

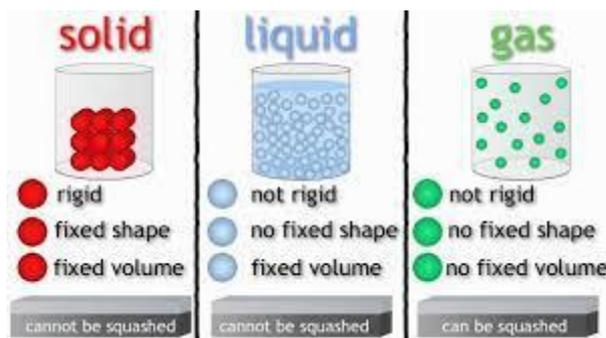


Sacred Heart Primary School

Curriculum Theme Plan

Science: States of Matter

Year 4 - Term 5



Rationale: In order to address the skills and knowledge as outlined in the national curriculum. The topic of states of matter is age appropriate for Year 4. In this unit, 'States of Matter,' children will be taught about the differences between solids, liquids and gases, classifying objects and identifying their properties. The children will work scientifically and collaboratively to investigate the weight of a gas. Furthermore, they will have chance to find the ideal temperature to melt chocolate. They will explore in-depth how water changes state, exploring melting, freezing, condensing as well as a particular focus on evaporation. Finally, they will learn about the stages of the water cycle, creating an interactive water wheel to represent the different stages.

Pre-Unit task: water cycle board game

Learning Objectives:

1. To sort and describe materials.
2. To investigate gases and explain their properties.
3. To investigate materials as they change state.
4. To explore how water changes state.
5. To investigate how water evaporates.
6. To identify and describe the different stages of the water cycle.

Curriculum Links:

Geography Links - physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains and the water cycle.

DT - making rice crispy cakes (link to science lesson on melting chocolate.)

SMSVC Links

Spiritual - Reflection on the natural world. Environment and human achievement. Vocational - Develop them as independent thinkers and learners. Social - provide a range of opportunities and activities for pupils to engage cooperatively and courteously with one another. **Curious** about everything; and **active** in their engagement with the world, changing what they can for the better.

Overview

1 .Solid, Liquid or Gas? To compare and group materials together, according to whether they are solids, liquids or gases by sorting and describing materials into solids, liquids and gases.

2. **Investigating Gases** To compare and group materials together, according to whether they are solids, liquids or gases by investigating gases and their uses.
3. **Heating and Cooling** To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) by investigating how heating and cooling can change a material's state.
4. **Wonderful Water** To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) by exploring how water can change its state to a solid, liquid or a gas
5. **Evaporation Investigation** To associate the rate of evaporation with temperature by investigating the effect of temperature on drying washing. To make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions by investigating the effect of temperature on drying washing.
6. **The Water Cycle** To identify the part played by evaporation and condensation in the water cycle by creating a model of the water cycle.

Resources

• Plastic bottle of lemonade - 1 per group • 3-5 different fizzy drinks • Thermometers • Foil pie tins • Chocolate broken into equal sized squares • Trays - 3 per group, each tray filled with a different temperature of water • Stopwatches • Container of warm water with cling film stretched over it • Ice cubes • Kettle • Plate • Beakers • Teaspoon • Salt •

Opportunities for enrichment:

Cooking to observe changes when some materials are heated

Impact/Assessment

- ...**all children should be able to:** Sort materials into solids, liquids and gases.
- Explain that heating causes melting, and cooling causes freezing.
 - Identify the melting and freezing point of water.
 - Describe evaporation and condensation using practical examples.
 - Describe the effect of temperature on evaporation referring to their investigation.
 - Identify the stages of the water cycle.
 - Predict what will happen in an investigation.
 - Make observations.
- ...**most children will be able to:** Describe the properties of solids, liquids and gases.
- Explain that melting and freezing are opposite processes that change the state of a material.
 - Identify the melting and freezing point of several different materials.
 - Explain that heating causes evaporation and cooling causes condensation.
 - Explain that evaporation and condensation are opposite processes that change the state of a material.
 - Explain that the higher the temperature, the quicker water evaporates.
 - Explain what happens to water at the different stages of the water cycle.
 - Make observations and conclusions.
 - Be able to answer questions based on their learning
-**some children will be able to:**
- Explain the behaviour of the particles in solids, liquids and gases.
 - Explain how heating and cooling causes materials to melt and freeze.
 - Explain why a material's melting and freezing point is the same temperature.
 - Explain how heating and cooling can cause materials to evaporate and condense.
 - Explain why a higher temperature will speed up evaporation.
 - Use the water cycle to explain why the water we have on Earth today is the same water that has been here for millions of years.
 - Set up reliable and accurate investigations.
 - Make and explain predictions.
 - Make and record accurate observations.
 - Use scientific language to explain their findings.
 - Be able to ask and answer questions based on their learning using scientific language.