

Louis The Fish

(GPN # 5)

Author: Arthur Yorinks

Illustrator: Richard Engelski

Publisher: Farrar, Straus & Giroux



Program Description: LeVar explores exotic marine life, tide pools, and dolphins as he visits the New England Aquarium in Boston, and the Aqua Circus of Cape Cod.

It's In The Water

Key Words: Fish, gasses, water

Concept: Fish breathe gasses that are in water.

People—like all mammals including Dixie and Dolly, the dolphins in this episode—get the oxygen they need from the air. Fish and many other sea animals get oxygen from the water they live in. Fish take in water (which includes oxygen) through their gills. Some other water animals, like soft-shelled turtles, take in oxygen from the water through their skin. Water contains gasses like oxygen and carbon dioxide.

Materials: Chopped red cabbage, water, pan, heat source, straws, small clear plastic cups, paper towels, fish tank (optional).

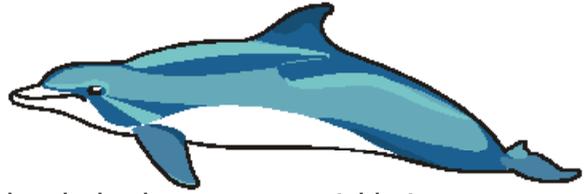
1. Boil 1 cup of chopped red cabbage in 1 cup of water to create a blue liquid that will turn purple when carbon dioxide is dissolved in it. For a larger amount, increase the recipe by keeping the cabbage to water ratio 1–1.
2. Pour at least 1" of the blue liquid into small cups. Give each group of students two of these cups and enough straws for each student. Have a group member use a straw to blow air into the liquid in one of the cups. Ask students to compare the color of the liquid in the cups. (They will see the color of the liquid change from blue to purple.) Explain that the color change is caused by carbon dioxide, which was blown into the water. When carbon dioxide dissolves in water, it forms carbonic acid and causes the color to change.

3. Have them release the gas by vigorously stirring the water with a straw. After the carbon dioxide is released, the water will return to a blue color. Have students take turns doing this (using their own straw, of course) until each group member has had a chance to experience the change.
4. To live, fish need oxygen which is also a gas dissolved in water. If there is a fish tank available, have students look for ways that oxygen is being introduced into the water. Ask students why it wouldn't work to keep fish in a jar with the lid on. (The fish would eventually use all the oxygen, and the lid would keep oxygen from entering the jar and the water.)

Science Note: Some tanks have an aerator that forces air bubbles through the water and causes oxygen to be dissolved. Oxygen is also introduced at the surface. Tanks usually have filters or pumps that circulate the water and as the water moves it is exposed to oxygen in the air at the surface. Water plants also release oxygen.



Streamlined Racers



Key Words: streamlined, fish, dolphins

Concept: Many water animals have body shapes that help them move quickly in water.

Because water is denser than air, moving in it can be more difficult. If you've tried to run in water, you know it can really slow you down. This isn't a problem for fish and water mammals like Dixie and Dolly because they have smooth, slim, streamlined bodies that move easily through water.

Materials: Oil-based modeling clay, pipe cleaners, wire clothes hanger, sink or large tub of cool water.

1. Give pairs of students a stick of clay, two pipe cleaners, and a clothes hanger.
2. Have students divide the clay in half, and use half to make a flat cube. With the other half have them make a slim, smooth, ocean animal such as a dolphin or shark. This kind of shape is called "streamlined."
3. Have them push the end of a pipe cleaner into the top center of each of these shapes, and use the pipe cleaners to hang the two shapes on a clothes hanger. They should make sure the ocean animal and one of the cubes large flat sides are both facing forward at the same distance (about 8"-10") from the hanger. The pipe cleaners should be loosely bent around the hanger so the shapes can swing back and forth freely.
4. Holding the top of the hanger, have them submerge their shapes into one end of a tub filled with about 6 " of cool water. The goal is to race the two shapes to see which moves faster in water. For the race to be fair, they must pull the hanger so that the tops of the pipe cleaners are even throughout the race; the water will push against each shape, but will push one more than the other. Have them predict what will happen.
5. Race the objects by pulling the hanger in a straight line to the opposite end of the tub. Which shape reached the opposite end first? (The streamlined shape) After repeating the race several times, have students further streamline their water animal and race again. Ask them to explain the race results. (The streamlined shape moves quickly and easily through the water because, unlike the cube, the water does not directly hit against it to push it back. Instead the water slides easily past it.)

Extension: Research other water animals to make models of and race. Students will find that not all have streamlined bodies. Some water animals don't need to move quickly in water. An example is a sea urchin, which is protected by spines so it doesn't need to run away quickly or move quickly to catch its food.