



Knowledge Progression

Disciplinary Science Knowledge Threads						
Ask questions and predict Plan	Plan	Set up and perform a test	Observe and measure	Record	Conclude	Report

Substantive Science Knowledge Threads									
Animals. including humans	Living things and their habitats	Plants	Seasonal change	Materials (including rocks) and States of Matter	Light and sound	Forces and magnets	Electricity	Earth and Space	Evolution and inheritance

Progression of Knowledge Science

Working Scientifically	EYFS http://www.hawkesley.bham.sch.uk/Early-Years/	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ask Questions and Predict	Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important process and changes in the natural world around them including the seasons and changing states of matter.	Ask simple questions when prompted.	Ask simple questions.	Ask relevant questions when prompted.	Ask relevant questions.		
Plan		Suggest ways of answering a question.	Recognise that questions can be answered in different ways.	Use different types of scientific enquiry to answer their questions.	Use different types of scientific enquiries to answer their questions.	Plan different types of scientific enquiries to answer questions. With prompting, recognise and control variables where necessary.	Plan different types of scientific enquiries to answer questions. Recognise and control variables where necessary.
Set Up and Perform a Test		Conduct simple tests, with support.	Perform simple tests.	Set up simple and practical enquiries, comparative and fair tests with some support.	Set up simple and practical enquiries, comparative and fair tests.		
Observe and Measure		Make relevant observations using simple equipment.	Observe closely, using simple equipment.	Make systematic and careful observations, using simple equipment. Use standard units when taking measurements.	Make systematic and careful observations using a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units, where appropriate.	Select, with prompting, and take appropriate equipment to take readings. Take precise measurements using standard units. Begin to understand the need for repeat readings.	Use a range of scientific equipment to take measurements. Take measurements with increasing accuracy and precision. Take repeat readings when appropriate.
Record		Gather and record data. Identify and classify, with guidance.	Gather and record data to help answer questions. Identify and classify.	With modelling and guidance gather, record, classify and present data in a variety of ways to help to answer questions. With prompting, use various ways of recording, grouping and displaying evidence and suggest how findings may be tabulated.	Gather, record, classify and present data in a variety of ways to help to answer questions. Record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys, bar charts and tables.	Take and process repeat readings. Record data and results. Record data using labelled diagrams, keys, tables and charts. Use line graphs to record data.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs.
Conclude		Recognise findings. Use their observations and ideas to suggest answers to simple questions.	Use their observations and ideas to suggest answers to simple questions.	With prompting, suggest conclusions from enquiries. Suggest possible improvements or further questions to investigate.	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 results to draw simple conclusions,	Suggest further comparative or fair tests. Report and present findings from enquiries, including conclusions and, with prompting, suggest casual relationships.	Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries,

					make predictions for new values, suggest improvements and raise further questions.		including conclusions and casual relationships.
Report			Record and communicate their findings in a range of ways and begin to use simple scientific language.	Suggest how findings could be reported.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations.	With support, present findings from enquiries orally and in writing.	Report and present findings from enquiries in oral and written forms such as displays and other presentation. report and present findings from enquiries, including explanations of, and degree of, trust in results.
Vocabulary		Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, beaker, pipette, syringe.	Previous vocabulary, plus: Observe changes over time, notice patterns, secondary sources, hand lenses, egg timers, identify, classify, data.	Previous vocabulary, plus: Scientific enquiry changes over time, notice patterns, secondary sources, comparative tests, fair tests	Previous vocabulary, plus: Enquiry types, increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results, data loggers.	Previous vocabulary, plus: Notice patterns, relationships, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, casual relationships, support/refute, data loggers.	Previous vocab, plus opinion/fact, confidently name scientific enquiry types.

Animals including humans	Early Learning Goals	Explore the natural world around them, making observations and drawing pictures of animals and plants.				
		Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.				
	Year 1 and 2	Year 3 and 4		Year 5 and 6		
Curriculum Coverage	Year A	Year B	Year A	Year A	Year B	Year A
	Pupils should be taught to: - 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	Pupils should be taught to: - 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)	Pupils should be taught 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	Pupils should be taught to: - 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,	Pupils should be taught to: - describe the changes as humans develop to old age. - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (Y5 – Living things and their habitats)	Pupils should be taught to: - 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

	<p>carnivores, herbivores and omnivores</p> <ul style="list-style-type: none"> - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. 	<ul style="list-style-type: none"> - describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<ul style="list-style-type: none"> - identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<p>identifying producers, predators and prey.</p>	<ul style="list-style-type: none"> - describe the life processes of reproduction in some plants and animals (Y5 – Living things and their habitats) 	<ul style="list-style-type: none"> - describe the ways in which nutrients and water are transported within animals, including humans. - 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 (Y6 – Living things and their habitats) - give reasons for classifying plants and animals based on specific characteristics (Y6 – Living things and their habitats)
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Living things and their habitats	Early Learning Goals		Explore the natural world around them, making observations and drawing pictures of animals and plants.			
			Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.			
	Year 1 and 2		Year 3 and 4		Year 5 and 6	
Year A	Year B	Year A	Year A	Year B	Year A	
Curriculum Coverage	<ul style="list-style-type: none"> - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1 – Plants) - identify and describe the basic structure of a variety of common flowering plants, including trees (Y1 – Plants) - identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (Y1 – Animals including humans) - identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1 - Animals including humans) - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (Y1 – Animals including humans) - observe changes across the four seasons (Y1 – Seasonal change) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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 - identify and name a variety of plants and animals in their habitats, including microhabitats - 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. - notice that animals, including humans, have offspring which grows into adults (Y2 – Animals including humans) 	<ul style="list-style-type: none"> - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (Y3 – Plants) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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 - construct and interpret a variety of food chains, identifying producers, predators and prey (Y4 – Animals, including humans) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - describe 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. 	<p>Pupils should be taught to:</p> <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

Plants	Early Learning Goals		Explore the natural world around them, making observations and drawing pictures of animals and plants.			
			Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.			
	Year 1 and 2		Year 3 and 4		Year 5 and 6	
Year A	Year B	Year A	Year A	Year B	Year A	
Curriculum Coverage	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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. - identify and name a variety of plants and animals in their habitats, including microhabitats (Y2 – Living things and their habitats) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - recognise that living things can be grouped in a variety of ways (Y4 – Living things and their habitats) - explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4 – Living things and their habitats) - Recognise that environments can change and that this can sometimes pose dangers to living things (Y4 – Living things and their habitats) 	<ul style="list-style-type: none"> - describe the life processes of reproduction in some plants and animals (Y5 – Living things and their habitats) 	<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 micro-organisms, plants and animals (Y6 – Living things and their habitats) - Give reasons for classifying plants and animals based on specific characteristics (Y6 – Living things and their habitats)

Seasonal change	Early Learning Goals	Understand some important process and changes in the natural world around them including the seasons and changing states of matter.				
	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
Curriculum Coverage	Pupils should be taught to: - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies		- recognise that light from the sun can be dangerous and that there are ways to protect their eyes (Y3 – Light)		- use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky (Y5 – Earth and space)	

Materials (including rocks) and States of Matter	Early Learning Goals	Understand some important process and changes in the natural world around them including the seasons and changing states of matter.				
	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
Curriculum Coverage	Everyday Materials Pupils should be taught to: - 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.	Uses of Everyday Materials Pupils should be taught 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 - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Rocks Pupils should be taught to: - 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 rock - recognise that soils are made from rocks and organic matter. - notice that some forces need contact between two objects, but magnetic forces can act at a distance (Y3 – Forces and magnets)	States of Matter Pupils should be taught to: - 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 (°C) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Properties and Changes of Materials Pupils should be taught 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 - know 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 uses of everyday	- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago (Y6 – Evolution and inheritance)

					<p>materials, including metals, wood and plastic</p> <ul style="list-style-type: none">- 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.	
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Light and sound	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
	Curriculum Coverage			<p>Light Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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 - 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 size of shadows change. 	<p>Sound Pupils should be taught to:</p> <ul style="list-style-type: none"> - identify how sounds are made, associating some of them with something vibrating - recognise that vibrations from sounds travel through a medium to the ear - 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 	

Forces and magnets	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
	Curriculum Coverage			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - compare how things move on different surfaces - notice that some forces need contact between two objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others - 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 - describe magnets as having two poles - predict whether two magnets will attract or repel each other, depending on which poles are facing. 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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.

Electricity	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
	Curriculum Coverage				Pupils should be taught to: <ul style="list-style-type: none"> - identify common appliances that run on electricity - construct a simple series electrical circuit, 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 circuit, 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 and insulators, and associate metals with being good conductors. 	

Earth and space	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year A	Year B	Year A
	Curriculum Coverage					Pupils should be taught to: <ul style="list-style-type: none"> - describe the movement of the Earth, and other planets, relative to the Sun in the solar system - describe the movement of the Moon relative to the Earth - describe the Sun, Earth and Moon as approximately spherical bodies - use the idea of the Earth's rotation to explain day and

					night and the apparent movement of the sun across the sky.	
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Evolution and inheritance	Year 1 and 2		Year 3 and 4		Year 5 and 6	
	Year A	Year B	Year A	Year B	Year A	Year B
	Curriculum Coverage					