



PLANT COMPETITION

Understanding competition for water and nutrients between plants

Lesson Plan

Grades: 3-12

Objectives:

1. Youth will gain an understanding of competition for water and nutrients between weeds and desirable plants.

Preparation Time: 10 minutes

Teaching Time: 10–20 minutes

Clean-up Time: 0-5 minutes

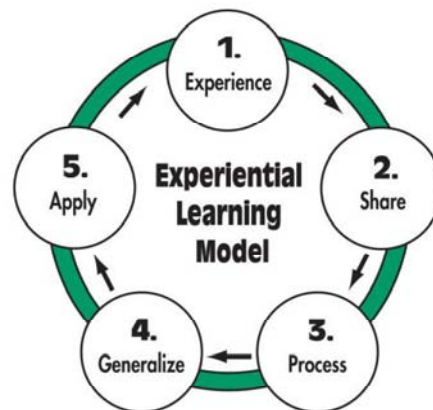
Arrangement: 2 groups, standing opposite of each other

Materials:

- Marble stones, or similar objects
- Permanent marker

Methods:

- I. Prior to the activity, label the marble stones with random numbers, using numbers 1-4. The marble stones will serve as the “water” and “nutrients” for the activity, and the numbers will serve as the point values for each.
- II. Explain to the youth they are divided into two groups, one being the weeds and one being desirable vegetable/garden crops.
- III. Explain that the stones are labeled with numbers relating to the size or value of the specific item—water or nutrients. The higher the number, the more water or more nutrients it contains.
- IV. Instruct the youth they are to determine a “home base” where they will store their water and nutrients.
- V. Somewhat randomly, drop the stones on the ground between the two home bases.
- VI. Tell the youth they are to walk during this activity and take only one stone at a time back to their home base.
- VII. When all of the stones are removed from the middle, instruct the youth to begin totaling the number of water and nutrients using the numbers written on each stone.
- VIII. Ask each group to share their total. The group with the larger number was the plant that out-competed the other plant.
 - a. The weeds have a 50% chance of out-competing in this activity.
- IX. Ask the youth what they can conclude for the activity.
 - a. Why did the weeds/crops out-compete? Answers will likely include the obvious—they were able to acquire more water and nutrients.



Pfeiffer, J.W., & Jones, J.E. "Reference Guide to Handbooks and Annuals"
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- b. What are others reasons the weeds/crop may have out-competed?
Answers may include that the other team was generally faster at acquiring water and nutrients.
- X. Ask the youth how this activity might relate to real life.
 - a. Without thinning/removing the weeds in a garden/field, what assumptions might we make about the stronger competitor? Answers will likely relate to plant heartiness, strong root systems, and better water and nutrient uptake.
 - b. What do we know about plant competition in regards to the less-desirable plants or weeds? Thinning them out or removing them will result in more water and nutrient uptake by the desirable crop because there will be more water and nutrients available to them.
 - c. What would happen if there were virtually no weeds, but an overabundance of the crop? The crop would then serve as a competitor against itself. Too many plants, even desirable ones, would compete for the available water and nutrients, resulting in a smaller overall yield per crop plant.
 - d. How could you use this information at home? Weed early and often. Thin seedlings to an appropriate population so that the desirable plants do not compete with one another.