KS2 Solids, liquids and gases (Chemistry)

Working Scientifically Focus: Setting up tests and enquiries

Prior learning: Materials

EYFS • Explore the natural world around them. • Describe what they see, hear and feel whilst outside.
Year 1 • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.
Year 2 • Identify and compare the suitability of a variety of everyday materials for particular uses.
Year 4 • Compare and group materials together, according to whether they are solids, liquids or gases. • 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).
Year 5 • Compare and group together everyday materials on the basis of their properties. • Know that some materials will dissolve in liquid to form a solution. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials.

During STEM week, we are learning to:

- Understand what solids, liquids and gases are.
- Investigate and understand how bubbles are formed.
- Set up tests and enquiries to answer a question.
- Use data, statistics and measurement to present our findings.

Key Vocabulary:

states of matter	Different forms that materials can take.
plasma	Superheated matter that has charged gas molecules.
gases	Matter that has no fixed shape or volume. It can fill any space and is often invisible.
liquids	Matter that flows and takes the shape of its container but has a fixed volume.
solids	Matter that has a fixed shape and volume. Keep their shape unless broken.
molecules	Tiny particles that are made up of two or more atoms joined together.
mixture	Two or more different things are combined together but keep their own properties.
surface tension	Invisible force that makes the surface of a liquid behave like a stretched elastic sheet, allowing things to float on it.
cohesion	Force that holds molecules of the same substance together.
hydrophobic	Substances that do not like water and do not mix with it.
hydrophilic	Substances that love water and can mix well with it.

Questions you will know the answers to…

How long can a bubble snake be?
Can you stop a bubble popping?
How many bubbles can you make inside a bubble?
Does a bubble have to be round?

Working Scientifically Assessment Focus: Setting up tests and enquiries.

YEAR 3

With support set up simple practical enquiries, comparative and fair tests. Begin to select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher.

With support, follow their plan to conduct observations and tests to classify, comparative and simple fair tests, observations over time and pattern seeking.

YEAR 4

Set up simple practical enquiries, comparative and fair tests. The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. They follow their plan to conduct observations and tests to classify, comparative and simple fair tests, observations over time and pattern seeking.

YEAR 5

Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Select from a range of practical resources to gather evidence to answer their questions. Conduct fair tests, recognising and controlling variables. Decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

YEAR 5

Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Select from a range of practical resources to gather evidence to answer their questions. Carry out fair tests, recognising and controlling variables. Decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

Explanatory note: A comparative test is performed by changing a variable that is qualitative e.g., the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g., the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.