Global Citizenship Marine Environment

Science Experiments

Junior- Senior Infants

Dancing Rice

What you need:

- Water
- A clear glass/jar
- Spoon
- Rice (instant dehydrated rice works best as normal rice is too dense)
- Food colouring
- Vinegar
- Baking soda (Bicarbonate of soda)

Methodology

1. Pour water into the clear jar until its about ¾ full.
2. Add a few drops of food colouring, and stir
3. Add in one tablespoon of baking soda and stir well.
4. Add in one tablespoon of rice.
5. Add in three tablespoons of white vinegar.
6. Watch as the vinegar and baking soda react, creating fizzing and bubbling, causing the rice to 'dance'.

The Science

This is a great example to show cause and effect as well as a chemical reaction. A reaction occurs when you add vinegar to baking soda. These two ingredients combined result in a gas being produced. This gas is Carbon Dioxide. You can see the gas being made as you can hear the fizzing and you can see the gas bubbles. This chemical reaction occurs in nature when rain falls on limestone rock, and in the sea, when acidic ocean water weakens some animals shells.

1st-2nd Class

Rain Cloud in a Jar

What you need:

- Food colouring (ideally blue, but you might like to use additional colours)
- Water
- A clear jar/glass
- Shaving foam
- Droppers (a teaspoon will work either)

Methodology:

1. Make a concentrated food colouring solution by mixing drops of food colouring with water. This will be the rain.
2. Fill a clear jar/glass about three quarters full of cool water. Spray shaving foam on top of the water so it looks like a fluffy cloud.
3. Ask a student to place some coloured water on top of the cloud (shaving foam), using either a pipette or spoon.
4. As more coloured water is placed on top of the cloud, it gets heavier. After a few minutes, the coloured water (rain) travel through the cloud and drop into the water underneath.
5. Continue to add more water and enjoy the coloured rain mixing with the water.

The Science:

This experiment shows part of the Water cycle. When water evaporates, water vapor rises into the air. Dust and other particles floating in the air provide surfaces for water vapor to turn into water drops or ice crystals. The tiny drops of water condense on the dust particles to form cloud droplets. Clouds are made up of a group of cloud droplets bundled together with raindrops. When these cloud droplets grow heavy enough, gravity pulls them down as raindrops.

3rd-4th Class

Underwater Volcano

What you need:

- Small clear container
- Large clear container (the taller the better!)
- Heavy object (e.g., rocks)
- Red food colouring
- Water

Methodology

1. Fill the large container with cool water.
2. Place the heavy object in the small container. Add a couple of drops of food colouring.
3. Fill the small container with hot water. The food colouring should automatically mix with the hot water but stir it if it doesn't.
4. While holding the small container upright, place the small container into the large container. You are aiming for the small container to sink to the bottom of the large container while staying upright.
5. Watch the coloured water 'erupt' from the small container. The hot coloured water should rise up like an underwater volcano.

The Science

Hot water is less dense than cold water. Therefore, warm water always rises to the top, and cold water always sinks to the bottom. The particles of the hot water are moving faster and are further apart than those particles of the cold water. The "underwater volcano" was created when the hot red coloured water rises up and circulated at the top of the container because it was less dense than the surrounding cold water. Less dense fluids rises and more dense fluids sink. The coloured hot water then remained at the top of the container and created what looked like an erupting volcano.

Here is a cool video of an underwater volcanic eruption, in case some of the students have never seen one before. https://www.youtube.com/watch?v=hmMlspNoZMs

5th-6th Class

Grow Salt Crystals

What you need:

- Hot water
- Salt (table salt or Epsom salts)
- Pipe cleaners
- Spoons
- Popsicle stick (or pencil will do!)

Methodology:

1. Boil water in a kettle
2. Choose your salt. Different salts produce different types of crystals. Table salt crystals takes a few days to grow. Epsom salt crystals grow faster but are smaller, needle-like crystals.
3. Pour hot water into a cup until its about ¾ full. Add in a spoonful of salt and mix to dissolve the salt in the water. Continue to add salt, one spoon at a time, until the salt won't dissolve when stirred. It is very important to ensure you have dissolved as much as salt as possible to the solution
4. Next, ask the teacher to slowly pour the hot salty water into a clean jar/container. Don't allow any of the salt grains to fall into the new jar (if there are undissolved salt grains in new the jar, the crystals might grow around those grains instead of your pipe cleaner).
5. Add a couple of drops of food colouring to your new jar of salty water.
6. Shape a pipe cleaner like a piece of coral. Tie one end of the pipe cleaner to the popsicle stick, as this will anchor the pipe cleaner in place. The pencil or popsicle stick should be long enough to lie across the top of the jar.
7. Cut the pipe cleaner short enough so that it will avoid touching the bottom or the sides of the jar, or the crystal will be lumpy and small. Balance the pencil/popsicle stick on top of the glass jar. The pipe cleaner should hang inside the jar and extend into the water. If the pencil/popsicle stick won't stay still, tape it against the jar.
8. Move the jar to a safe place where it will be undisturbed. (Epsom salts grown best in the fridge!)
9. Observe the growth of crystals. This could take a few hours, or a few days!

The Science:

The salt crystals could only stay dissolved when the water was hot. Cooling the solution down made it supersaturated, which is unstable. A supersaturated solution is a solution that has more material dissolved in it then it would normally allow.

You should have found that the water travelled up the string through a process called capillary action, bringing the salt with it. As the water evaporated on the string, salt crystals were left behind.