

Science Knowledge Mapping

Working Scientifically Through Each Year Group

Year 1

- Ask questions such as:
 - Why are flowers different colours?
 - Why do some animals eat meat and others do not?
- Set up a test to see which materials keeps things warmest, know if the test has been successful and can say what has been learned
- Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked
- Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken

Year 2

- Ask questions such as:
 - Why do some trees lose their leaves in Autumn and others do not?
 - How long are roots of tall trees?
 - Why do some animals have underground habitats?
- Use equipment such as thermometers and rain gauges to help observe changes to local environment as the year progresses
- Use microscopes to find out more about small creatures and plants
- Know how to set up a fair test and do so when finding out about how seeds grow best
- Classify or group things according to a given criteria, e.g. deciduous and coniferous trees
- Draw conclusions from fair tests and explain what has been found out
- Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with

Year 3

- Ask questions such as:
 - Why do shadows change during the day?
 - Where does a fossil come from?
- Observe at what time of day a shadow is likely to be at its longest and shortest
- Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc.
- Use research to find out how reflection can help us see things that are around the corner
- Use research to find out what the main differences are between sedimentary and igneous rocks
- Test to see which type of soil is most suitable when growing two similar plants
- Test to see if their right hand is as efficient as their left hand
- Set up a fair test with different variables e.g. the best conditions for a plant to grow
- Explain to a partner why a test is a fair one e.g. lifting weights with right and left hand, etc.
- Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning
- Use a thermometer to measure temperature and know there are two main scales used to measure temperature
- Gather and record information using a chart, matrix or tally chart, depending on what is most sensible
- Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens
- Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings
- Know how to use a key to help understand information presented on a chart
- Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape
- Present findings using written explanations and include diagrams when needed
- Make sense of findings and draw conclusions which help them to understand more about scientific information
- Amend predictions according to findings
- Be prepared to change ideas as a result of what has been found out during a scientific enquiry

Year 4

- Ask questions such as:
 - Why are steam and ice the same thing?
 - Why is the liver important in the digestive systems?
 - What do we mean by 'pitch' when it comes to sound?
- Use research to find out how much time it takes to digest most of our food
- Use research to find out which materials make effective conductors and insulators of electricity
- Use research to find out which materials make effective conductors and insulators of electricity
- Set up a fair test with more than one variable e.g. using different materials to cut out sound
- Explain to others why a test that has been set up is a fair one e.g. discover how fast ice melts in different temperatures
- Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning
- Use a data logger to check on the time it takes ice to melt to water in different temperatures
- Use a thermometer to measure temperature and know there are two main scales used to measure temperature
- Gather and record information using a chart, matrix or tally chart, depending on what is most sensible
- Group information according to common factors e.g. materials that make good conductors or insulators
- Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings
- Present findings using written explanations and include diagrams, when needed
- Write up findings using a planning, doing and evaluating process
- Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned
- When making predictions there are plausible reasons as to why they have done so
- Able to amend predictions according to findings
- Prepared to change ideas as a result of what has been found out during a scientific enquiry

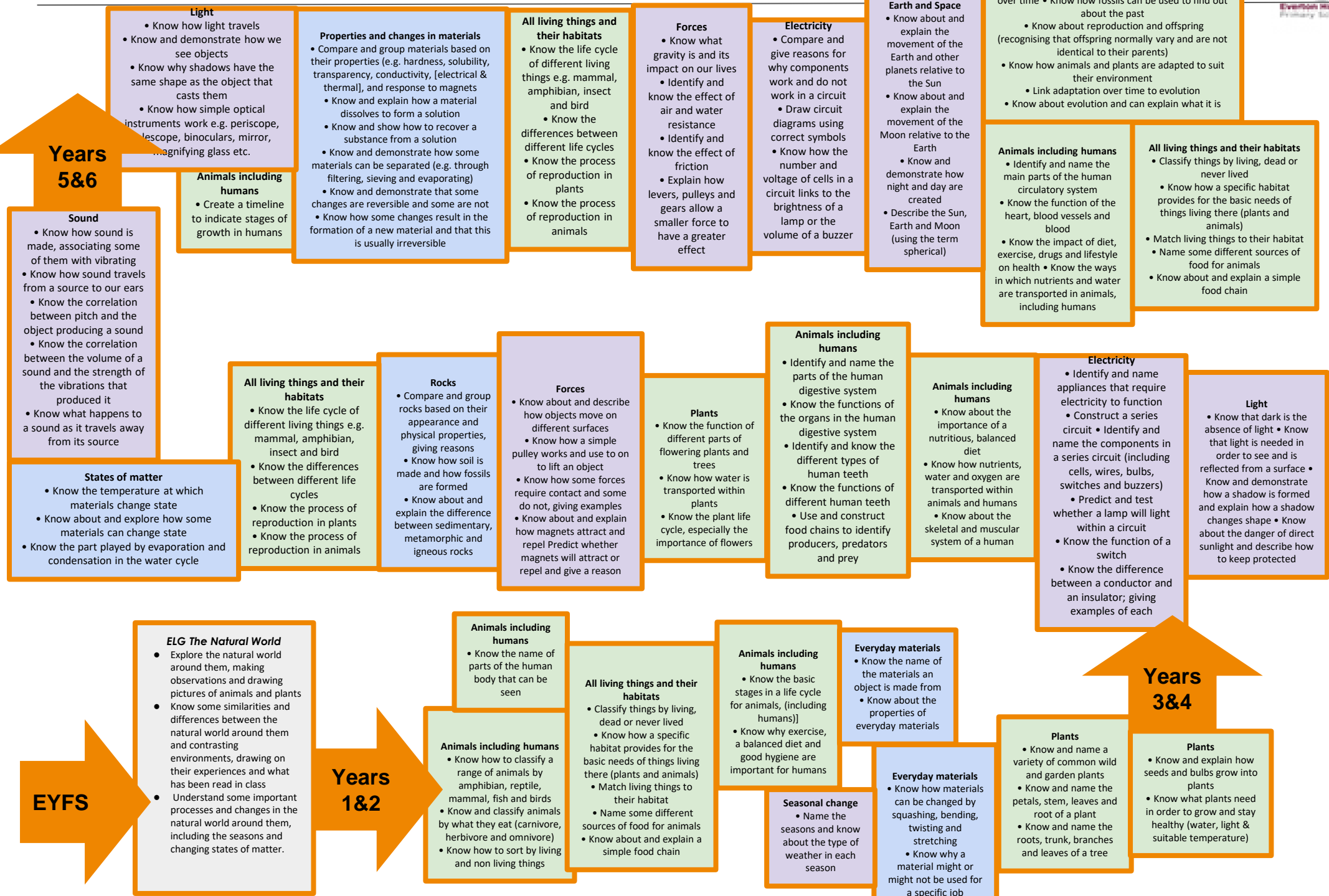
Year 5

- Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not
- Set up a fair test when needed e.g. which surfaces create most friction?
- Set up an enquiry based investigation e.g. find out what adults / children can do now that they couldn't when a baby
- Know what the variables are in a given enquiry and can isolate each one when investigating e.g. finding out how effective parachutes are when made with different materials
- Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass
- Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons)
- Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs
- Make predictions based on information gleaned from investigations
- Create new investigations which take account of what has been learned previously
- Able to present information related to scientific enquiries in a range of ways including using IT such as powerpoint and iMovie
- Use diagrams, as and when necessary, to support writing
- Is evaluative when explaining findings from scientific enquiry
- Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate
- Their explanations set out clearly why something has happened and its possible impact on other things
- Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys
- Keep an ongoing record of new scientific words that they have come across for the first time
- Able to relate causal relationships when, for example, studying life cycles
- Frequently carry out research when investigating a scientific principle or theory

Year 6

- Know which type of investigation is needed to suit particular scientific enquiry e.g. looking at the relationship between pulse and exercise
- Set up a fair test when needed e.g. does light travel in straight lines?
- Know how to set up an enquiry based investigation e.g. what is the relationship between oxygen and blood?
- Know what the variables are in a given enquiry and can isolate each one when investigating
- Justify which variable has been isolated in scientific investigation
- Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion
- Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs
- Make accurate predictions based on information gleaned from their investigations and create new investigations as a result
- Able to present information related to scientific enquiries in a range of ways including using IT such as powerpoint, animoto and iMovie
- Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases
- Clear about what has been found out from their enquiry and can relate this to others in class
- Explanations set out clearly why something has happened and its possible impact on other things
- Aware of the need to support conclusions with evidence
- Keep an ongoing record of new scientific words that they have come across for the first time and use these regularly in future scientific write ups
- Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class
- Able to give an example of something they have focused on when supporting a scientific theory e.g. classifying vertebrate and invertebrate creatures or why certain creatures choose their unique habitats
- Frequently carry out research when investigating a scientific principle or theory

Science Sticky Knowledge Mapping



Year Group	Themes					
	Cycle A			Cycle B		
<p>Year 1 & 2</p>	<p><u>Animals, including humans</u> Naming and describing common animals / Identifying seen body parts</p> <p><u>Materials</u> Properties of and grouping of everyday materials</p>	<p><u>Habitats</u> All living things and their habitats</p>	<p><u>Animals, including humans</u> Life cycles</p>	<p><u>Seasonal Change</u> The four seasons / Seasonal weather <i>(throughout the year)</i></p>	<p><u>Materials</u> Properties of and grouping of everyday materials</p> <p><u>Materials</u> Uses of different materials</p>	<p><u>Plants</u> Know about structure of plants and name common plants</p> <p><u>Plants</u> Growing plants from seeds and bulbs and keeping them healthy</p>
<p>Year 3 & 4</p>	<p><u>Light</u> Reflections and shadows</p> <p><u>Electricity</u> Simple circuits and switches Conductors and insulators</p>	<p><u>Animals, including humans</u> Skeleton, muscles and exercise and health</p> <p><u>Animals, including humans</u> Digestive system and Teeth</p>	<p><u>Plants</u> Basic structure and functions Life cycle and transportation of water</p>	<p><u>Forces and magnets</u> Different forces Investigating magnets</p> <p><u>Rocks</u> Fossil formation Compare and group rocks Soil</p>	<p><u>Living things and their habitats</u> Classification and habitats.</p>	<p><u>States of Matter</u></p> <p><u>Sound</u> Sound vibrations Pitch and Volume</p>
<p>Year 5 & 6</p>	<p><u>Light</u> How light travels Reflection Ray models of light</p> <p><u>Animals, including humans</u> Changes in humans from birth to death</p>	<p><u>Properties and changes in materials</u> Reversible and Irreversible substances</p>	<p><u>Living things and their habitats</u> Life cycles and reproduction in some plants and animals</p> <p><u>Forces</u> Gravity, Friction Pulleys. etc</p>	<p><u>Electricity</u> Electrical components, Simple circuits, Fuses and voltage</p> <p><u>Earth and Space</u> Movement of the Earth and the planets, Movement of the Moon, Night and day</p>	<p><u>Animals, including humans</u> The circulatory system Water transportation Impact of exercise on body</p>	<p><u>Evolution and Inheritance</u> Identical and non-identical offspring Fossil evidence and evolution Adaptation and evolution</p> <p><u>Living things and their habitats</u> Classification of living things and the reasons for it</p>