Enriching lives every day; enabling our school community to learn, achieve and flourish through living 'life in all its fullness'

Innovation

Subject: Science

Year group: 5

Term: Spring

Unit name: Properties and changes of materials

Strand: Physics

Prior Knowledge - A variety of everyday materials including wood, plastic, glass, metal, water and rock. The physical properties of a variety of everyday materials (including those that are transparent) and to compare and group materials on the basis of these properties. How materials are suitably used based on their properties. How magnets and electrical circuits work. Some materials which are magnetic. How shapes of solid objects can be changed by squashing, bending, twisting and stretching. Materials that are solids, liquids and gases and their particle structure. Some materials change state when they are heated or cooled and the temperature at which this happens. The roles of melting, evaporation and condensation in the water cycle and the role temperature has on the rate of evaporation. Some rocks are permeable.

Key Vocabulary: Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/not reversible, change, burning, rusting, new material.

Key Scientists:

Spencer Silver (post it note)

Suggested books:

National curriculum:

- Compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity and response to magnets.
- Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
- Use knowledge of solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation.
- Give reasons based on evidence from comparative tests for the particular uses of everyday materials including metals, wood and plastic.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes result in the formation of new materials and this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.

Working Scientifically:

- Evaluate different aspects of their enquiries such as equipment and accuracy of measurements.
- Make predictions about which materials are soluble or insoluble.
- Use scientific language and illustrations to discuss, communicate and justify scientific ideas.
- Make careful observations when heating solutions.
- Plan own investigation to test how materials react with each other.
- Record my results in a table.

Respect	Integrity

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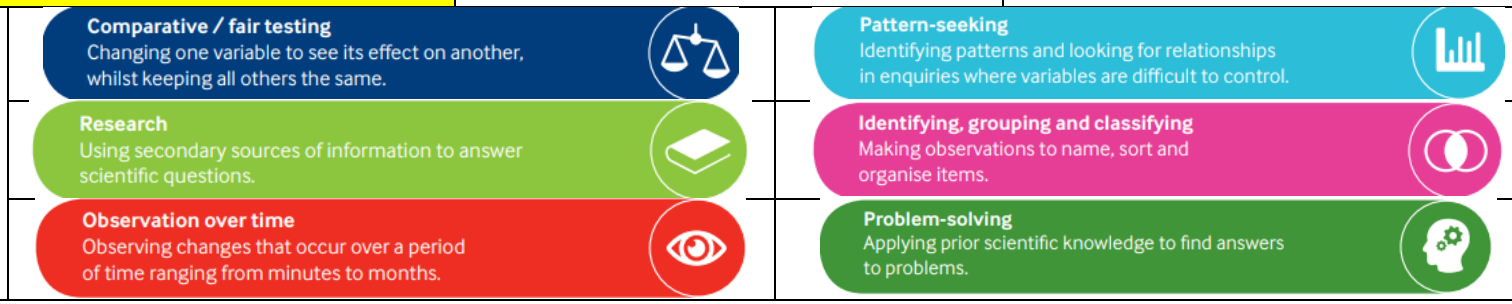
Key learning objectives- ***Highlighted boxes = Learning Objective for that lesson. The other two are your Success Criteria.***		
Knowledge	**Working Scientifically**	**Scientific Enquiry**
To compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity and response to magnets	To evaluate my test	To identify different materials and classify based on its properties.
To know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.	To make predictions about which materials are soluble or insoluble.	To identify the properties of different materials based on if they dissolve or not.
To use knowledge of solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation.	To use scientific language and illustrations to discuss, communicate and justify scientific ideas	To make observations over time to see if materials can be separated.
To demonstrate that dissolving, mixing and changes of state are reversible changes.	To make careful observations when heating solutions.	To compare how reversible and irreversible materials act when heated and cooled.
To explain that some changes result in the formation of new materials and this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.	To plan my own investigation to test how materials react with each other.	To notice patterns in my results.
To give reasons based on evidence from comparative tests for the particular uses of everyday materials including metals, wood and plastic.	To record my results in a table.	To I can learn about famous scientists and what major discoveries they have made.

Scientific Enquiry



Assessment- Key indicators: Can explain everyday uses of material e.g. how bricks, wood, glass are used in buildings. Can explain what dissolving is, giving examples. Can name equipment used for filtering and sieving. Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. Can describe simple reversible and non-reversible changes to materials, giving examples.
Can create chart/table grouping materials using properties. Suggest appropriate material for purpose. Can explain results from investigations involving dissolving and non-reversible change.