St Barnabas' CE Primary School & Nursery

Science Skills Progression Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Everyday materials	Animals including humans Seasonal changes	Seasonal changes Everyday materials	Human body	Plants	Animals including humans Seasonal changes
Year 2	Human body/healthy living	Materials	Animals including humans	Living things and their habitats	Plants	Living things and their habitats
Year 3	Rocks	Animals including humans	Forces and magnets	Forces and magnets	Plants	Light and Dark
Year 4	All living things and their habitats	Animals including humans	Electricity	States of matter	States of matter	Sound
Year 5	Properties	Animals including humans	Animals including humans	Living things and their habitats	Forces	Earth and space
Year 6	Electricity	Light	Animals including humans	Evolution and Inheritance	Evolution and Inheritance	Living things and their habitats

Biology: Animals including humans						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Children know about similarities and differences between themselves and others. Begin to understand the need to respect and care for the natural environment and all living things. Explore the natural world around them, making observations and drawing pictures of animals and plants Understand the key features of the life cycle of a plant and an animal. Recognise some environments that are different to the one in which they live. **WORKING SCIENTIFICALLY** *Develop curiosity by being encouraged to explore, observe and discuss findings*	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 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **WORKING SCIENTIFICALLY** *Observing closely, using simple equipment* *Identifying and Classifying*	Understand that animals, including humans, have offspring which grow into adults. Describe the basic needs of animals, including humans, for survival (water, food and air). **WORKING SCIENTIFICALLY** *Observe, identify, compare and describe.* *Suggest how to find things out.* *Observing, through video or first-hand observation and measurement how animals incl humans grow* *Asking questions what things animals need for survival and what humans need to stay healthy*	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. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. **WORKING SCIENTIFICALLY** *Identifying and grouping animals with and without skeletons* *Observing and comparing movement of various animals* *Exploring ideas about what would happen if humans did not have skeletons* *Comparing and contrasting the diets of*	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. **WORKING SCIETIFICALLY** *Set up simple practical enquiries, comparative and fair tests.* *Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.* *Compare the teeth of carnivores and herbivores, and suggest reasons for differences* *find out what damages teeth and how to look after them* *draw and discuss their ideas about the*	Describe the changes as humans develop to old age. **WORKING SCIENTIFICALLY** *Researching the gestation periods of other animals and comparing them to humans* *Finding out and recording the length and mass of a baby as it grows*	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Describe the ways in which nutrients and water are transported within animals, including humans. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. **WORKING SCIENTIFICALLY** *Explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.*

	Gathering and recording data to help in answering questions *Using their senses to compare different textures, sounds and smells*		*different animals, e.g. their pets* *Grouping animals according to what they eat* *Research food groups and how they keep us healthy.*	*digestive system and compare them with models or images.*		

Biology: Plants						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Use all their senses in hands-on exploration of natural materials. Plant seeds and care for growing plants. Begin to understand the need to respect and care for the natural environment and all living things Explore the natural world around them, making observations and drawing pictures of animals and plants	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. **WORKING SCIENTIFICALLY** *observe closely and compare and contrast familiar plants* *describe how they were able to identify and group them, and draw diagrams showing the parts of different plants including trees.*	• 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. **WORKING SCIENTIFICALLY** *Observing closely, using simple equipment* *Asking simple questions and recognising they can be answered in different ways* *Making tables and charts*	.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. **WORKING SCIENTIFICALLY** *compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser* *discover how seeds are formed by observing the different stages of plant life cycles over a period of time*			

WORKING SCIENTIFICALLY *Develop curiosity by being encouraged to explore, observe and discuss findings* *Talk about their own experiences*	*keep records of how plants have changed over time*		*Look for patterns in the structure of fruits that relate to how the seeds are dispersed.* *Observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.*			

Biology: Living things and their habitats						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Use correct terms so that, e.g. children will enjoy naming a chrysalis and other living things. Draw information from a simple map. Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live.		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. **WORKING SCIENTIFICALLY** *Sort and classify things according to whether they are living, dead or were*		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. Talk about criteria for grouping, sorting and classifying and use simple keys. Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things. **WORKING SCIETIFICALLY** *Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.* *Explore everyday phenomena and the relationships between living things and familiar.* *Use the local environment throughout the year to raise and answer questions*	• 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. **WORKING SCIENTIFICALLY** *Study and raise questions about their local environment throughout the year* and suggesting reasons for similarities and differences *Observe and compare life-cycle changes in a variety of living things, for example plants in the vegetable garden or flower border, and*	• 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. **WORKING SCIENTIFICALLY** *Pupils should use their immediate environment to use classification keys and systems to identify some plants and animals.* *Observe how animals are grouped*

WORKING SCIENTIFICALLY *Develop curiosity by being encouraged to explore, observe and discuss findings*		*never alive, and recording their findings using charts.* *Describe how they decided where to place things,* *Construct a simple food chain that includes humans (e.g. grass, cow, human).* *Describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.*		*that help to identify and study plants and animals in their habitats. Identifying how the habitat changes throughout the year.* *Using and making simple guides or keys to explore and identify local plants (e.g. flowers, trees, small invertebrates, local birds)* *Raising and answering questions based on their observations of animals and research* *Comparing two habitats*	*animals in the local environment.* *Growing plants from different parts of a parent plant: seeds, stem, root cuttings, tubers and bulbs* *Observing changes in an animal over a period of time*	

Biology: Evolution and Inheritance						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
.						• 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. **WORKING SCIENTIFICALLY** *Observing and raising questions about local animals and how they are adapted to their environment* *Comparing how some living things are adapted to survive in extreme conditions for example, cactuses, penguins and camels* *Analysing advantages and disadvantages of specific adaptations such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers* *Researching the work of Mary Anning. Charles Darwin, Alfred Wallace, Rosalind Franklin (DNA discovery)*

Chemistry: Everyday materials including rocks						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Talk about the differences between materials and changes they notice. Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Explore the natural world around them. Describe what they see, hear and feel whilst outside. **WORKING SCIENTIFICALLY** *Develop curiosity by being encouraged to explore, observe and discuss findings* *Talk about their own experiences*	Describe simple physical properties of everyday materials. Make simple comparisons and group everyday materials on the basis of their simple physical properties. 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. **WORKING SCIENTIFICALLY** *Use simple scientific language.* *Performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for a house*	Use simple features 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. Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. happened. **WORKING SCIENTIFICALLY** *Compare the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs)* *observe closely, identifying and classifying the uses of different materials, and*	• 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 **WORKING SCIENTIFICALLY** *Observe rocks and explore how and why they might have changed over time* *Identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.* *Research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.* *Explore different soils, identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water.*	**States of matter** 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. **WORKING SCIETIFICALLY** *grouping and classifying a variety of different materials* *exploring the effect of temperature on substances such as chocolate, butter* *research the temperature at which materials change state, for example*	**Properties and changes of materials** 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 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. **WORKING SCIENTIFICALLY**	

		recording their observations.	*Raise and answer questions about the way soils are formed.*	*observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.*	*Carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'* *Compare materials in order to make a switch in a circuit* *observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes.* *research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials*	

Physics – Forces and magnets						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Explore how things work. Explore and talk about different forces they can feel. **WORKING SCIENTIFICALLY** *Develop curiosity by being encouraged to explore, observe and discuss findings*			Compare how things move on different surfaces; • notice that some forces need contact between 2 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 2 poles; • predict whether 2 magnets will attract or repel each other, depending on which poles are facing. **WORKING SCIENTIFICALLY** *compare how different things move and group them*		• 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. **WORKING SCIENTIFICALLY**	

			raise questions and carry out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions *explore the strengths of different magnets and find a fair way to compare them* *sort materials into those that are magnetic and those that are not* *look for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another* *identify how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.*		*explore falling paper cones or cup -cake cases, and design and make a variety of parachutes and carry out fair tests to determine which designs are the most effective* *explore resistance in water by making and testing boats of different shapes* *design and make products that use levers, pulleys, gears and/or springs and explore their effects.*	

Physics – seasonal change and light						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Observe changes across the 4 seasons Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. **WORKING SCIENTIFICALLY**	• observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies. **WORKING SCIENTIFICALLY** *Make tables and charts about the weather; and make displays of what happens in the world around them, including day length,*		• 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. **WORKING SCIENTIFICALLY** *Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.*			• 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. **WORKING SCIENTIFICALLY** *decide where to place rear -view mirrors on cars;* *design and making a periscope and use the idea that light appears to travel in straight lines to explain how it works.*

Develop curiosity by being encouraged to explore, observe and discuss findings *Talk about their own experiences*	*as the seasons change.*					*investigate the relationship between light sources, objects and shadows by using shadow puppets* *extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur)*

Physics – Electricity						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				• 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. **WORKING SCIENTIFICALLY** *Observing patterns e.g Which materials conduct electricity the best? How is brightness of the bulb affected by number of batteries/length of wire/thickness of wire/type of wire/number of bulbs?*		• 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 recognised symbols when representing a simple circuit in a diagram **WORKING SCIENTIFICALLY** *systematically identify the effect of changing one component at a time in a circuit; designing and making a*

						set of traffic lights, a burglar alarm or some other useful circuit.

Physics – Sound						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
				• 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. **WORKING SCIENTIFICALLY** *finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses* *make earmuffs from a variety of different materials to investigate which provides the best insulation against sound* *make and play their own instruments by using what they have found out about pitch and volume.*		

Physics – Earth and Space						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
					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 **WORKING SCIENTIFICALLY** *compare the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system;* *construct simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day* *find out why some people think that structures such as Stonehenge might have been used as astronomical clocks.*	