Year 5 – Properties and Changes of Materials – Get Sorted, Everyday Materials, Marvellous Mixtures and All Change

What it looked like last year

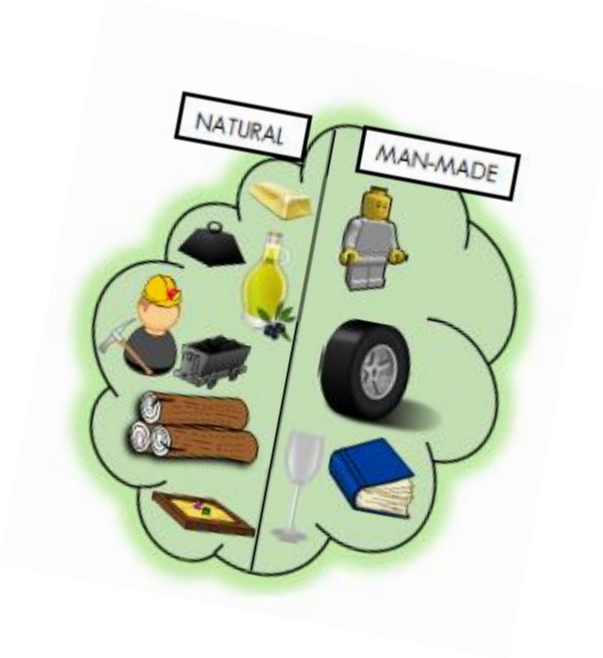
- To compare and group materials together, according to whether they are solids, liquids or gases.
- To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).
- To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

What it looks like next year – KS3

- Chemical reactions as the rearrangement of atoms.
- Representing chemical reactions using formulae and equations.
- Combustion, thermal decomposition, oxidation and displacement reactions.
- Defining acids and alkalis in terms of neutralisation reactions.
- The pH scale for measuring acidity/alkalinity and indicators.

Sequence of Learning

1. Compare and group materials based on their properties.
2. Investigate solids and compare them and explore the viscosity of liquids.
3. Explore different metals and plastics and their properties.
4. Investigate the different materials around school and their purposes.
5. Carry out a fair test into the different types of carrier bags.
6. Investigate how a cool bag works.
7. Test the absorbency of different materials – nappies.
8. Use a variety of sieves to separate a complex mixture of dry solids.
9. Investigate dissolving solids and how rapidly a solid dissolves.
10. Carry out an investigation of how to produce drinkable water from seawater.
11. Investigate reversible and non-reversible materials.
12. Explore a variety of solids and liquids that react chemically when they are mixed.
13. Investigate the changes that take place when some metals are exposed to air or water.
14. Observe what happens when a candle burns.



Cultural Capital

- To be able to compare and group together every day materials on the basis of their properties.
- To know that some materials will dissolve in liquid to form a solution.
- To be able to use knowledge of solids, liquids and gases to decide how mixtures might be separated.
- To be able to give reasons based on evidence from comparative and fair tests for the particular uses of materials.

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- To demonstrate that dissolving, mixing and changes of state are reversible changes.
- To be able to explain that some changes result in the formation of new materials.
- The real life knowledge that links is: grouping and classifying, carrying out comparative and fair tests and observing over time.
- The jobs it can be used in are: Chemist, Geologist, Pharmacist, Engineering.

Principles of Teaching Science.

Exploring – when we look at how things work in the world
Questioning – when we question what will happen
Understanding – when we use scientific language to explain
Investigating – when we can explore and are hands on
Predicting – when we use our previous knowledge to say what we think will happen.

Vocabulary (definitions)

thermal – heat energy
change of state – a change from one state to another without a change in chemical composition.
soluble – substances that dissolve in a liquid.
insoluble - substances that do not dissolve in water.
dissolve – substances that become part of a liquid.
electrical insulator conductor filter sieve mixture reversible/non-reversible burning rusting solution