

Where are all the fish?

Background Information

The five-day, three-hour/day summer camp, held at Khalsa Montessori school, has a variety of sessions students can sign up for. “Dive into the Sea,” open to 1st through 5th graders, is the session this lesson will be given in. Each day of camp will focus on various habitats found in the ocean. All activities have to be geared to children 6 - 10 years old, which can be a challenge. The students at this school are accustomed to helping each other, though. The director has asked that academics be a part of the summer experience, but not as intense as the regular school year.

Objective

At the end of the lesson, students will be able to:

- explain some of the reasons the ocean is important to planet Earth
- describe why over-fishing has occurred
- explain “Tragedy of the Commons” concept
- describe what a Marine Protected Area (MPA) is and what it does

Materials

- pinata (fish-shaped or earth-shaped, if possible!) filled with a small amount of yummy candy, a large amount of polished beach stones (not too pretty!), and medium amount of packages of saltine crackers
- baseball bat for hitting pinata, a rope to tie it up, and a blindfold
- for MPA Simulation - tape and fish crackers

Relevant Vocabulary

over-fishing

bycatch

species

sustainability

Marine Protected Areas

Procedures

1. Campers will watch short video “Once Upon a Tide” (<http://www.youtube.com/watch?v=NvtIWho7X8o&feature=related>) to have them start thinking about the importance of ocean. After the video, ask them to think of all the things that we get from the ocean and

why those things are important to us. Suggest other important items that they don't come up with.

2. Tell them today is your birthday and that we are going to go outside to hit a pinata filled with goodies to celebrate! Excitement everywhere...
 - Everyone gets a chance to hit the pinata, starting with the youngest going to oldest. Hopefully it makes it to the last person - the pinata breaks open and all the items spill out.
 - Most of the kids will run forward at break-neck speed to pick up the "goodies." Obviously, all of the candy, and maybe some of the stones and crackers will be picked up.
 - Campers will then sort what they picked up and be told the following: Candy = desirable fish (like, tuna.); crackers = moderately desirable fish; stones = least desirable fish. Older or more aggressive kids (with more items) = commercial fishermen and younger or less aggressive kids (with less items) = local fisherman They could put their findings in chart form - but, hey it is summer camp!
 - Campers will then talk about what happened. The younger, less aggressive campers might feel they were cheated by the older, more aggressive campers. They might all feel that their were too few desirable items in the pinata. Some of the "goodies" were not desirable enough for either group and remained on the ground.
 - Tell them that this is what happens in the ocean everyday. Let them explain how it happens in the ocean by inferring from the pinata "findings."
 - How can we help the ocean and the fish? Let campers come with ideas. Suggest other important ideas they miss and introduce the concept of Marine Protected Areas. Play the MPA Simulation game <http://www.usc.edu/org/cosee-west/Octo8/MPA%20Simulation.pdf>.
 - Let them explain why MPAs can help the ocean.
 - Briefly suggest some careers that they could do when they grow up that would help heal the oceans.
 - A Seafood Watch Guide for the Southwest will be sent home with each camper to give to their parents. Campers will be asked to share what they learned about the ocean today and the guide with their parents and siblings as way they can have a direct impact on the ocean from where they live here in the desert.

Arizona State Standards

Science Standards

Strand I: Inquiry Process

Concept 1: Observations, Questions, and Hypotheses (Observe, ask questions, and make predictions)

Performance Objective 3: Formulate predictions in the realm of science based on observed cause and effect relationships

Concept 3: Analysis and Conclusion (Organize and analyze data; compare to predictions)

Performance Objective 2: Construct reasonable interpretations of the collected data based on formulated questions

Concept 4: Communication (Communicate result of investigation)

Performance Objective 4: Communicate verbally or in writing the results of an inquiry

Strand 2: History and Nature of Science

Concept 1: History of Science as a Human Endeavor (Identify individual and cultural contributions to scientific knowledge)

Performance Objective 2: Describe science-related career opportunities

Ocean Literacy Principles

Principle 4: The ocean makes Earth habitable

Principle 5: The ocean supports a great diversity of life and ecosystems

Principle 6: The ocean and humans are inextricably interconnected

Ocean for Life Elements

Essential Element 5: Environment and Society - Human influences on oceans