

Name _____ Section _____ Date _____

LT: I can use skittles to simulate how extinction drives evolution.

Do Now: Write true or false for each of the following statements

_____ You can't believe in evolution and religion at the same time

_____ Scientists don't 100% know how life began.

_____ Rising ocean temps. isn't a problem because the sea life can just adapt to warmer waters.

_____ We can see evolution happening now.

_____ Evolution happens because organisms needed certain features. (for example, the giraffe needed a long neck)

_____ Evolution is random.

The Evolution of Skittlefish:

A really sweet simulation

Background: Since life began on Earth about 3.5 billion years ago, organisms have always competed for resources and struggled to survive. Through these events organisms have survived while others have gone extinct. This begs the question, Why?

Environmental conditions are the determining factors that drive the evolution of a species. *Natural selection* is the name for the process by which nature (the environment) favors certain traits or behaviors. Populations consist of organisms that have a variety of traits and adaptations. Some traits are favorable for a particular environment, while others are not. These favorable traits give some organisms an advantage in survival and reproductive success. It is these organisms that will survive to reproduce and pass on their traits to the next generation. Those organisms that do not possess these favorable traits typically do not survive to reproduce and therefore, these traits do not make it to the next generation. Consequently, over time, gene pools change, populations begin to change and the evolution of a species occurs. This is referred to as *survival of the fittest*.

Procedure:

Skittlefish come in several different colors. Their natural habitat is an orange coral reef. In this ecosystem, Skittlefish have a natural predator, the Seabird.

1. Obtain a population of 10 Skittlefish to live on your orange reef. You need to begin with 2 Skittlefish of each color and place them on the orange paper.
2. Record how many Skittlefish you have of each color in Table 1.
3. Each year, Seabirds eat 5 Skittlefish. They are visual predators and eat the Skittlefish that stand out the most.
4. Choose 5 Skittlefish that for the Seabirds to eat. Move these "eaten" fish to the plastic bag.
5. The Skittlefish that remain have survived and can reproduce.
6. Each Skittlefish has one offspring that is identical in color to itself. (NOTE: The population must always be 10 organisms in each generation).
7. Repeat this for 5 years. Record your data in Table 1.

Table 1 – Orange Reef

Years	# of Red	# of Orange	# of Yellow	# of Green	# of Purple	TOTAL
1						10
2						10
3						10
4						10
5						10

Analysis Questions:

1. What variation did you observe in the Skittlefish population?

2. Which color (trait) had an advantage? Why?

3. Did your population of Skittlefish change over time? If so, explain how.

4. Why would a population of Skittlefish change over time?

5. Did individual organisms change over time or did the population change over time?

6. According to Darwin, there are 5 factors that drive evolution. Give an example of each based on this activity.

a. Each population has variation -

b. Some variations are favorable (best fit)-

c. More offspring are produced than survive -

d. Those that survive have favorable traits (survival of the fittest) -

e. A population will change over time to show the favorable trait (evolution) -

7. Explain how speciation (the evolution of a new species) occurs.

8. Explain how a parent species can still exist when a new “daughter” species evolves.

9. How does extinction drive evolution?
