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| **Candy Dish Selection**  **Author:** Carol Tang |

**Overview:** In this lesson students become unwitting subjects in a demonstration of natural selection. Students select candies from a bowl and have an opportunity to think about what traits brought about the “survival” of some candies.

**Lesson Concepts:**

* Not every feature is an adaptation.
* Adaptations often persist in a population because they are in some way advantageous.
* Adaptations are preserved in a population by natural selection.
* Depending on environmental conditions, inherited characteristics may be advantageous, neutral, or detrimental.
* Random factors affect the survival of individuals and of populations.
* Natural selection acts on individuals and populations in a nonrandom way.

**Grade Span:** 9–12

**Materials:**

* Variety of candies—has to include popular ones and unpopular ones (try black licorice). You should have at least two candies per person plus plenty of unpopular ones. Possibly include candies with different colors, sizes, brand names, etc. (avoid candies with nuts for kids who are allergic).
* Large dish

**Advance Preparation:**

— Prepare a list of the candies and their initial abundance in the candy dish.

**Time:** 30 minutes

**Grouping:** Whole class

**Teacher Background:**

This activity provides a model for natural selection. It is, of course, artificial both in the sense that the selecting is done by people and that the “organisms” being selected are nonliving entities with no genetics and no ability to reproduce. Charles Darwin, in modeling natural selection, used the artificial selection of pigeons to illustrate how selection can, over time, modify populations of living things. This activity is at least one additional step removed from the reality of natural selection, but it provides one way to illustrate the mechanism. The concept of natural selection should, of course, be pursued in many other ways in order to help students understand its centrality to evolutionary theory.

Explore these links for additional information on the topics covered in this lesson:

* [Variation](http://evolution.berkeley.edu/evosite/evo101/IIICGeneticvariation.shtml)
* [Adaptation](http://evolution.berkeley.edu/evosite/evo101/IIIE5Adaptation.shtml)
* [Natural Selection](http://evolution.berkeley.edu/evosite/evo101/IIIENaturalSelection.shtml)

**Vocabulary:** variation, selection, traits

**Procedure:**

1. Make the candy dish accessible in advance so students can pick candies over a period of time, or the dish can be passed around the room a couple times. You can avoid commenting about it at all, or you can make very innocent remarks about providing a treat for the students.
2. After more than half of the candy has been removed, gather the class together. Start the discussion by pointing out that there is often great variation among individuals of animal species. For example, students can look around the room and list the characteristics that vary among humans. Then, ask the students why variation is significant. (One reason variation is important is that variation allows for differential survival of individuals.)
3. Show them the candy bowl and the remaining candies. Count what candies remain and list them on the board. Ask them if they remember which candies were originally available. Make a list on the board of the original set of candy.
4. Now ask them to list the traits of the candy they *selected* from the candy dish. (examples include: chocolate flavor, large size, favorite brand, etc). These are the traits that led to the removal of certain candies.
5. Make a list now of the traits of the candies that were *not selected* (examples: bad flavor, small size). These are the traits that allowed the candies to survive being passed around the room.
6. So, the fact that there were different candies with different traits resulted in some candies being eaten and others surviving. This is what natural selection does with individuals in a population. Each individual has unique traits; some traits will help an individual survive and some traits do not.

**Extensions:**

A teacher could continuously add candy into the candy bowl according to the proportions left in the candy bowl. For example, if after the first round all the Hershey kisses disappeared but there were a lot of green Starbursts, add more green Starbursts but do not add any more kisses. This will accentuate the loss of favorite candies and the proliferation of the remaining ones. In addition, this extension will simulate the production of new generations, similar to the evolution of populations over time. Another possibility is that you will see students taking their second choice of candies, simulating the natural situation where predators will start consuming another prey item when their favorite prey item is eliminated.

**Acknowledgements:**

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