Leigh Academy Dartford

Knowledge, Skills and Understanding Progression maps

Science

EYFS				
	3 and 4 Year Olds	**Reception**	**Reception ELG**	
Understanding the World	Use all their senses in hands-on exploration of natural materials. Begin to make sense of their own life-story and family's history. Talk about what they see, using a wide vocabulary. Explore how things work. Explore collections of materials with similar and/or different properties. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. Use all their senses in hands-on exploration of	Understand the effect of changing seasons on the natural world around them Describe what they see, hear and feel while outside Explore the natural world around them Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps;	ELG: The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants; Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	

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	natural materials. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living thing			
Personal, Social and Emotional	Make healthy choices about food, drink, activity and toothbrushing - .		Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices	
Communication and Language	Understand 'why' questions, like: "Why do you think the caterpillar got so fat"	Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions; Make comments about what they have heard and ask questions to clarify their understanding		
Physical		Know and talk about the different factors that support their overall health and wellbeing - regular physical activity, healthy eating, toothbrushing, sensible amounts		

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		of 'screen time', having a good sleep routine				
KS1						
Year 1	**Working Scientifically (All Year)**	**Animals Including Humans**	**Plants**	**Everyday Materials**	**Seasonal Change**	
	Ask simple questions and think about how they could be answered Make some observations using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties Use the scientific vocabulary relating to this programme of study correctly	Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	

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		consistent with their increasing word reading and spelling knowledge		Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge		
Year 2	**Working Scientifically (All Year)**	**Animals Including Humans**	**Plants**	**Uses of Everyday materials**	**Living Things and Their Habitats**	
	Ask simple questions and think about how they could be answered Make some observations using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions	Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level	Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Explore and compare the differences between things that are living, dead, and things that have never been alive. 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. 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	

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		consistent with their increasing word reading and spelling knowledge .			food. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Use scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary.	

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KS2							
Year 3	**Working Scientifically (All Year)**	**Animals Including Humans**	**Plants**	**Rocks**		**Light**	**Forces and Magnets**
	Ask relevant questions and use different types of scientific enquiries to answer them Set up simple, practical enquiries, comparative and fair tests Make systematic and careful observations Take accurate measurements using standard units Use a range of equipment, including thermometers and data loggers Gather, record, classify and present data in a variety of ways Answer questions recording findings using	Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge:	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 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 Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rocks Recognise that soils are made from rocks and organic matter. Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge		Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Notice that light is reflected Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in the way that the sizes of shadows change	Compare how things move on different surfaces 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 Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Predict whether two magnets will attract or repel each other, depending on which poles are facing. Observe how magnets attract or repel each

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	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 results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings		Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge			Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	other and attract some materials and not others. Describe magnets as having two poles. Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge

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Year 4	Working Scientifically (All Year)	Animals Including Humans		States of Matter	Living Things and Their Habitats	Sound	Electricity
	Ask relevant questions and use different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations Take accurate measurements using standard units Use a range of equipment, including thermometers and data loggers Gather, record, classify and present data in a variety of ways to help in answer questions Record findings using simple scientific language, drawings,	Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge		Compare and group materials together, according to whether they are solids, liquids or gases 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 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific	Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Identify how sounds are made, associating some of them with something vibrating Find patterns between the pitch of a sound and features of the object that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases. Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their	Identify common appliances that run on electricity Construct a simple series of electrical circuits, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers . Identify whether or not a lamp will light in a simple series circuits, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors

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Science

	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 results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings			vocabulary at a level consistent with their increasing word reading and spelling knowledge		increasing word reading and spelling knowledge	and insulators, and associate metals with being good conductors Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge

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Science

Year 5	Working Scientifically (All Year)	Animals Including Humans		Properties and Changes of Materials	Living Things and Their Habitats	Forces	Earth and Space
	Plan different types of scientific enquiries to answer questions Recognise and control variables Take measurements, using a range of scientific equipment, with increasing accuracy and precision, Take repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions and to set up further comparative and fair tests	Describe the changes as humans develop from birth to old age Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge .		Compare and group together everyday materials based on their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets Understand 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	Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their	Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the Sun, Earth and Moon as approximately spherical bodies. Describe the movement of the Moon relative to the Earth. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their

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Science

	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 Identify scientific evidence that has been used to support or refute ideas or arguments			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. Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge		increasing word reading and spelling knowledge	increasing word reading and spelling knowledge

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Year 6	Working Scientifically (All Year)	Animals Including Humans	Evolution and Inheritance		Living Things and Their Habitats	Light	Electricity
	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables Take measurements, using a range of scientific equipment, with increasing accuracy and precision, Take repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests	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 Describe the ways in which nutrients and water are transported within animals, including humans Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	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 Use the scientific vocabulary relating to this programme of study correctly		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 give reasons for Classifying plants and animals based on specific characteristics Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	Recognise that light appears to travel in straight lines 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 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 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them Use the scientific vocabulary relating to this programme of study	Use recognised symbols when representing a simple circuit in a diagram Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit 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 Use the scientific vocabulary relating to this programme of study correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading

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Science

	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 Identify scientific evidence that has been used to support or refute ideas or arguments		Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge			correctly Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge	and spelling knowledge