

Competing for Limited Resources

Grade(s): 3-6	Topic: Ecosystems, Plant Life Cycle, Seed Germination	Season: Any
Timing: 35 minutes, including 5 minute RPK, 5 minute introduction, 20 minute outdoor game, and 5 minute conclusion		
Objectives: <ul style="list-style-type: none">• Through a hands-on game, students demonstrate that the environment provides limited resources of sun, nutrients, water, and space, which leads to competition. Due to this competition, many plants and animals do not survive and many seeds do not grow.		
Materials: <ul style="list-style-type: none">• Weed example for introduction• Paper (or manipulative) representations for water, sunlight, and soil nutrients, each represented by a different color or shape, 50 – 100 of each• Chalk, tape or paper squares to mark out starting spots for game• Stopwatch (optional)		
Degree of need for extra teacher or parent helper? Low		
Journal Prompt: What is a limited resource? How do limited resources effect plants and whether or not they survive?		
Lesson Sequence: Reactivate Prior Knowledge (5 minutes) Bring a weed into class and explain that it has grown large while other plants haven't. Ask the students why this could be. What is the weed getting more of than the other plants? How is it doing it? What qualities (adaptations) does it have that favor it over other plants? Introduction (5 minutes) Review with students what every plant needs to survive (water, sunlight, soil, and space). These things are resources, and some are more limited than others. Have the class work through how each of them could be limited (i.e. a plant getting shaded out by another plant, or rain water puddling in one section of a garden and missing another part). What are other examples of competition the students experience on a day-to-day basis? Explain that some plants get more of these resources than other plants, and today, each student is going to act out being a different plant. They might get enough resources to grow and they might not. Limited Resources Game (Outside, 20 minutes) Before playing the game, make sure to have marked off a space (either in the schoolyard or in the classroom) for the game to take place (this is important for dealing with the issue of space as a limited resource). Tell every child they are going to start out as an apple seed and have them practice with their bodies what trees look like and how they think they might grow. Ask them to list for you what it is that trees (and all living organisms) need to survive (air, sunlight, water, space, nutrients). Explain that today they will all be competing to survive.		

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Give each student a starting place and explain that while they will probably end up bumping arms and/or feet they are not to hit or hurt anyone. Anyone who is intentionally hurting someone else will have to sit out for the rest of the game.

Have each student start out in their spot (which should already be a bit close together, though no one should be touching at the outset) with their bodies folded in half (trying to touch their feet with their hands). They must always come back to THIS SPOT (can mark out with chalk, carpet square, etc. if necessary)

Tell them that at this point they are all seeds. Ask what they need in order to grow and what they will become (sprouts). Since they are growing into trees they will need a lot of sunlight. Say that everyone would like to get 5 “rays” of sunlight, but you don’t have enough for everyone. They will have to come and get them from you one at a time (as in, they can only get one piece at a time, and so will have to take 5 trips, but EVERYONE should be coming up at the same time). After you run out of sunlight, say that anyone with at least 2 rays of sunlight is now a SPROUT and should be crouching/squatting with their hands spread out above their heads. All sprouts can grow into the next stage, and anyone who doesn’t have 2 rays will stay a seed.

The sprouts will need to come and get 3 drops of water, but you again don’t have enough for each student who comes up. Everyone who gets at least 2 drops can continue to grow (standing up with their arms halfway out. Repeat with nutrients, after which the students will have their arms out all the way while standing. Then have everyone who has made it that far spread out his/her legs and see if they can manage to do so without touching anyone else.

This is a good opportunity to introduce the ideas of both thinning and transplanting as ways to cope with limited space. You can thin out or transplant students that make it to the last stage, and discuss as a class why these are good solutions to the limited resources problem.

Notes: Students who don’t make it to the next stage stay as they are (seed, sprout, sapling, adolescent tree).

For a second round, or if you don’t want students to come to you to get resources, you can put them opposite the students in the schoolyard and have them *speed walk* to pick them up, still taking one at a time and walking back to their starting place, but letting them pick their resources and giving them a time limit.

Conclusion (Outside or inside, 5 minutes)

Make sure that students are becoming familiar with the idea that there are limited resources in any ecosystem of water, space, soil, nutrients, and sun, and every plant has different needs and luck in getting these resources.

Vocabulary

Competition
Limited Resource
Nutrient
Resource

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Vocabulario

Competición

Nutriente

Recurso

Recursos Limitados

Extensions / Homework Ideas:

- Play the Limited Resources Game again over the course of the year, varying the amount of resources appropriately by season (i.e. less sunlight in winter with some students dying due to the cold, more rain in spring, etc.) and discuss why plants and animals have to adapt to the different seasons and why their life cycles happen at the times they do.