

# Tragedy of the Commons – Protecting Public Goods

**SUBMITTED BY:** Michael Ryan Moore, University of Pennsylvania, GSE

**SUBJECT(S):** Economics

**GRADE LEVEL(S):** 9, 10, 11, 12

## ≡ OVERVIEW:

In this lesson, students will use their knowledge of public goods, externalities and regulation to think about the tragedy of the commons. In particular, students will take on the role of fisherman, looking at the trade-off between consumption and conservation. After several rounds of “fishing,” the class will discuss the role of regulation in protecting public goods.

## ≡ NBEA STANDARD(S):

- Economics, II. Economic Systems
- Economics, VII. The Role Of Government

## ≡ RELATED ARTICLES:

- [“GDP: The Rock Star of Economic Indicators”](#)
- [“A Young Photographer Sees His Lens as a ‘Creative and Powerful Conservation Tool’”](#)

## Common Core Standard(s):

- Mathematics (S-IC), “Make inferences and justify conclusions from sample surveys, experiments, and observational studies”

**Objectives/Purposes:** The purpose of this lesson is to get students thinking holistically about public goods and regulation.

- Students will make decisions about consumption and conservation.
- Students will examine the long-term consequences of individual decision-making.
- Students will be able to explain how government intervention can prevent a *tragedy of the commons*.

**Other Resources/Materials:**

For Teachers:

- Internet Access (Outside of the Classroom)
- Printer/Copier
- Large Bowl
- Bag of small candy (e.g. M&Ms or Hershey’s Kisses)
- Box of paperclips

For Students:

- Pen and Paper

**Activity:**

*1. Game*

Introduce the game to students by talking briefly about *public goods*. Remind students that public goods are non-rival and non-excludable. (Do **not** talk about the “commons” or “tragedy of the commons.” Let students learn the content through their experiences with the game.)

In this game, we will be looking at a specific public good: a small lake. For the purpose of this game, the large plastic bowl will serve as the lake. Individual pieces of candy will represent fish in the lake.

Limit each “lake” to 5 or 6 students, maximum (e.g. if you have 14 students, you will need three “lakes”).

One student in each group will be the scorekeeper. Every other student will be a fisher. Have the scorekeeper give each fisher a paperclip. This paperclip is the student's fishing pole. Students are allowed to bend the paperclip into any shape they wish.

The game will take place over several rounds. Each round, the scorekeeper will give fishers 20-30 seconds to "fish" for the pieces of candy. Every fisher needs at least 2 fish to break even. If a fisher catches fewer than two fish, he or she must sit out the next round. Fishers who catch 2 or more fish receive one point for every fish caught. (For example, if I catch 9 fish, I earn 9 points). Have the scorekeeper write down each fisher's score.

Once the round ends, the pond repopulates. Have the scorekeeper count the number of fish left in the lake. For every two fish remaining, the scorekeeper should add 1 extra fish to the pond (e.g. if 13 fish are remaining, add 6 fish between rounds. If 20 fish are remaining, add 10 fish to the pond).

To start the game, put in at least 5 fish for each player. If you have 5 students, around 25 fish will work well.

Have students play through several rounds of the game, keeping a running tally of their score.

If and when a lake is empty, the game is over. Once the game ends, the scorekeeper takes on a new role. Now the scorekeeper is also the rulemaker. The scorekeeper can make any changes to the game he or she wants. For example, rounds can take more or less time. Fishers can be limited in their catch. **The scorekeeper cannot change the way fish repopulate, or the 2 fish minimum for fishers.** Some fishers can be excluded from a round. Let the students experiment with these new rules.

## *2. Discussion*

After the students play through several rounds of the game, bring everyone together for a class discussion. Ask students to explain what happened in their games. How did the first game start? Did anything change along the way? What were the students' strategies?

Next, ask students to reflect on why their lakes emptied. What does that mean for the fishers? What would that mean in real life?

Ask students about their second game. What new rules were implemented? Did these rules help the game last longer? What would these rules represent in the real world?

Use the game as a bridge to introduce students to the *tragedy of the commons* and the difficulty of protecting public goods. Compare the rules to government regulation. How might the government intervene to prevent fishers from over-fishing a public lake? Is this possible without government intervention? Why or why not?

**What Worked and What I Would Do Differently:**

The success of this lesson depends on the scorekeeper. Before students start playing, make sure *everyone* is very clear on the rules. Keep a close eye on each scorekeeper, especially during the final round. His or her authority will keep the games running smoothly.

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