

Ocean in a Jar

Suggested Age / Grade Level	Concepts Covered
Grades 3 - 8	<ul style="list-style-type: none">• Oceanic zones based on amount of light penetration and depth• Marine animals that live in each zone and ocean ecosystems• Oil spills/plastics the impact they have on an ocean ecosystem

Overview

The ocean can be divided into several layers with similar characteristics based on the amount of sunlight that penetrates each layer. The marine organisms living in each layer have adapted to their surroundings,

Learning goals

- Learning about the oceanic zones and how the amount of sunlight penetration into zone affects the types of marine organisms that live in each zone
- Learning about the ocean ecosystem (producers, consumers) based on the oceanic zones - complementing the food chains activity
- Learning about the adaptations that marine organisms in each zone have based on where they live
- Learning about the negative effects of oil spills and plastics on marine ecosystems

Key Terms

Adaptations - Special characteristics of organisms that allow them to survive in an environment, like the large ears of elephants and manes of lions in hot temperatures and the thick fur of polar bears in cold temperatures

Sunlight Zone - The top-most layer of the ocean that receives the most sunlight, allowing photosynthesis and diverse marine organisms to be found here

Twilight Zone - The second layer of the ocean where sunlight cannot penetrate that well

Midnight Zone - The third layer of the ocean where sunlight cannot penetrate at all, and marine animals have special characteristics like bioluminescence in order to survive

Abyss - Hardly any animals are found in the fourth ocean zone which is why it is called the abyss

Trenches - The last zone of the ocean where small trenches are filled with water and life can still be found

Marine animal examples - Phytoplankton, Algae, Anglerfish

Adaptation examples - Gills, Feelers

Bioluminescence - Animals have chemicals inside their bodies that can react to allow their body parts to “light up” or bioluminesce

Activity Timeline

Activity	Time
Introduction to the Ocean and Animal Adaptations <ul style="list-style-type: none"> ● Comparison between Canadian and African animals based on temperature differences 	2 - 3 minutes
Activity - Making an Ocean in Jar	10 - 20 minutes
Discussion about each ocean zone: <ul style="list-style-type: none"> ● Sunlight Zone ● Twilight Zone ● Midnight Zone ● Abyss ● The Trenches Based on: <ul style="list-style-type: none"> ● Sunlight ● Temperature ● Pressure ● Oxygen The marine animals found in each zone and the adaptations the animals have: <ul style="list-style-type: none"> ● Bioluminescence ● Eyesight evolution ● Gills ● Feelers 	10 minutes (roughly 2 minutes per zone)
Discussion about Deep Sea Divers	2 minutes
Conclusion	1 minute

Materials Needed

- ½ Cup of Rubbing Alcohol
- ½ Cup of Cooking Oil
- ½ Cup of Water
- ½ Cup of Dish Soap (Dawn dish soap or liquid laundry detergent like Tide)
- ½ Cup of Corn Syrup or Honey
- Food coloring (red, blue, green)
- Clear jar (can either be large or small)
- Funnel
- Disposable Gloves (when handling the liquids, especially Rubbing Alcohol)

Additional Setup Requirements

Prepare the experiment close to a sink where it will be easy to clean up a mess. When handling the Rubbing Alcohol, the children should be careful and can use disposable gloves if necessary when pouring it.

Procedure - Activity

1. In a bowl, add all three colors to the honey or corn syrup and mix until it is black. Using the funnel, add it to the jar.
2. In a clean bowl, add red and blue food coloring to the dish soap and mix until it is purple. Using the funnel, add it to the jar.
3. Add green food coloring to the water in a bowl and mix until it is dark green. Add this to the jar using the funnel.
4. Add blue food coloring to the cooking oil in a bowl and mix until it is dark blue. Add this to the jar using the funnel.
5. Add some blue food coloring to the rubbing alcohol in a bowl and mix until it is light blue. Add this to the jar using the funnel.