

Tragedy of the Commons

Grade 6-8 Lesson Plan

Purpose

In this activity students are introduced to the classic idea of the tragedy of the commons by observing the results of acting with only their own interests in mind.

Since the tragedy of the commons is a scenario that plays out in many situations, the activity is widely applicable. Here, it's outlined in an environmental science setting.

Duration

One 50-minute class period

Student Objectives

At the end of the activity, students should be familiar with the concept and the consequences of various public land use regimes. They should understand that consequences may be different depending on the scale at which observations are made.

Materials

- M&Ms: ~300 per group of 4 individuals
- Straws: one per student
- Paper plate or bowl "ocean": 1 for every 4 individuals
- Candy bars or some other commodity that the students will greatly desire
- A stopwatch

Instructional Procedures

Warn the students at the beginning not to

eat the M&Ms on the plates in front of them.

Introduce and discuss the concept of sustainability using the following definition: "Sustainability is meeting the needs of the present without limiting the ability of people, other species, and future generations to survive."

Explain the game rules:

- Divide the class into groups of three or four students and have each group choose an ocean name such as North Atlantic, North Pacific, Arctic, Mediterranean, et cetera.
- Give each group one serving bowl and each student one cup, one straw, and one copy of the handout Fishing Log. Put M&Ms into each bowl.
- Each student will be a "fisher" whose livelihood depends on catching fish.
- Each fisher must catch at least two fish (large or small) in each round to survive (i.e., get enough fish to either eat or sell).
- When the fishing begins, students must hold their hands behind their backs and cannot talk. Do not let them know that they can use the straws for fishing.
- Tell students to begin fishing.
- The fish remaining in the ocean after each fishing season represent the breeding population, and thus one new fish will be added for every fish left in the ocean (bowl).
- Fishers who did not catch the two-fish minimum must sit out.

- Add one new fish for every fish left in the ocean (bowl).
- The ocean that has fishermen last the longest win and receive a prize.

Reflection Questions

Have students do a free-write on the following quote by John C. Sawhill, relating it to the fishing activity: “In the end, our society will be defined not only by what we create, but by what we refuse to destroy.” (John Sawhill is the former President and Chief Executive Officer of The Nature Conservancy.)

Use the following sample questions to lead a discussion about the activity:

- How did you feel when you realized that you had depleted your fish stock?
- How did you feel when other fishers joined your ocean group?
- How does this activity relate to real ocean and fishery issues?
- What’s missing in this game? (Impacts to nonhuman animals that rely on fish for their survival, population growth, et cetera.)
- What happens to a resource when you have infinite population growth, growing technology, and a finite resource?
- Are there any commonly owned resources in our region or community? If so, what are some similar issues around them, and how can they best be managed? (Air is a commonly used resource - how do we deal with air pollution? Forestry or animal grazing rights also sometimes create similar discussions. You might also talk about city, national parks, and other public lands, and the competing uses and needs.)
- Have students brainstorm ways to have a sustainable fishery. What rules could be developed? (For example, limits on type

of equipment allowed, amount and type of fish, shorter seasons.)

School/Home Connection

Ask students to bring a variety of items from home that were destined for the trash but could be reused, recycled, or reduced. Students should be prepared to explain how each item could have been reduced, reused, or recycled as they attach it to the Slobosaurus outline (see Extension). The final product will be a large, class collage. Be sure students ask an adult’s permission to bring the items to school.

Teacher Note: Have a selection of reusable or recyclable items for students who are unable to bring something from home.

Extension

- Download the Saving Seafood mobile application by bookmarking it from: www.savingseagood.info
- Have students research a local fishery and include interviews with local fishers, biologists, and other people involved with the fishery.
- Have students choose one of the major world fisheries, such as salmon, cod, or tuna, and develop a sustainable fishing plan, paying attention to international laws and treaties.
- Have students investigate fish farming and its environmental and economic impacts.
- Have students research federal and state laws relating to economic use of public lands by private companies and individuals. Determine whether these laws balance environmental protection and economic development. If not, outline new laws to create such a

balance.

- Participate in a beach or river cleanup project.

Background Information

Garrett Hardin coined the phrase “tragedy of the commons” in 1968. Hardin describes cows grazing on a common land. Since there is no direct cost to using the land, individual ranchers are motivated to add to their herds in order to increase their personal wealth. But each added animal damages the pasture a small, perhaps imperceptible, amount. Ultimately, this gradual degradation destroys the commons. Each rancher acting alone is behaving in an appropriate, rational manner, yet the sum total of all the ranchers’ actions destroys the resource for them all.

From 1950 to 1990, there was a fivefold increase in the world annual fish catch. An increasing demand for fish coupled with environmentally damaging fishing practices are leading to another tragedy of the commons. Roughly 70 percent of the planet’s marine stocks are fully or over exploited, according to the Monterey Bay Aquarium’s Seafood Watch program.

In this activity, students will simulate fishery activity in different oceans. As students progress through the fishing seasons, they will likely overfish their oceans and will have to migrate to other oceans to meet their basic needs. Most groups will eventually create a total crash of fish stocks in all the oceans. This demonstration will clearly indicate the benefits of sustainable fishing practices.

Choosing self-interest is not the best option in this game. This is a type of social trap.

Common Core Standard Suggestions

CCSS.ELA-LITERACY.CCRA.SL.1
CCSS.ELA-LITERACY.CCRA.SL.4
CCSS.ELA-LITERACY.RST.6-8.3
CCSS.ELA-LITERACY.CCRA.W.4
CCSS.ELA-LITERACY.CCRA.R.4

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