



Shirley Schools Knowledge Progression Year R - Year 6



Sticky knowledge required for B20% children

Biology			
	Animals including humans	Plants	Living things and their habitats
EYFS	Use our senses to explore the world and describe what we can see, hear, feel, smell and taste around school.	Name and describe some familiar plants and animals we have around our school grounds.	Life cycle of chicks - observe changes from egg to chick Lifecycle of tadpoles / pond dipping. Visit from farm - use senses to describe and observe the animals.
Year 1	<p>Recognise and name body parts on animals.</p> <p>Identify and name animals, including fish, amphibians, reptiles, birds and mammals.</p> <p>Use language of carnivores, herbivores and omnivores to classify animals.</p> <p>Describe and compare the structure of a variety of different animals</p>	<p>Identify and describe the structure of a variety of common flowering plants and trees.</p> <p>Name and identify a range of plants including deciduous and evergreen.</p> <p>Classify plants as deciduous or evergreen.</p>	<p>Lifecycle of butterflies.</p> <p>Pond dipping.</p>
Year 2	<p>Describe the importance of exercise, healthy eating and hygiene for humans. Compare differences between living things, non-living things and things that have been alive. Describe what living means.</p> <p>Explain the basic needs of humans (water, food, air). Understand that living things grow and reproduce. Recognise that humans have offspring which grow into adults.</p>	<p>Observe and describe how seeds and bulbs grow into mature plants considering what healthy plants need to grow.</p>	<p>Identify that most living things live in habitats to which they are suited.</p> <p>Match animals/plants to their habitats.</p> <p>Explore different habitats and describe how the habitat provides for the needs of the animals.</p>

Year 3	<p>-identify that humans and some animals have skeletons and muscles for support, protection and movement.</p> <p>-describe the simple functions of the basic parts of the digestive system.</p> <p>-identify different types of teeth in humans and their simple functions.</p> <p>- identify that animals, including humans, need the right types and amounts of nutrition which they get from what they eat.</p>	<p>-identify and describe the functions of different parts of flowering plants.</p> <p>-explore requirements of plants for life and growth.</p> <p>-investigate the way water is transported within plants.</p> <p>-explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	
Year 4			<p>- recognise that living things can be grouped in a variety of ways.</p> <p>-explore and use classification keys to help group, identify and name a variety of living things.</p> <p>- recognise that environments can change and this can sometimes pose dangers to living things.</p> <p>- construct and interpret a variety of food chains including predator, producer and prey</p>
Year 5	<p>-describe the changes as humans develop to old age.</p> <p>-describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>-describe the life process of reproduction in some plants and animals</p>		

Year 6	<ul style="list-style-type: none">-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.-recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.		<ul style="list-style-type: none">-describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.-give reasons for classifying plants and animals based on specific characteristics.-recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.-recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
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Chemistry

	Materials	States of Matter	Rocks
EYFS	<p>Understands that different media can be combined to create new effects. (EAD)</p> <p>Manipulates materials to achieve a planned effect. (EAD)</p> <p>Constructs with a purpose in mind, using a variety of resources (EAD)</p>		
Year 1	<p>Identify and name a variety of materials, including wood, plastic, glass, metal, water and rock.</p> <p>Describe materials by saying what they look and feel like.</p> <p>Describe the physical properties of materials (strong, flexible, etc.).</p> <p>Compare and group materials based on properties.</p> <p>Begin to give reasons for why or why not a material may be suitable for a particular purpose.</p>		
Year 2	<p>Identify a range of common materials and identify their properties.</p> <p>Compare materials.</p>	<p>Know that some changes can be reversed - and some can not.</p>	

	<p>Group materials in a variety of ways.</p> <p>Consider the suitability of materials for particular uses.</p> <p>Explore how different materials can be changed by squashing, bending, twisting and stretching.</p> <p>Describe the process required to change materials.</p> <p>Give reasons for the way materials have been grouped.</p>		
Year 3			<p>compare and group together different types of rocks</p> <p>-recognise that soils are made -from rocks and organic matter</p>
Year 4		<p>- compare and group materials together, according to whether they are solids, liquids or gases</p> <p>-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)</p>	
Year 5	<p>-compare and group together everyday materials on the basis of their properties (solubility, transparency, conductivity and their response to magnets</p>	<p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	

	<p>-know that some materials will dissolve in liquid to form a solution.</p> <p>-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering and sieving.</p> <p>-demonstrate that mixing and changes of state are reversible changes.</p> <p>-explain that some changes result in the formation of new materials, and this kind of change is usually irreversible (including changes associated with burning).</p>		
Year 6			Fossils

Physics - The World Around Us

	Changes	Earth and Space	Light
EYF S	<p>Explore the natural world around them - observe and interact with natural processes (ice melting/ floating and sinking objects).</p> <p>Understand that the seasons change and observe how our outside environment changes - what happens to the trees/ leaves?</p> <p>Read stories/ texts set in different places/ weather systems.</p>		<p>Explore how to make a shadow.</p> <p>Explore torches and colour fans to find out how the light changes.</p>
Year 1	<p>Describe and compare changes and weather in four seasons.</p> <p>Compare how length of day varies within the different seasons.</p> <p>Opportunity to link to clothing through seasonal changes</p>	<p><i>(The moon landings are taught as a history unit and chn do their own research about the moon and space in general).</i></p>	<p>Explore shadows and how they change throughout the day.</p>
Year 2	<p>In relation to materials topic, apply knowledge of seasons, e.g. different temperatures.</p>		

Year 3			<p>-recognise that they need light to see things and that the dark is the absence of light.</p> <p>-notice that light is reflected from surfaces</p> <p>-recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>-recognise that light appears to travel in straight lines</p> <p>-explain why objects are seen because they give out or reflect light into the eye (understand)</p> <p>-explain that we can see things because light travels from a light source to our eyes, or a light source to an object to our eyes.</p>
Year 4			
Year 5		<p>-describe the movement of the earth, and other planets, relative to the Sun in the solar system.</p> <p>-describe the movement of the Moon relative to the Earth.</p> <p>-describe the Sun, Earth and Moon as approximately spherical bodies.</p>	

		<p>-use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	
Year 6			<p>recapping light objectives (taught in Y3) to design a lighting set for final production.</p> <p>-use the idea that light travels in a straight line to explain why shadows have the same shape as the objects that cast them.</p>

Everyday Physics

	Forces and Magnets	Sound	Electricity
EYFS	<p>Exploration of magnets during MOOT</p> <p>Know that the higher the ramp, the fastest/ furthest the emergency vehicle will travel</p>	<p>Musical instruments available to differentiate between different kinds of sounds</p>	
Year 1	<p>Continue exploration of magnets during Materials term.</p>	<p>Investigate how far sound travels a part of the Humans' senses theme.</p>	
Year 2			
Year 3			<ul style="list-style-type: none"> -find common appliances that run on electricity. - construct a simple series electrical circuit and identify whether a lamp will light or not. -recognise the use of a switch and add to their circuit. -recognise common conductors and insulators and associate metals being good conductors. -use recognised scientific symbols when representing a diagram in a circuit.

<p>Year 4</p>	<p>-compare how things move on different surfaces.-</p> <p>notice that forces need contact, but magnets can create force at a distance.</p> <p>- observe magnets attracting and repelling.</p> <p>- describe magnets as having two poles.</p> <p>-predict whether two magnets will attract or repel depending on which poles are facing.</p>	<p>- identify how sounds are made, associating them with something vibrating.</p> <p>- recognise that vibrations and sounds travel from a medium to the ear.</p> <p>- find patterns between the pitch of a sound and the features of the object that produces it.</p> <p>-find patterns between the volume of the sound and the strength of the vibrations that produced it.</p> <p>-recognise that sounds get fainter as the distance from the sound source increases.</p>	
<p>Year 5</p>	<p>-explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>-identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>-recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p>		
<p>Year 6</p>			<p>Revisit of Year 3 electricity objectives as a refresh ahead of It's a Wrap!</p>

			<p>-find common appliances that run on electricity.</p> <p>- construct a simple series electrical circuit and identify whether a lamp will light or not.</p> <p>-recognise the use of a switch and add to their circuit.</p> <p>-recognise common conductors and insulators and associate metals being good conductors.</p> <p>-use recognised scientific symbols when representing a diagram in a circuit.</p>
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Working Scientifically Overview

Skill		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore	Asking Questions	<p>Ask simple questions about the world around us (<i>where/ how/why/when</i>) and respond to questions about <i>how</i> to find things out. <i>Eg. "How can you melt the ice?"</i></p>	<p>Ask how, why, what will happen if.... <i>Eg. "What will happen if I don't water the seed? "What will happen if the seed isn't planted in soil?" "Will it still grow?"</i></p>	<p>Asks relevant questions linked to the topic using their prior knowledge</p> <p>Begin to ask a wider variety of questions. <i>Eg "What are the differences between bulbs and seeds?"</i></p>	<p>Use my scientific knowledge to explore a Big Question.</p>	<p>Use my prior scientific knowledge to explore a big question and create further questions to stretch my investigation</p>	<p>To use my prior scientific knowledge to create a series of linked questions based on a stimulus.</p>	
	Observing	<p>Know that we use science everyday to see the world around us.</p> <p>Begin to recognise when things might be dangerous and what equipment we can use to keep safe. Follow rules carefully. <i>Eg. "How can we look in the pond safely?" "What will we do to stay safe?"</i></p>	<p>Begin to observe changes over time (growing/ weather topic)</p> <p>Know that science can sometimes be dangerous and we need to follow rules when observing to stay safe. <i>Eg. exploring using simple equipment magnifying glasses/ mirrors etc)</i></p>	<p>Knows that some changes happen over time or some happen instantly in science.</p> <p>Be able to observe safely using equipment correctly if it is needed.</p>	<p>Demonstrate some knowledge of how to use some of the provided equipment to answer the Big Question.</p>	<p>Demonstrate accurate use of certain equipment to help answer the Big Question.</p>	<p>Accurately choose appropriate equipment to be able to answer the Big Question.</p>	

<p>Research</p>	<p>Know that we can find out information from different places with support. <i>Eg non fiction books, apps and videos online, adults as the 'experts'.</i></p>	<p>Can use a simple search engine for information online with support, asking 'experts', using a range of provided non fiction books</p>	<p>Is able to search for information independently online, asking 'experts', and finding books from the library.</p>				<p>Independently use a range of sources to investigate a concept</p>
<p>Predict</p>	<p>Able to say what they think might happen in different situations. Begin to offer a simple reason.</p> <p>To know that a prediction is not always correct and it's okay to get things wrong.</p> <p><i>Eg "I think the stick will sink and the marble will float because it's smaller."</i></p>	<p>Use prior knowledge to think about what might happen before deciding what to do.</p> <p>Use some personal experiences to inform your prediction.</p> <p><i>Eg. "I know that my wellies are waterproof so Red Riding Hood's coat needs to be the same material"</i></p>	<p>Be able to make a simple prediction about what will happen in an investigation/ observation and begin to think about the reason behind your prediction.</p> <p>Eg "I know that water can change in different ways so it is a reversible change because I have frozen water into ice and watched it melt."</p>	<p>Make a prediction using because based on what I know will be able to observe during the experiment.</p>	<p>Make a prediction using because and accurate scientific evidence learned from the topic.</p>	<p>Make a prediction using because and accurate scientific evidence learned from current and previous topics.</p>	<p>Make a prediction using because and accurate scientific evidence. I will also be able to use my knowledge to predict something that will not happen, supporting it with previously learnt science.</p>
	<p>Be able to talk about how to find out the</p>	<p>Begin to think about how we can</p>	<p>Be able to think of some ideas</p>				

<p style="text-align: center;">Testing</p>	<p>answer to our observations and questions.</p> <p>To be introduced to the concept of something being 'fair'</p> <p><i>Eg "Will it be fair if we roll different cars down different ramps to see how far they go?"</i></p>	<p>find the answers to observations and questions.</p> <p>What will we need to test something?</p> <p>What things will need to stay the same to make it fair?</p> <p><i>Eg. "Is it fair to pour 3 cups of water on the paper coat and 1 cup on the tissue coat?"</i></p>	<p>for a test and what information you would like to find out.</p> <p><i>Eg. "I need to know if toast can change back to bread. How can I test this fairly?"</i></p>	<p>undertake an experiment keeping everything the same apart from what I am investigating.</p>	<p>create a control within my experiment to ensure a fair test, whilst testing one thing.</p>	<p>create a fair test and test more than one variable.</p>	<p>independently create a fair test, explaining which variables need to be controlled and why.</p>
<p style="text-align: center;">Recording</p>	<p>Quotations and photographs of science in action.</p> <p>Chn can draw simple representations of observations/ predictions/ tests.</p> <p>Begin to use appropriate Scientific vocabulary when modelled by adults.</p> <p>Can sort into 2 groups using given criteria.</p>	<p>To talk about what they have seen/done and adults record quotes.</p> <p>Begin to use labelled drawings</p> <p>Use a 2 column table to record simple results (cross/tick)</p> <p>Use scientific vocabulary and begin to sort using a simple venn diagram/ hoops.</p>	<p>Make own simple table of results and include non standard measurement (<i>how many star jumps in a minute?</i>)</p> <p>Label pictures and use appropriate scientific vocabulary.</p> <p>Sort into chosen criteria using a venn diagram/ hoops.</p>	<p>use standard measurement to observe changes and record it.</p> <p>create simple scientific diagrams with labeling.</p> <p>use a bar graph to record my results.</p>	<p>accurately use standard measurements to record a series of observations.</p> <p>create scientific diagrams with appropriate scientific labeling.</p> <p>record data onto a line graph with given intervals.</p>	<p>take accurate measurements, beginning to repeat them to support with precision.</p> <p>begin to identify anomalies in my results.</p> <p>select appropriate intervals</p>	<p>take accurate and precise measurements , repeating them when needed.</p> <p>recognise anomalies in my measurements .</p> <p>choose how to best represent my results according to the type of data (e.g</p>

						for lines and bar graphs.	continuous or discrete).
Concluding and Evaluating	<p>Talk about what happened and respond to questions from the adult.</p> <p><i>Eg "The fire engine rolled the longest distance because the ramp was higher."</i></p>	<p>Talk about the prediction and result. Was it the same?</p> <p>Can chn begin to think about how they can make their tests even better next time?</p>	<p>Begin to identify simple patterns.</p> <p>Was your prediction correct? Do you know why/ why not?</p> <p>How would you change your tests next time?</p>	<p>explain simple patterns in my results.</p> <p>Explain why keeping everything the same has made my results accurate</p>	<p>use scientific knowledge to explain the patterns.</p> <p>Begin to describe how accurate my results are, comparing them to the control.</p> <p>Discuss other factors that could be controlled next time</p>	<p>explain causal relationships from my results.</p> <p>begin to comment on the reliability of my results.</p> <p>Evaluate the accuracy of my results based on my fair testing.</p> <p>Make practical suggestions about how my working methods can be improved.</p>	<p>use scientific ideas to explain my results, accounting for any anomalies</p> <p>refute or agree with scientific arguments using evidence.</p> <p>Independently evaluate the accuracy of my results, and make reasoned suggestions on how to improve my working methods.</p>