Ocean Layers in a Jar

Introduction

Have you ever wondered why it's easier to float in the ocean than in a swimming pool? Would you believe us if we told you the secret is... salt?

In this experiment, we'll learn about our moana (oceans) by creating different coloured salty solutions and observing how they interact and layer. **The moana is connected to the star Waitā in the Matariki cluster. Waitā is associated with saltwater, alongside the food and animals that come from the sea and our relationship with the ocean world.**

Predict

But first, let's make some predictions!

- Do you think that the salty mixtures will look different before the food colouring?
- What effect do you think the salt will have on the water?

What you will need:

- **Ipu roa** - A tall, thin clear container
- **E toru ngā kōata** - Three glasses (to hold different concentrations of salty water)
- **Ipu ine** - Measuring cup
- **Tīpune** - Teaspoon
- **Tote** - Salt
- **Wai pūmahana** - Warm water
- **Kara kai** - Food colouring (3 colours)
- **Pune** - Spoon
- **Ngōpata** - Liquid dropper or syringe

Instructions:

1. Pour 100 mL of warm water into each of three glasses.
2. Add 4 teaspoons of salt to the first glass, 2 teaspoons of salt to the second glass, and no salt to the third glass and stir each glass well until salt is dissolved.
3. Add 1–2 drops of food colouring to each glass, choose a different colour for each glass and label which colour goes with which salt level!
4. Use your liquid dropper to add the liquid with the most salt into your tall, thin container.
5. Next, slowly add the second most salty liquid - one drop at a time.
6. Finally, add the liquid with no salt in the same way.

Reflect:

- What did you notice about how the colours moved (or didn't move) when you added them to the same container?
- Why do you think we used warm water?

How it Works

Salty water weighs more!

This experiment works because of something called density. **Density is a way to describe how much "stuff" is packed into a certain amount of space.**

The most salty water has the most salt stuffed into the same amount of water. Even though you can't see the salt anymore, it's still there—making the water heavier.

Because **heavier (denser) liquids sink below lighter (less dense) ones**, the salty water stays at the bottom and the less salty water floats on top—if you add them slowly and carefully!

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