



Science
Year 5 and 6
Spring 1

Topic Properties and Changes of Materials						
Rationale						
<p>The National Curriculum requires that all children learn the topics and units of work as set out in the programmes of study. All children within a two year mini-team will study the same unit of work with differentiation by level of input, support given and the content of the work completed by each student. When appropriate links are made to other areas of the curriculum with significant figures in science throughout the ages taught within each unit of work.</p>						
NC Objective						
<ul style="list-style-type: none"> • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), 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 solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair 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 that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda 						
Links to other Subject/Topics.						
Maths: collecting, representing and reporting on data.						
Inspiration for Aspiration						
Chemical engineer, chemical engineer technician, chemist, food scientist						
Key Content						
<ul style="list-style-type: none"> • What are the properties of solids, liquids and gases? • How can I describe the properties of materials? • Which materials make the best thermal insulators? • Which materials are magnetic? • Which materials are soluble and which are insoluble? • How can mixed materials be separated? • What is irreversible change? 						
Concepts						
Science	1	2	3	4	5	6
Plants						
Animals, including Humans						
Materials						
Light						
Sound						
Electricity						
Forces						
Earth and Space						

Skills Year 3

- Ask relevant questions and use different types of scientific enquiries to answer them
- Explore everyday phenomena and the relationships between living things and familiar environments.
- Raise their own questions about the world around them
- Make some decisions about which types of enquiry will be the best way of answering questions
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment
- Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them
- Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
- Notice a pattern in results
- Set up simple practical enquiries, comparative and fair tests
- Recognise when a simple fair test is necessary and help to set it up
- Think of more than one variable factor
- Gather, record, classify and present data in a variety of ways to help in answering questions
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Use notes, simple tables and standard units and help to decide how to record and analyse their data.
- Record results in tables and bar charts
- Identify differences, similarities or changes

Skills

- Plan different scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

- Talk about criteria for grouping, sorting and classifying and use simple keys
- Compare and group according to behaviour or properties
- Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations
- Use results to draw simple conclusions, make predictions, and suggest improvements
- Use scientific evidence to answer questions or to support their findings
- With help, look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions
- See a pattern in my results
- Say what they found out, linking cause and effect
- Say how they could make it better
- Answer questions from what they have found out

Year 5 and 6 Topic Vocabulary

soluble
 insoluble
 saturation
 solution
 filtration
 boiling
 condensing
 evaporation
 freezing
 melting point
 chemical change
 physical change
 reversible change
 irreversible change
 durable
 flexible
 permeable
 absorbent

Scientific Vocabulary

Mean
 Data
 Results
 Fair test
 Variable
 Comparative

By the end of the topic Year 5 children will with support

- Name examples of solids, liquids and gases, identifying the properties of each type of material. They will understand how states of matter change and name some of these processes.
- Describe the properties of materials using the scientific vocabulary taught in the lesson.
- Plan and conduct a fair test investigation to answer a question about thermal insulation. They will interpret their results and conclude using scientific vocabulary.
- Predict, test and group materials according to their magnetic properties.
- Know that some materials dissolve in a liquid to make a solution. They will be able to explain the process of dissolving using scientific vocabulary (soluble, insoluble, solution) and understand that solutions have a saturation point.
- Understand that they can separate some mixed materials through various processes (evaporation, filtering, sieving or using magnets). They will be able to predict how they could separate mixtures depending on the properties of the mixed materials.
- Identify the difference between irreversible and reversible change. They will be able to give examples of each type of change.

By the end of the topic Year 6 children will: -

- Name examples of solids, liquids and gases, identifying the properties of each type of material. They will understand how states of matter change and name some of these processes.
- Describe the properties of materials using the scientific vocabulary taught in the lesson.
- Plan and conduct a fair test investigation to answer a question about thermal insulation. They will interpret their results and conclude using scientific vocabulary.
- Predict, test and group materials according to their magnetic properties.
- Know that some materials dissolve in a liquid to make a solution. They will be able to explain the process of dissolving using scientific vocabulary (soluble, insoluble, solution) and understand that solutions have a saturation point.
- Understand that they can separate some mixed materials through various processes (evaporation, filtering, sieving or using magnets). They will be able to predict how they could separate mixtures depending on the properties of the mixed materials.
- Identify the difference between irreversible and reversible change. They will be able to give examples of each type of change.

Assessment

Teacher assessment of vocabulary throughout topic.
Grammarsaurus assessment