OCEAN
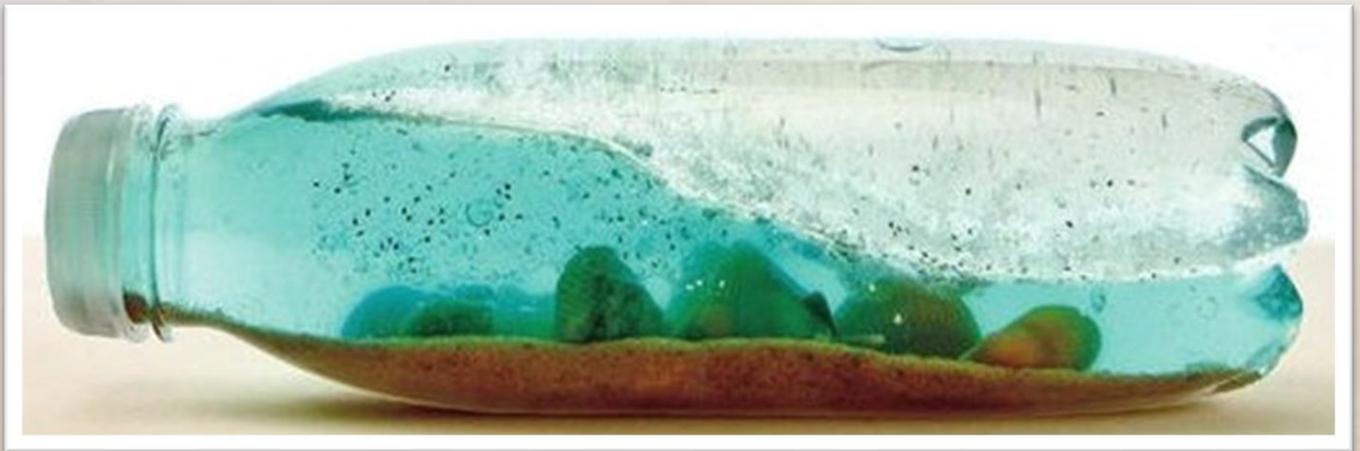## IN A
BOTTLE

A trip to the beach is a wonderful way for children to explore the ocean and all its treasures, mysteries, and scientific intrigue. Making an Ocean in a Bottle is a great way to bring beach explorations into the home, and a fun opportunity for children to learn about currents and waves while creating a beautiful sensory toy!

MATERIALS

Empty Bottle or Jar
Water
Oil
Funnel
Blue Food Coloring
Various Oceanic Items:
Seashells
Sand
Rocks
Fish Figurines
Optional: Glitter (Blue, Green, Silver, or Gold)

Photo Credit: CraftGossip.com

METHOD

1) Fill bottle or jar ¾ full with water.
2) Add one drop of blue food coloring; *(Too much and the water will be too dark to see the items inside)*
3) Drop oceanic items into the bottle; (Use a funnel for sand and glitter.)
4) Place funnel into bottle and pour oil into bottle, leaving about 1 inch of air at the top. *(Note: Mineral or baby oil work best, because they are clear and not yellow!)*
5) Place bottle cap on and tighten well.
6) Explore! Shake the bottle up and watch the different objects settle; Hold the bottle on its side and watch the items reconfigure on the "ocean floor" and in the "sea;" Tip and rock the bottle from side to side creating waves and currents.

THE SCIENCE OF OCEAN IN A BOTTLE

What do you see happening when you swish and swirl around the liquid in your bottle? Is it similar to what you see happening to things like rocks, seashells, sand, crabs, and seaweed when you go to the beach? The forces at work here are waves and currents. Read what our friends at Ducksters.com have to say about the science of these two powerful forces:

OCEAN WAVES AND CURRENTS

The water in the ocean is constantly moving. On the surface we see water moving in the form of waves. Below the surface the water moves in great currents.

Ocean Waves

One of the things many people love about the ocean is the waves. People love to play in the waves, surf the waves, and the sound of the waves crashing on the beach.

What causes ocean waves?

Ocean waves are caused by wind moving across the surface of the water. The friction between the air molecules and the water molecules causes energy to be transferred from the wind to the water. This causes waves to form.

What is a wave?

In science, a wave is defined as a transfer of energy. Ocean waves are called mechanical waves because they travel through a medium. The medium in this case is water. The water doesn't actually travel with the wave, but only moves up and down. It's the energy that travels with the wave. You can go here to learn more about the science of waves.

What are swells?

Swells are rolling waves that travel long distances through the ocean. They are not generated by the local wind, but by distant storms. Swells are typically smooth waves, not choppy like wind waves. A swell is measured from the crest (top) to the trough (bottom).

Ocean Currents

An ocean current is a continuous flow of water in the ocean. Some currents are surface currents while other currents are much deeper flowing hundreds of feet below the surface of the water.

What causes ocean currents?

Surface currents are usually caused by the wind. As the wind changes, the current may change as well. Currents are also influenced by the rotation of the Earth called the Coriolis effect. This causes currents to flow clockwise in the northern hemisphere and counter clockwise in the southern hemisphere. Deep ocean currents are caused by a number of things including changes in the temperature, salinity (how salty the water is), and density of the water. One other factor impacting ocean currents is the gravitational pull of the Moon and the Sun.

OPPORTUNITIES FOR EXPANDED LEARNING

Making an Ocean in a bottle is also a fun science lesson on density.
Learn more about the density of oil and water HERE!

Oceans do more than just provide fun beach days for humans!
Check out more interesting Ocean Habitat facts from National Geographic Kids HERE!

Did you know there are fish that glow in the dark in the deepest known parts of the ocean?
Discover this and more fun ocean facts HERE!

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