

Something For Everyone

Concept: Carrying capacity refers to the number of a given species that an area's resources will support without impairing that area's ability to *continue* supporting that population. Sustaining our natural resource base requires observation and the cooperative use of resources held in common. In this simulation, students desiring to draw renewable resources from a common pool devise, by trial-and-error, short-term consumption strategies that will preserve a long-term supply of the resource.

Materials: Tokens (such as poker chips, or peanuts in the shell) - 10 per student
Candies or other reward
Stopwatch or watch with a second hand
CD or tape player
CD or tape of lively music (at least 8 minutes' worth)

Procedure:

Count out ten chips for each student playing the game. Put one-fourth of them in a separate pile.

Seat the students in a circle.

In the center of the circle, place the pile comprising one-fourth of all the chips. (For example, if you have 4 students, you use 40 chips total and begin with 10 in the center. If you have 10 students, you use 100 chips and begin with 25, and so on.)

Read the following rules carefully to the students. Allow time for questions and answers to make sure students understand the rules of the game thoroughly.

Rules

1. The chips belong to all of you, to the group.
2. Music will be played, and while it is playing, each of you may take chips out of the pool of chips in the center.
3. You may not put chips back into the pool once you have taken them out.
4. Each of you may trade in 10 chips for a piece of candy (or decal).
5. As soon as the music stops, I will double the number of chips left in the pool at that time, and then continue the game.
6. There will never, however, be more chips in the pool than there are at the start of the game. This is the maximum number of chips the pool can hold.
7. You may not talk to anyone during the game.

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Notes to the Leader

DO NOT explain the significance of the chips before playing the game. The rules are the only instruction the players get.

The players will most likely completely empty the pool almost instantly the first time the game is played. Point out that, as it's impossible to double zero, the game is over. Ask if they'd like to try again. Each student must return all his or her chips to the pool.

Continue to play the game for several rounds without giving the students time to communicate with one another in between.

When doubling the chips in the pool, remember there can "never be more chips in the pool than there are at the start of the game, this is the maximum number of chips the pool can hold." Think of the chips in the pool as fish, in a pond that only has enough room and food in it to support as many fish (or chips) as there were in the pool at the start of the game. That number is the pool's "carrying capacity" for chips.

After that, ask students how they feel about the way the game worked out. As a group, help the students think of ways they could cooperate to allow more of them to get their 10 chips without depleting the pool of resources. Play again using these strategies developed by the students.

Discussion Questions:

1. What do the chips represent? *Renewable resources, such as fish or trees. (Coal, gasoline, oil, iron, aluminum are examples of nonrenewable resources, and therefore aren't applicable in this exercise.)*
2. Can we draw any parallels between the way the group treated the chips and the way individuals, and society as a whole, uses or overuses renewable resources? **DEFORESTATION:** *cutting trees down without planting replacements or at a rate at which newly planted trees are not given time to grow to maturity before they too are harvested; or cutting down old-growth or tropical rainforests which can never be replaced.* **OVERFISHING:** *taking so many fish that not enough are left to reproduce and replenish the stocks for the next year.* **OVERFARMING:** *depleting the soil of nutrients without giving it time to regenerate. (Conversely, we overwhelm nature by producing too much; the rate at which we produce carbon dioxide and other forms of pollution far outpaces the time required by air and water to clean themselves.)*
3. How many chips were taken out of the pool by each player in the different game variations? How many candies (or other rewards) did this generate? How did it make you feel about other members of the group?
4. How did talking about the game make you play differently? After discussing strategies, did it seem differing attitudes were behind different ways you played the game? Why did some participants take as many chips as they could reach and others left some behind? How did this make you feel?
5. Have you experienced a similar situation at home, with friends, in your community? *(It may help to provide an analogy, such as several people in the house competing for hot water in the morning.)* How, in the long run, can more benefit if individuals refrain from taking too much? What sort of attitude do we need to have as individuals to achieve the goal of the greatest benefit for all?

This activity was adapted by permission from an activity developed by Kurt and Ursula Frischknecht and Karen Zimbelman in Thinking Globally and Acting Locally: Environmental Education Teaching Activities by Lori D. Mann and William B. Stapp, ERIC/SMEAC, 1982.