

St. Laurence CofE Junior Academy

Science Progression of Skills

PLANTS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees</p>	<p>Observe and describe how seeds and bulbs grow into mature plants. <i>Use microscopes and magnifying glasses to observe in more detail.</i></p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p><i>Develop vocabulary so explanations are more Scientific.</i></p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant <i>Compare the effect of different factors on plant growth.</i></p> <p>Investigate the way in which water is transported within plants. <i>Observe how water is transported and relate this to the idea that plants make their own food.</i></p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed</p>		<p>See living things and their habitats</p>	

		formation and seed dispersal			
ANIMALS INCLUDING HUMANS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Compare and discuss different types of offspring - do they look like the adult? (e.g. caterpillars into butterflies, calves into cows)</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Compare how animals get their food and how they breathe</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Make links with investigations and compare data, using charts and diagrams (effects on their</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>Understand that there are different food groups and how these keep us healthy. Compare diets of different animals (including pets)</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Recognise the main bones in a human skeleton.</p> <p>Compare different animals' skeletons</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans. (ie mouth, tongue and teeth, oesophagus, stomach, small intestine, large intestine)</p> <p>Identify the different types of teeth in humans and their simple functions. (Relate shape to function)</p> <p>Find out what damages teeth and how to look after them.</p> <p>Compare teeth of carnivores, omnivores and herbivores and suggest why there are differences.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>Describe the changes as humans develop to old age</p> <p>Use a timeline to indicate stages of growth and development in humans.</p> <p>Understand the changes experienced in puberty (in terms of physical, emotional, independence, responsibility)</p> <p>Compare humans with other animals</p>	<p>Identify the main body parts and understand that these all need to receive blood from the heart in order to function.</p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Know where the heart and lungs are positioned and describe how they work together in order to pump oxygenated blood to all parts of the body.</p> <p>Understand that the pulse is a measure of the heart rate. Explore and explain the effect of exercise on the pulse rate.</p> <p>Describe the ways in which nutrients and water are</p>

	body after 1 minute of exercise compared to 5 minutes?)				<p>transported within animals, including humans</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Understand what is meant by a balanced diet. Know and explain the different food groups and the importance of each.</p> <p>Describe how to keep their bodies healthy.</p>
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LIVING THINGS AND THEIR HABITATS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Explore and compare the differences between things that are living, dead and things that have never been alive.</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other.</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p>Describe how animals obtain their food from plants and</p>		<p>Understand how the environment / habitat changes over a year.</p> <p>Recognise that living things can be grouped in a variety of ways.</p> <p>Compare living things and explore ways to group living things.</p> <p>Understand how scientists group living things ie animals into vertebrates and invertebrates and plants into flowering and non-flowering</p>	<p>Describe the life process of reproduction in some plants and animals</p> <p>Understand what reproduction is and why it is vital.</p> <p>Identify the parts of a flower responsible for reproduction. Understand the role of each in the processes of pollination and fertilization. Recognise that this is an example of sexual reproduction</p> <p>Recognise how different seeds are suited to their method of dispersal.</p>	<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>Understand how scientists classify living things and know the main groups (including sub-groups) and know the classification characteristics for each group. Explore similarities and differences.</p> <p>Classify a range of living things using this classification system</p>

	other animals, using the idea of a simple food chain, and identify and name different sources of food.		<p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Explore the impact of humans on the environment (both positive and negative)</p>	<p>Compare different ways of growing new plants eg from cuttings, tubers, bulbs - recognize this as asexual reproduction</p> <p>Find out about reproduction in mammals.</p> <p>Research the life cycles of different types of animals, amphibian, insect, bird) and compare</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p>	<p>Understand that microorganisms are living things through research and /or exploration.</p> <p>Research how microorganisms are classified.</p> <p>Understand how microorganisms can be either beneficial or harmful and describe some examples.</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p>
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SEASONAL

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Look closely at similarities, differences, patterns and change.	Observe changes across the four seasons.				

MATERIALS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday</p>	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.		<p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Explore and develop simple descriptions of each state eg solids hold their shape, liquids take the shape of</p>	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	

<p>materials, including wood, plastic, glass, metal, water, and rock.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>Compare natural and manmade materials. Find out how these materials are made. Use tests, ask questions and compare data to evaluate and observe uses of different materials. (What happens if....?)</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Use tests and observations to compare, evaluate and predict what happens when you squash, bend, twist or stretch different materials. Report findings using data.</p>		<p>the container they are in, gases escape from an unsealed container)</p> <p>Observe and explore water as a solid, liquid and gas and recognise the effect that temperature has on this.</p> <p>Recognise real life examples of water changing state eg puddle evaporating, washing on a line, making/ melting ice cubes</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> <p>Research or explore the effect temperature has on different substances eg chocolate, butter</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Relate to learning on magnetism and electricity in years 3 and 4, testing materials as required.</p> <p>Understand the concepts of thermal insulation and conduction. Identify examples of good conductors and insulators in real life.</p> <p>Investigate which material is the best insulator.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Recognise that other materials are insoluble and know how to recover the substance.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including</p>	
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				<p>through filtering, sieving and evaporating</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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</p>	
ROCKS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Use a hand lens to observe and compare rocks eg whether they have crystals</p> <p>Observe a range of rocks in the local environment and how different rocks are used.</p> <p>Explore and compare properties of rocks and record findings</p>			

		<p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Explore how fossils are formed</p> <p>Recognise that soils are made from rocks and organic matter</p> <p>Explore and compare different soils.</p> <p>Explore the constituents of soil.</p>			
LIGHT					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Recognise that they need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Explore how different surfaces reflect light</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</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>Explore and explain how shadows are made relating to the fact that light travels in a straight line</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>Explore how light is reflected from different surfaces. Make</p>

		<p>Explore shadows made by different shaped objects / materials</p> <p>Find patterns in the way that the size of shadows change</p> <p>Explore the length of shadows throughout the day and recognise how the shadow changes</p>			<p>generalisations and predictions.</p> <p>Explore how light is reflected when the beam is at different angles. Recognise and describe patterns.</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Explore and describe how reflection is used in real life eg periscopes, rear view mirrors, dental mirrors</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>Investigate how the size of a shadow varies. Recognise and explain generalisations and patterns.</p>
FORCES (INCLUDING MAGNETS)					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Understand that a force is a push or pull and know its effect.</p>		<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between</p>	

		<p>Recognise forces in real life.</p> <p>Compare how things move on different surfaces.</p> <p>Understand and recognise friction as a force.</p> <p>Notice that some forces need contact between 2 objects but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>Describe magnets as having 2 poles</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p> <p>Explore the strength of different magnets</p> <p>Research how magnets are used in real life</p>		<p>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>Investigate the effect of air resistance and water resistance on different shapes / sizes. Relate water resistance to stream lining in real life.</p> <p>Investigate friction by making and recording measurements.</p> <p>Recognise and explain how friction can be useful / unhelpful in real life situations.</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p>Recognise real life examples of the use of levers, pulleys and gears.</p>	
SOUND					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Identify how sounds are made, associating some of		

			<p>them with something vibrating</p> <p>Explore and identify the way sound is made through vibration in a range of musical instruments eg plucking, striking, shaking</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p> <p>Explore vibrations through a string telephone, table top etc</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Explore the pitch produced by different length / thickness elastic bands; water in bottles, different length straws, different sized saucepan lids</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>Recognise that sounds get fainter as the distance</p>		
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			<p>from the sound source increases</p> <p>Investigate different materials to find the best sound insulator</p>		
ELECTRICITY					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			<p>Identify common appliances that run on electricity.</p> <p>Distinguish between mains and battery power and relate to electrical safety.</p> <p>Learn the dangers of electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Explore different components in the construction of a simple circuit and draw pictorially.</p> <p>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete circuit with a battery</p>		<p>Construct simple circuits and explore different components.</p> <p>Understand and explain how a bulb lights up using scientific vocabulary.</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Explore and describe the effect of changing one component at a time. Use scientific knowledge to explain findings.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p>

			<p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</p>		<p>Use recognised symbols when representing a simple circuit in a diagram</p> <p>Group materials / objects according to whether they are electrical conductors or insulators. Identify how electrical conductors and insulators are used in real life</p> <p>Understand how a switch works. Use knowledge of conductors and insulators to design and make a switch.</p> <p>Know the dangers of electricity and describe how to keep safe, distinguishing between mains and battery.</p>
EARTH AND SPACE					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				<p>Explore how the ideas about the solar system have developed.</p> <p>Describe the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>Understand that the Sun is in the centre of the solar system and that it has 8 planets.</p>	

				<p>Explain how the movement of the Earth gives the seasons.</p> <p>Compare sunrise and sunset times during the year and know why they differ.</p> <p>Describe the movement of the moon relative to the Earth.</p> <p>Describe how we see the moon and know the phases of the moon.</p> <p>Describe the sun, Earth and moon as approximately spherical bodies.</p> <p>Know their relative sizes.</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>	
EVOLUTION AND INHERITANCE					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally</p>

					<p>offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p> <p>Explore how the work of scientists has helped develop our understanding of the process of evolution.</p> <p>Recognise that living things have changed over time and that a number of factors can affect a species' evolution.</p>
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WORKING SCIENTIFICALLY

<p>Ask simple questions and recognise that they can be answered in different ways observing closely, using simple equipment</p> <p>Perform simple tests identifying and classifying</p>		<p>In year 3, children begin to learn these skills, supported by the teacher as needed.</p>	<p>In year 4, children build on the skills from year 3. They should be using and applying these skills with increasing independence and use of their scientific language.</p>	<p>In year 5, children continue to use skills learned in years 3 and 4 but begin to develop the following, supported as needed by the class teacher.</p>	<p>In year 6, children build on skills from year 5. They should be using and applying these skills with increasing independence and accuracy; choosing and using appropriate scientific vocabulary effectively.</p>
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<p>using their observations and ideas to suggest answers to questions</p> <p>Gather and record data to help in answering questions</p>		<p>Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Set up simple practical enquiries, comparative and fair tests</p> <p>Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables,</p> <p>Report on findings from enquiries, including oral and written explanations,</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests beginning to identify the variables where relevant.</p> <p>Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers with increasing accuracy.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Use test results to make predictions to set up further comparative and fair tests</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results,</p>	<p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; understanding the need for repeated measurements and finding averages as needed.</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Recognise the most appropriate way to present including choice of graph.</p> <p>Use test results to make predictions to set up further comparative and fair tests</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and</p>
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		<p>displays or presentations of results and conclusions</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p>	<p>in oral and written forms such as displays and other presentations</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p>
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