Title of Book: **What Do You Do With a Tail Like This?**
Author: **Steve Jenkins & Robin Page**
Publisher/Year: **Houghton Mifflin Company/2003**
ISBN: **978-0-618-99713-8**

Grade Levels for Recommended Use: 7th Grade Science and Biology

TEKS:

7th Grade

(11) Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations. The student is expected to:

(B) explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb

(C) identify some changes in genetic traits that have occurred over several generations through natural selection and selective breading such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals and hybrid plants

Biology

(7) Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to:

(C) analyze and evaluate how natural selection produces change in populations, not individuals

(D) analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success

(E) analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species

Brief Summary:

Students gain knowledge on the *variation* of different parts of an animal like noses, ears, tails, eyes, feet, and mouths though the book, *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page. In the book, students learn that different animals have different traits that help them survive. After reading the book, students learn how animals gain those traits through natural selection in a colored paper activity.

Materials needed:

- The book, *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page
- Colored paper - five different colors
- Hole punch
- Worksheet for each student found on pages 3-4 of this document
- Pencils and brains!

Suggested Activity:

Students see how the characteristic of a single trait (like color) changes in a population over time through the process of natural selection. This is done by students "eating" different colored dots on a colored background. The dots represent a single species and the various colors represent different variations of a single trait within that species; in this case color.

Students should see the color dots that have the same color as the colored background get eaten less and thus the colored dots population that matches the same color of the background increases over time. This shows why populations of organisms have specific variations of noses, ears, tails, eyes, feet, and mouths – specific variation helps them survive in their environment and is passed on to future generations.

Teacher note: It helps to have students complete the activity in groups of three or four. The time for each round should be set so 1/3 - 1/2 of the dots are eaten per round. This can be achieved in around 20 seconds.

References*:

The link to the website that describes the activity in this document is
https://www.scientificamerican.com/article/color-changing-dots-bring-science-home/

Adapted by: Christoffer J. Becho (2018)

*The activity in this document was modified to show change through time by adding different rounds. The directions for the rounds are NOT found in the website.

Name: _____ Class Period: _____

Animal Traits / Natural Selection

Book – *What Do You Do With a Tail Like This?* by Steve Jenkins & Robin Page

Directions: Before reading the book, *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page write down some examples of animal parts and how the trait of that specific animal part helps the animal survive. After reading the book, write down some new animal parts and how the trait of that animal part helps the animal survive.

What You Know – Prior Knowledge	**What You Learned** – Acquired Knowledge
Pelican beak- the pouch in the beak scoop up fish Eagle feet- sharp claws help grab prey	

Activity – A Very Hungry Student

This activity demonstrates how the traits of an animal *might* help the animal survive and thus gets passed on to future generations.

Step 1: Pick a random color for a background: orange, black, blue, brown, or white. Place 20 dots of each color on the background. It's important to know the dots represent a single species and the colors are a variation of a trait within that one species, in this case the organism's color.

The background I chose is: _____

Step 2: Understand the directions below before proceeding.

This activity is done in rounds. For each round quickly "eat" as many dots/organisms in the time allowed. Don't be selective on what dots you want to eat, they all taste the same! In other words, just eat the dot you see first. It helps to look away each time you pick up a new dot. Each round is a specific time set by your teacher. Pick up one dot at a time.

Record how many dots of *each* color you have after each round. Find the percentage of the color dots after each round and start the next round so the quantity of colored dots in the new round is equal to the percentage of the matching color dots in the previous round. For example, if you had 18% white dots survive at the end of a round, start with 18 white dots in the new round. Each round should start with 100 dots.

Step 3: Record your data on the data table on the back of this worksheet.

Step 4: EAT!!!!

Round 1

Color Dots	Starting Amount	Ending Amount	**Percentage of Population** (Ending Amount/Total Survivors) x 100
Orange			
Black			
Blue			
Brown			
White			

Round 2 *Remember: Starting number in this round should equal the percentage of ending number in last round.*

Color Dots	Starting Amount	Ending Amount	**Percentage of Population** (Ending Number/Total Survivors) x 100
Orange			
Black			
Blue			
Brown			
White			

Round 3 *Remember: Starting number in this round should equal the percentage of ending number in last round.*

Color Dots	Starting Amount	Ending Amount	**Percentage of Population** (Ending Number/Total Survivors) x 100
Orange			
Black			
Blue			
Brown			
White			

Round 4 *Remember: Starting number in this round should equal the percentage of ending number in last round.*

Color Dots	Starting Amount	Ending Amount	**Percentage of Population** (Ending Number/Total Survivors) x 100
Orange			
Black			
Blue			
Brown			
White			

Conclusion Questions

The color dots that had the highest percentage of population in round four was the color dot _____ and the background I used was the color _____. These matched / did not match (circle one).

Explain WHY animals have different traits in the book, *What Do You Do With a Tail Like This?* using your results from the activity above.

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