



The fishing game

Lesson plan: a three-round fishing game about shared resources, then the science of overfishing and destructive fishing



Ages	12 to 18 (grades 7 to 12)
Time	60 minutes
Group	Up to 36 students, in groups of four (or four pairs)
Where	Any classroom. No internet needed.
You need	24 beans, buttons or paper fish, a bowl and a cup per group, one record sheet per group

What students learn

- Why shared resources such as fish stocks are easily overused, and how agreed rules and reserves can prevent it.
- What maximum sustainable catch means, found through play.
- Why large, old fish matter so much for fish populations.
- Which fishing methods destroy reefs, and why they are banned.

Before the lesson

1. Count out 24 beans or paper fish per group, with a bowl (the sea) and a small cup (the reserve for game C).
2. Print one **record sheet** per group.
3. Choose one student in each group as the banker, who runs the sea and adds the new fish.

The lesson

- 1 **Why fish matter 5 minutes, slides 1 and 2.** Share the global picture and ask students who in their family fishes or buys fish.
- 2 **Game A 12 minutes, slides 3 and 4.** Play in silence. Most groups collapse the sea within three or four seasons.
- 3 **Game B 10 minutes, slide 5.** Allow talking. Watch which groups agree limits and whether anyone breaks them.
- 4 **Game C 10 minutes, slide 6.** Add the reserve. The spillover keeps the open sea alive even when it is overfished.
- 5 **What happened 13 minutes, slides 7 to 10.** Discuss the results, then link to Hardin, Ostrom, big fish and destructive fishing.
- 6 **Wrap up 5 minutes, slide 11.** Discuss one or two questions.

Answers and what to listen for

The maths behind the game: starting from 24 fish, the most the four families can catch every season forever is 8 in total, 2 each. That leaves 16, which produce 8 new fish and refill the sea to 24. If every family takes 4, only 8 are left, which grow back to 12, and the sea collapses within a few seasons.

Game C: the full reserve of 8 produces 4 new fish a season, which can't stay, so 4 fish swim out into the open sea every season. That is spillover, and it keeps a trickle of fish coming even if the open sea is emptied.

Making it easier or harder

- **Younger groups:** play games A and C only, and skip the big fish slide.
- **Older groups:** graph fish numbers against seasons for each game, and work out the catch that gives the biggest total over 8 seasons. Compare with the idea of maximum sustainable yield.
- **Local link:** ask students to interview a family member who fishes about how catches have changed.

Safety and good practice

- Keep beans and small objects away from very young children.

Curriculum links

- **Science:** populations, sustainability and human impact.
- **Maths:** modelling, growth, graphs.
- **Social studies (Araling Panlipunan) and economics:** shared resources, rules and livelihoods.
- **Ocean Literacy Principle 6:** the ocean and humans are inextricably interconnected.

The teacher reading has the science behind every slide, with links to the sources.

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