KIDS ENVIRONMENTAL LESSON PLANS

This lesson plan developed by:

A Shark's Sixth Sense

Overview:
Did you know that sharks have a sixth sense? Sharks have the ability to detect electricity with specialized gel-filled pores found in their snouts, called ampullae of Lorenzini. Using magnets, students can mimic how hammerhead sharks use this sensory system to find stingrays, their favorite prey, hiding in sand.

Ocean Literacy Principles:

5. The ocean supports a great diversity of life and ecosystems

Materials:

- Shark and stingray sheet
- Scissors
- Thin cardboard
- Tape or glue
- 6 small magnets
- Large, shallow container
- Enough sand to fill the container

Set-up Prior to Activity:

1. Print and cut out the shark and stingrays found at the end of this activity. Tape or glue them to pieces of thin cardboard so that they are a bit sturdier.
2. Tape or glue a magnet to underneath the shark's head and then underneath each stingray.
3. Fill the large, shallow container with sand.

A Shark's Sixth Sense (cont.)

Duration:
15-30 minutes

Physical Activity:
Low

Background:
Sharks have a network of electroreceptors called ampullae of Lorenzini to help locate prey. The ampullae of Lorenzini are sensing organs that consist of many specialized gel-filled pores that are concentrated around the snout of a shark. Sharks use this sensory system to detect the weak electric fields produced by prey. All living animals emit an electric field, given off by a heartbeat or muscle movement. Even if prey is hidden under sand, the shark's ampullae of Lorenzini can detect the electric fields produced by the prey.

Hammerhead sharks have wide, mallet-shaped heads that improves their ability to find prey. Their wide-set eyes give them a better visual range than many other sharks and they are able to spread highly specialized sensory organs, including ampullae of Lorenzini, over their oddly shaped head. The hammerhead shark's increased ampullae sensitivity allows it to thoroughly scan the seafloor and find its favorite prey item, stingrays, which usually bury themselves under sand.

Activity:
Part 1 – Introduction to senses

Begin the activity with a verbal "brainstorm" about the five types of senses humans have (sight, hearing, smell, taste and touch) and how we use the different senses. The sensing organs that are

associated with each sense send information to the brain to help us understand and perceive the world around us. Discuss how sharks have a sixth sense to detect electricity in the water, which helps them find prey.

Part 2 – Finding hidden prey

1. In the large, shallow container, hide the five stingrays (with magnets attached) just beneath the sand.
2. Without digging into the sand, ask the students if they can find the prey using their five senses as a human.
3. Next, have them use the hammerhead shark (with the magnets attached to the snout) to find the stingrays, mimicking the shark's sixth sense. Were they able to find all five stingrays?

Discussion:
As a group, discuss the following questions:

- Were you able to use your senses as a human to find the stingrays?
- Was it easier to find the stingrays as a hammerhead shark?
- How does this sixth sense help sharks find their prey?

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