Fishing for the Future
ap environmental science

Objective:

Students will model several seasons of a fishery and explore how technology, population growth, and sustainable practices impact fish catch and fisheries management. Students will experience Tragedy of the Commons as it relates to fisheries management.

Activity:
1. Each student is a fisherperson whose livelihood depends on catching fish.
2. Larger pretzel M&Ms represent the most valuable fish (tuna, swordfish, etc.)
3. Smaller plain M&Ms represent more common, smaller fish (snapper, flounder, etc.)
4. When fishing begins, students must hold their hands behind their backs and use the "fishing rod" (straw) to suck "fish" (M&Ms) from the "ocean" (pan) and deposit them into their "boat" (cup).
5. Students must catch at least two fish to survive. Students who do not catch at least two fish must sit out the next round.
6. The fish remaining in the pan will represent the breeding population, with new fish being added periodically.
7. Students keep track of their catch in the table below.

Data:

Season	Catch				# Fish Left in Ocean
	# Large Fish ($5)	# Small Fish ($1)	Total # Caught	Total $ Value	
1					
2					
3					
4					
5					
6					

Analysis Questions:
1. Describe changes in the status of the fishery over time.
2. How did changes in fishing technology affect the fishery?
3. At what point did you realize there might be a problem with the future of the fishery? Did you discuss this with others in your group? Did you change the methodology or rules to compensate?
4. How could you have made your fishery more sustainable from the start?
5. Who would enforce regulations for sustainable resource use in your lab? Who would enforce in the real world?
6. What happens when a commonly owned resource is overused?
7. Overuse of a resource often leads to short term gains and long term losses. Explain why this is.
8. Give two examples, other than ocean fisheries, of common resources.
9. Tragedy of the Commons is a term coined by Garrett Hardin in 1968. Define Tragedy of the Commons.