

Ocean Diving

Intended Grade Level

5 Grade

Summary

Students will learn about the 5 layers of the ocean and fill out the chart of information. Students will create the 5 layers of the ocean in a jar and test the opacity of the water. Then students will answer questions about the experiment and ocean life.

Materials

1 Jar
Water
Food coloring (black and blue)
Tape
Corn syrup
Spoons
Vegetable oil
Rubbing alcohol
Dish soap
Measuring cups
Funnel

Standards

LS2-5-2
LS2-5-3
LS4.C
ESS2.A
CCSS.ELA-LITERACY.W.5.8
CCSS.ELA-LITERACY.W.5.9



Notes

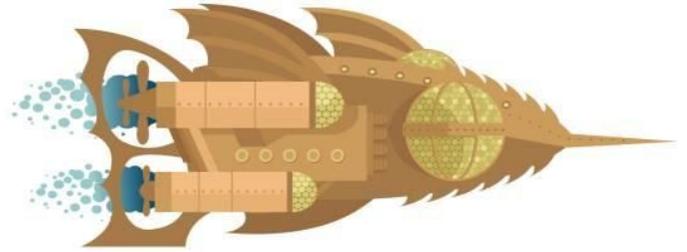
1. You may want to find stickers of sea creatures and plant life to stick to the jar. You could also have students draw their own pictures to tape to the jars.
2. For filling out the chart, you may have previously discussed the ocean ecosystem or have them read about it before doing this activity.
3. If you have rectangular or square jars, you can stack the ocean layers on top of each other for a better model.
4. Based off a lesson from:
<https://www.icanteachmychild.com/make-ocean-zones-jar/>

5. If you do not have a lot measuring cups available or want to make it a little more challenging, then you can bring some math into this by providing quarter, half, and full cups.
6. If your dish soap is already blue, then you can still add a little of the blue food coloring.
7. You can dye the oil blue using oil-based food coloring, but other food coloring does not work.
8. It may be easier to use a syringe to add the liquids that need to be added slowly.
9. You will be able to move around with the jar without disturbing the layers too much. Intentionally shaking the jar may make the colors bleed.
10. The article used was obtained from
<https://www.worldatlas.com/articles/the-5-layers-of-the-ocean.html>

Name _____

Ocean Diving

You have been selected to test out the newest submarine model. With this submarine, you will be able to travel to the abyss and even the trenches. Your job will be to gather information about the 5 layers of the ocean by reading the article below.



You have made it to through the 5 layers of the ocean. Fill out the chart with information about the 5 layers of the ocean. Some spaces may not have any answers and can be answered with “none.”

Layer of the Ocean	Plant Life	Animal Life	Depth

Now that you know about the 5 layers of the ocean, we will be creating a model of the ocean layers using jars. Each jar will be a layer of the ocean.

Material

1 Jar

Water

Food coloring (black and blue)

Tape

Corn syrup

Spoon

Vegetable oil

Dish soap

Rubbing alcohol

Measuring cup

Funnel

Directions

1. Mix black food coloring into $\frac{3}{4}$ cup of corn syrup. Then pour it into the glass jar.
2. Mix blue food coloring into $\frac{3}{4}$ cup of dish soap. Use the funnel to add it into the jar.
3. Add blue food coloring into $\frac{3}{4}$ cup of water. Then use the funnel to **slowly** add it to the jar.
4. Add $\frac{3}{4}$ cup of the oil.
5. **Slowly** add $\frac{3}{4}$ cup of rubbing alcohol.
6. Use the tape to label each layer of the ocean.

Questions

1. Try putting a ruler behind the jar. What do you notice?

2. Why do you think the ruler was visible in some parts of the jar and not in others?

3. Do you think this is true in real life? Why?

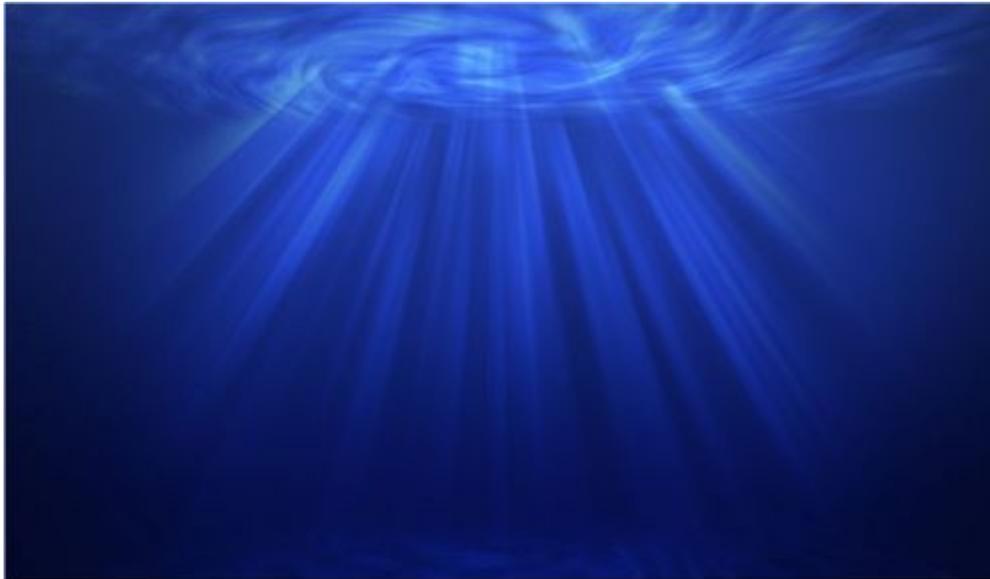
4. Why do you think there is no plant life in the lower layers of the ocean?

5. What are some adaptations that would help different organisms in each layer of the ocean?

6. Why do you think they have different adaptations?

The 5 Layers Of The Ocean

The ocean may be mysterious, but science has taken us far enough to be able to pinpoint five layers that exist within it.



There is plenty we do not know about the "deep sea" zones of the ocean.

The ocean has 5 different and distinct layers that each have their own unique characteristics. The layers range from the surface layer where most ocean activities occur, to the deep dark depths of the water that have yet to be fully explored. The deep layers have unique sea creatures, freezing temperatures, and high pressure. With the advancement in technology, scientists are hopeful that the oceanic depths will be explored thoroughly. As the depth increases, the temperature, light, and sea life decreases. Below is a summary of the ocean's 5 layers.

5. Hadalpelagic Zone (The Trenches)

The Hadalpelagic zone is also called the Trenches and is found from the ocean basin and below. The Hadalpelagic zone lies between 19,686 feet to 36,100 feet. The depth depends on the trenches and valleys in the area. Japan's Marina Trench is the deepest part of the ocean ever to be explored by man, and it sits at 35,797 feet. In Puerto Rico, fish were discovered at 27,460 feet deep. The zone cannot be explored without specialized kits due to its cold temperatures and high pressure. Natural light cannot penetrate to the Trenches. Different creatures can be found in this layer, mostly invertebrates including starfish.

4. Abyssopelagic Zone (Abyss)

The Abyssopelagic zone, also known as the Abyss or Abyssal zone, lies just above the hadalpelagic layer between 13,124 feet and 19,686 feet. The layer's name has origins in the Greek language and loosely translates to "no bottom." Just like the layer below it, temperatures are near freezing point, and there is no penetration of natural light. Pressure is also high due to the weight of the water above. Invertebrates like sea stars and squids can survive in this environment. Over 75% of the ocean floor lies can be found within this zone with the continental rise starting here.

3. Bathypelagic Zone (Midnight Zone)

The Bathypelagic layer is found between 3,281 feet and 12,124 feet just above the Abyss. This layer is also called the midnight or the dark zone. Although the Bathypelagic zone is dark, visible light may be observed from sea creatures found here. The pressure in the zone reaches 5,858 lbs for every square inch, and a huge number of different sea species are found in the layer. Many animals in this layer are either black or red thanks to low sunlight penetration. Some whale species, like the sperm whale, spend some time at this level in search of food.

2. Mesopelagic Zone (Twilight Zone)

Above the Bathypelagic zone lies the Mesopelagic layer (Twilight or midwater zone). The Mesopelagic zone lies between 656 feet and 3,281 feet. The zone is home to some of the strangest sea animals like the swordfish and the wolf eel. Faint sun rays penetrate the layer.

1. Epipelagic Zone (Sunlight Zone)

The Epipelagic zone is known as the surface layer or the sunlight zone of the ocean ranging from the surface to 656 feet. There is plenty of light and heat within this layer although both decrease as the depth increases. Pressure is also minimal and increases with depth. Most oceanic life and human activities like leisure, fishing, and sea transport occur in the Epipelagic zone. The coral reefs can be found in the layer and the photosynthesis process occurs here.

This page was last updated on **August 1, 2017**.
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On WorldAtlas.com

Where Do Most Hurricanes

The Venomous Snakes Of Texas

Top North and South American

<https://www.worldatlas.com/articles/the-5-layers-of-the-ocean.html>