

# Drybrook Primary School – Science Progression Ladder

Working Scientifically								
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Working Scientifically</b>			<p>To ask simple questions and recognising that they can be answered in different ways</p> <p>To observe closely, using simple equipment</p> <p>To perform simple tests</p> <p>To identify and classifying</p> <p>To use their observations and ideas to suggest answers to questions</p> <p>To gather and record data to help in answering questions.</p>	<p>To ask simple questions and recognising that they can be answered in different ways</p> <p>To observe closely, using simple equipment</p> <p>To perform simple tests</p> <p>To identify and classifying</p> <p>To use their observations and ideas to suggest answers to questions</p> <p>To gather and record data to help in answering questions.</p>	<p>To ask relevant questions and using different types of scientific enquiries to answer them</p> <p>To set up simple practical enquiries, comparative and fair tests</p> <p>To 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>To gather, record, classify and present data in a variety of ways to help in answering questions</p> <p>To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>To ask relevant questions and using different types of scientific enquiries to answer them</p> <p>To set up simple practical enquiries, comparative and fair tests</p> <p>To 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>To gather, record, classify and present data in a variety of ways to help in answering questions</p> <p>To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>To use test results to make predictions to set up further comparative and fair tests</p> <p>To report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>To identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>To use test results to make predictions to set up further comparative and fair tests</p> <p>To report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>To identify scientific evidence that has been used to support or refute ideas or arguments</p>

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					<p>To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>To identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>To use straightforward scientific evidence to answer questions or to support their findings</p>	<p>To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>To identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>To use straightforward scientific evidence to answer questions or to support their findings</p>		
<b>Vocabulary</b>			<p>question answer observe observing equipment identify classify sort group <b>record</b> – diagram, chart, map data compare, contrast describe</p>	<p>question answer observe observing equipment identify classify sort group <b>record</b> – diagram, chart, map data compare, contrast describe</p>	<p>plan variables measurements</p> <p>accuracy precision repeat readings <b>record data</b> – scientific diagrams, labels, classification keys, tables, bar graph and line graphs</p> <p>predications further comparative and fair test</p> <p><b>report and present</b> – conclusions, explanations, oral and written display and presentation. <b>evidence</b> – support,</p> <p>identify, classify and describe</p> <p>patterns</p>	<p>plan variables measurements</p> <p>accuracy precision repeat readings <b>record data</b> – scientific diagrams, labels, classification keys, tables, bar graph and line graphs</p> <p>predications further comparative and fair test</p> <p><b>report and present</b> – conclusions, explanations, oral and written display and presentation. <b>evidence</b> – support,</p> <p>identify, classify and describe</p> <p>patterns</p>	<p>plan variables measurements</p> <p>accuracy precision repeat readings <b>record data</b> – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs</p> <p>predications further comparative and fair test</p> <p><b>report and present</b> – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation. <b>evidence</b> – support, refute ideas or arguments</p>	<p>plan variables measurements</p> <p>accuracy precision repeat readings <b>record data</b> – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs</p> <p>predications further comparative and fair test</p> <p><b>report and present</b> – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation. <b>evidence</b> – support, refute ideas or arguments</p>

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					systematic	systematic	identify, classify and describe	identify, classify and describe
							patterns	patterns
							systematic	systematic
Plants								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Plants</b>			<p>To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>To identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>To observe and describe how seeds and bulbs grow into mature plants</p> <p>To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>To identify and describe the functions of different parts of flowering plants (i.e roots, stem/trunk, leaves and flowers).</p> <p>To 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.</p> <p>To investigate the way in which water is transported within plants.</p> <p>To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>		To describe the life process of reproduction in some plants.	To give reasons for classifying plants based on specific characteristics.
<b>Vocabulary</b>			Names of common plants and trees such as grass, daisy, dandelion, daffodil, rose, oak tree, willow tree, fir tree (choose	bulb seed shoot root germination	petals sepals stamen pollen stigma		sexual reproduction asexual reproduction cells male	

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			<p>appropriately for our grounds)</p> <p>deciduous conifer</p> <p>flower petals stem/stalk leaf roots trunk branch twig</p> <p>Just the structure not the functions</p>	<p>Not Year 3 content of plant reproduction. Limit to parts needed for growth.</p>	<p>ovary pollination dispersal absorb evaporation</p>		<p>female</p>	
<b>Depth of Learning</b>			<p>Describe the difference between deciduous and evergreen. Use information they have gathered to answer a question. Suggest a way to answer a question using the equipment that has been provided.</p>	<p>Explain that different plants have different needs. Compare the growth of different plants. Give reasons for their answers. Use observations to suggest conditions that food crops need to grow well</p>	<p>To explain the importance of plants on life. What do they provide? How does this help all life?</p>			<p>Through observations, group different plants according to characteristics. Understand that they can fit into more than one category.</p>
<b>Animals, including humans</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Animals, including humans</b>			<p>To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>To identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds</p>	<p>To notice that animals, including humans, have offspring which grow into adults</p> <p>To find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>To describe the importance for humans of exercise, eating the right amounts of different</p>	<p>To 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>To Identify that humans and some other animals have skeletons and muscles for support,</p>	<p>To identify the different types of teeth in humans and their simple functions.</p> <p>To describe the simple functions of the basic parts of the digestive system in humans.</p> <p>To construct and interpret a variety of food chains, identifying</p>	<p>To describe the changes as humans develop to old age.</p>	<p>To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>To describe the ways in which nutrients</p>

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			<p>and mammals, including pets)</p> <p>To 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>	types of food, and hygiene.	protection and movement.	producers, predators and prey.		and water are transported within animals, including humans.
<b>Vocabulary</b>			<p>Common examples such as frog, toad, rabbit, fox, blackbird, robin, bluetit, snake, shark, trout. Dog, cat, goldfish, parrot etc</p> <p>carnivore omnivore herbivore</p> <p>fur, scales, skin, claws, teeth, legs, paws, gills,</p> <p>smell sight touch hearing taste</p> <p>head, neck, shoulders, arms, elbows, knees, face, ears, eyes, hair, mouth, teeth</p> <p>Teach <u>the names of a mix of different vertebrates</u> but don't teach classifying with formal names such as amphibian etc. The aim is that the children can NAME a wide variety of common animals and describe them but not <u>classify</u> according to characteristics</p>	<p>pairs of animals such as cow – calf sheep – lamb pig – piglet</p> <p>survival hygiene</p>	<p>nutrition protein fat carbohydrate vitamins minerals fibre skeleton skull cranium jaw spine pelvis femur humerus radius ulna tibia fibia phalanges ribs</p>	<p>incisor canine premolar molar tongue enzyme oesophagus stomach small intestine large intestine rectum anus producer predator prey</p>	<p>breasts hormones period pubic hair fertile ovary</p>	<p>heart vein artery capillary aorta vena cava pulmonary artery pulmonary vein atrium ventricle lungs alveoli platelets white blood cells red blood cells</p>
<b>Depth of Learning</b>			To describe and compare the observable features of animals from a range of groups and apply this knowledge to unfamiliar animals from different groups, explaining the	To identify and match a wide range of animal offspring and their adult forms. They can describe, in detail, the key	To identify the importance of the skeleton and all of its functions. Can a link be made as to why some animal don't have	To observe and compare the human teeth to other predatory animals. Are there similarities and		To describe the impact of lifestyle on the body. They can describe the negative and positive impacts of a variety of factors.

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			<p>features they would expect to see.</p> <p>To name and identify animals that are herbivore, carnivore or omnivore and explain what they eat.</p>	<p>characteristics of the offspring found in different animal groups</p> <p>To name the three basic needs of all animals to survive. They can describe the specific needs of a given animal and compare this to humans.</p>	<p>skeletons? Is there a reason for this?</p>	<p>differences? Can they explain why.</p>		
<b>Seasonal changes</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Seasonal changes</b>			<p>To observe changes across the four seasons</p> <p>To observe and describe weather associated with the seasons and how day length varies</p>					
<b>Vocabulary</b>			<p>Autumn</p> <p>Winter</p> <p>Spring</p> <p>Summer</p> <p>season</p> <p>weather</p>					
<b>Depth of Learning</b>			<p>To interpret and identify patterns in simple data and begin to suggest explanations for this</p> <p>To explain seasonal changes across the four seasons</p> <p>To describe how day length varies across the four seasons</p> <p>To make comparison across the four seasons</p>					
<b>Living things and their habitats</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>

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<b>Living things and their habitats</b>				<p>To explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>To 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>To identify and name a variety of plants and animals in their habitats, including microhabitats To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>			<p>To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>To describe the life process of reproduction in some plants and animals.</p>	<p>To 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.</p> <p>To give reasons for classifying plants and animals based on specific characteristics.</p>
<b>Vocabulary</b>				<p>alive dead never living extinct habitat suited/suitable food energy</p> <p>names of habitats such as garden,</p>			<p>pregnancy gestation embryo metamorphosis chrysalis</p>	<p>kingdoms fungi protozoa / protocista monera (bacteria) aerobic anaerobic Linnaeus</p>

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				<p>wood, forest, seashore, river, ocean, town microhabitats – soil, logs, pond</p> <p>Not the terms producer predator prey</p>				
<b>Depth of Learning</b>				<p>To identify a variety of plants and animals in a range of habitats.</p> <p>To use information, they have gathered to suggest an answer to a question.</p> <p>To suggest why the plants in a habitat need the animals.</p>			<p>To identify the life cycle of a variety of mammals and amphibians,</p> <p>To be able to classify these animals as mammals and amphibians.</p>	<p>To be able to identify a wide variety of characteristics and how these can vary which group living things are put into.</p>
<b>Rocks</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Rocks</b>					<p>To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>To describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>To recognise that soils are made from rocks and organic matter.</p>			
<b>Vocabulary</b>					<p>igneous metamorphic sedimentary</p>			





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<b>Depth of Learning</b>					<p>To start to make observations about how light is travelling when it is reflected.</p> <p>To observe how the power of the light source impacts the shadow.</p>			<p>To clearly describe the functions of the eye when light enters.</p> <p>To explain the difference between light being reflected and refracted.</p>
<b>Forces and magnets</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Forces and magnets</b>					<p>To compare how things move on different surfaces.</p> <p>To notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>To observe how magnets attract or repel each other and attract some materials and not others.</p> <p>To 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>To describe magnets as having two poles.</p>		<p>To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>To identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	

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						To predict whether two magnets will attract or repel each other, depending on which poles are facing.		
<b>Vocabulary</b>						pole attract repel		gravity air resistance friction water resistance mechanism
<b>Depth of Learning</b>						To relate their knowledge of how magnets attract or repel to a wide variety of materials. They can make predictions as to whether they will attract or repel.		
<b>States of matter</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>States of matter</b>						<p>To compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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).</p> <p>To identify the part played by evaporation and condensation in the water cycle and</p>		

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									associate the rate of evaporation with temperature.		
<b>Vocabulary</b>									evaporation condensation melting freezing state Celsius		
<b>Depth of Learning</b>									To explain what the differences are between solid, liquid and gases.  They can use this knowledge to describe what happens to the particles when a substance changes state.		
<b>Sound</b>											
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>			
<b>Sound</b>									To identify how sounds are made, associating some of them with something vibrating.  To recognise that vibrations from sounds travel through a medium to the ear.  To find patterns between the pitch of a sound and features of the object that produced it.  To find patterns between the volume of a sound and the strength of		

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						the vibrations that produced it.  To recognise that sounds get fainter as the distance from the sound source increases.		
<b>Vocabulary</b>						frequency pitch volume vibration amplitude wave longitudinal vacuum oscillation volume		
<b>Depth of Learning</b>						To make links between sound and light and which one travels faster. Light in a straight line or sound on a curvature.		
<b>Electricity</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Electricity</b>						<p>To Identify common appliances that run on electricity</p> <p>To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>To 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 loop with a battery</p> <p>To 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>To 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>To 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>

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							To Recognise some common conductors and insulators, and associate metals with being good conductors		To use recognised symbols when representing a simple circuit in a diagram.
<b>Vocabulary</b>									voltage current resistance
<b>Depth of Learning</b>									To create a functional circuit with more than one light or buzzer.  To understand that a greater power source will be needed.
<b>Properties and changes of materials</b>									
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	
<b>Properties and changes of materials</b>			<p>To distinguish between an object and the material from which it is made</p> <p>To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>To describe the simple physical properties of a variety of everyday materials</p> <p>To compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>To 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> <p>To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>				<p>To 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> <p>To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>To use knowledge of solids, liquids and gases to decide how mixtures might</p>	

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							<p>be separated, including through filtering, sieving and evaporating.</p> <p>To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>To demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>To 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>	
<b>Vocabulary</b>			<p>flexible waterproof absorb hard transparent</p>	<p>squash bend twist stretch suitable</p> <p>Remind children of materials encountered in year 1 and the vocab used to describe the properties. The focus in Year 2 is suitability for purpose and changing a material</p>			<p>soluble insoluble dissolve conductivity reversible</p>	
<b>Depth of Learning</b>			Describe and compare the properties of everyday materials. Make a prediction and suggest a reason. Suggest how a	Use their observations, ideas and experiences to ask and answer simple questions.				

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			simple test could be made fair. Explain an outcome and suggest reasons for it.					
<b>Earth and space</b>								
	<b>Nursery</b>	<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Earth and space</b>							<p>To describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>To describe the movement of the Moon relative to the Earth.</p> <p>To describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	
<b>Vocabulary</b>							<p>sun moon solar stellar lunar gibbous crescent satellite planet names of planets cycle dawn dusk perpendicular eclipse impact crater gravity</p>	



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Depth of Learning								
Evolution and inheritance								
	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evolution and inheritance								<p>To 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>To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
Vocabulary								<p>evidence extinction extinct adaptation suitability selective advantage fossil record evolution natural selection gene DNA chromosome egg sperm identical / fraternal</p>

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<b>Depth of Learning</b>								<p>To make links with evolution and the fact we are still evolving and adapting to our environment.</p> <p>To describe how different humans have evolved across the world to live in different climates.</p>