked with letters for each group are set in another part of the room.

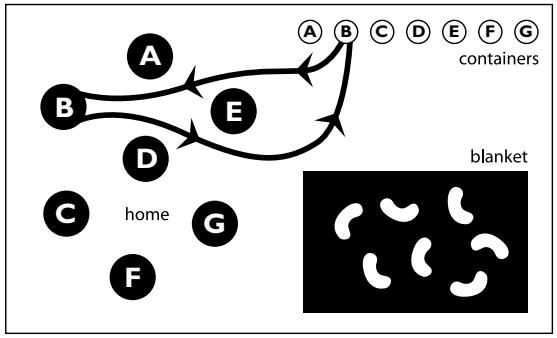


4. Each group positions itself at its specified home location, away from the lettered containers.

5. Start the stopwatch and instruct each group to proceed to the blanket and gather nine peanuts. These peanuts are put in a container marked with the letter of the group. The group members then return to their home base and call out their group number. Announce the elapsed time and have students record it on their charts.

NOTE: Do not stop the stopwatch until the last piece of food is eaten or crushed. Announce the time it took for this portion of the activity, but the length of the entire activity must be recorded without stopping the stopwatch.

6. The group members then proceed back to the lettered container to retrieve their food. Once the group has removed all nine peanuts from the container, they return to their home location. The group opens the peanut shells or candy wrappers and removes the contents. Each group member will consume three peanuts or candies (or crush them to appear eaten). When the group calls out their group letter, announce the elapsed time. The group then computes and records the elapsed time for the second portion of the activity.



NOTE: Some animals, desperate for food, may try to ransack and steal another group's stash. Be sure not to allow violent reactions. Some groups may want to help others that have more severe mutations. This is allowed if it occurs, but you should not suggest it.

Discussion

1. Which mutation caused the greatest delay in acquiring food?
2. Which mutation caused the greatest delay in processing and consuming food?
3. What would these mutations do to the population of the environment?
4. What were some adaptations to the mutations that group members came up with?