

SciGirls Activity 3

California Fish



Icebreaker

Take a dive with this simple Cartesian Diver activity!

SciGirls Skill: Observing

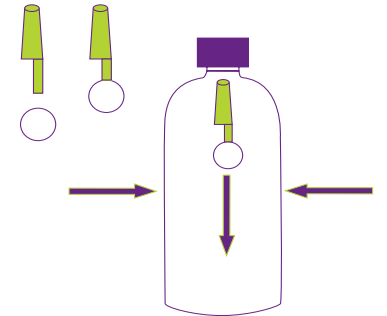
Guide your girls as they

- 1) Stick the pen top into the piece of clay, so it looks like the illustration below.
- 2) Fill the bottle to the neck with water. Put the pen top in the bottle and seal the bottle tightly with the screw top lid. The pen top floats!
- 3) Now squeeze the sides of the sealed bottle. The pen top sinks! Release the bottle, and watch the pen top float back up!
- 4) Instead of the pen top and clay, put a ketchup or mustard packet in the bottle. Can you make the packet sink and rise, too?



You'll need:

- an empty 2-liter soda bottle, with screw-top cap
- water
- a pen cap
- small wad of clay
- optional: fast food packets of mustard, ketchup, or mayonnaise



SciGirls Suggestion: When you squeeze the bottle, the pressure inside increases. This compresses the little air bubble that's trapped inside the cap, and the bubble can't keep the cap afloat. Release the bottle, and the air bubble re-expands, floating the cap to the top. Many fish rely on a bladder system that works in a similar way to move up and down in their watery environment.



For more information about this activity, visit pbskidsgo.org/dragonflytv/superdoit/cartesian_diver.html

Investigation

Fish Mouths

We're Milan and Harison, and we love going to the ocean. We like to learn about the animals that live off the coast of Los Angeles, and a great place to do that is the Long Beach Aquarium of the Pacific. Our favorite exhibit there is the shark and ray pool. You can see them up close and even touch them. We think it's interesting to watch a ray eat—its mouth on the underside of its body! You can do the same kind of observation at a pet store. We got to wondering: How does a fish's mouth type affect what and how it eats?

We took a ride on the Aquarium's research boat, the *Conqueror*, and threw a trap into the bay to see what sorts of fish live near the ocean bottom. We came back the next day to count the fish we found in the trap, then we released them. Next, we got permission to snorkel the Amber Forest aquarium exhibit, to see which of those fish from the bay were also in the exhibit. Finally, from outside the exhibit, we watched those fish at feeding time to see how they ate their food.



You'll need:

- fish identification guide
- notebook
- access to an aquarium with many different fish, or to a pet store that carries a variety of fish



Find out more about Milan and Harison's investigation at pbskidsgo.org/dragonflytv/show/californiafish.html



Check out this investigation on the SciGirls DVD. Select "California Fish" from the main menu.



SciGirls Want to Know

How does a fish's mouth type affect what and how it eats?

Guide your girls as they

- 1) Locate a zoo, aquarium, or fish store where they can make their observations.
- 2) Observe a variety of fish species, and categorize each fish as having one of the following mouth types: a) upward facing mouth; b) forward facing mouth; c) downward facing mouth.
- 3) Make a three-column listing, one column for each mouth type, and write the name of the fish species into the appropriate column. Try to find at least 3 or 4 fish for each category.
- 4) Ask permission to have the fish fed, and observe how the fish eats its food. Does it swim to the top of the aquarium and grab food from the surface? Does it have to wait for food to sink to the bottom, so it can scoop it up there? Record observations in your notebook.
- 5) Conduct research about what types of food each fish eats in the wild. Add this information to your notebook. An example of an Internet resource is thetropicaltank.co.uk/Fishindx/a-z_comm.htm. Make notes about whether the fish eats live food, scavenges along the bottom, or eats both plants and animals.
- 6) Develop a conclusion about how the fish fits into its environment. For example, a certain fish may be a hunter, while others may live off the scraps that other fish leave behind, while still others rely on plants for their food.



SciGirls Secret

Most of us learn to watch animals in a zoo or aquarium for entertainment, but it's quite a different skill to observe them for scientific purposes. Coach kids on the importance of writing down good notes about what they see and to make observations about each fish that will allow them to compare and contrast the fish later on.



SciGirls Synthesize Data and Analysis

On the *Conqueror*, Milan and Harison saw fish with three basic types of mouth: upward facing, front facing, and downward facing. They saw similar types of fish when they snorkeled in the Amber Forest. When they watched those different kinds of fish eat, they saw that fish with mouths facing down mostly ate food below them, and fish with mouths facing up ate food above them. Fish with forward-facing mouths ate food above, below, and all around them!

It is hard to come up with firm conclusions from this type of inquiry, but work with kids to look for patterns or generalizations that come out of their observations. You might consider doing a similar inquiry involving birds, based on beak shape.

Keep Exploring!

It's also interesting to study fish body shapes. Fish come in all kinds of shapes and sizes. Have your kids sketch out different fish body types (bottle-shaped, fan-shaped, tube-shaped, etc.) and relate that to the way the fish swims through the water. Which fish are the speedy ones, and which move slowly and gracefully through the water? How does the fish's body shape affect the way it swims?