Stokenchurch Primary School Science Curriculum Coverage and Progression (we teach using the Developing Experts Scheme, PLAN resources and Explorify)

Knowledge Content: key objectives						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Animals, including humans	• 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) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• 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	• 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	• 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	• Describe the changes as humans develop to old age	• 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

Enquiry Skills covered						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Animals, including humans	• Perform simple tests (taste tests, touch tests) • Identify and classify (parts of human body and sense organs, classify animals) • Using their observations and ideas to suggest answers to questions (most popular eye colour, most suitable pet) • Gather and record data to help in answering questions (tally chart of eye colours in class, simple table to collect sounds heard, venn diagrams, animal research) • Asking simple questions and recognise that they can be answered in different ways (most popular eye colour) • Observe closely, using simple equipment (begin to take measures using non-standard units) (smell tests, difference between amphibian/reptile/fish)	• Asking simple questions and recognise that they can be answered in different ways (what do animals need to survive? What is a healthy diet? Do all animals have the same lifecycle?) • Perform simple tests (effect of exercise on the body) • Identify and classify (needs vs wants, food groups, parents to offspring) • Using their observations and ideas to suggest answers to questions (pepper and soap handwashing, life cycle of a butterfly) • Gather and record data to help in answering questions (effect of exercise on the body – simple table, draw simple bar chart to show growth of chick)	• Gather, record, classify and present data in a variety of ways (sort healthy foods, explore food labels) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (label human skeleton) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (match animals to skeletons and explain functions) • Identify differences, similarities or changes (different skeletons) • Use straightforward scientific evidence to answer questions or to support their findings (match animals to skeletons and explain functions)	• Set up simple practical enquiries, comparative and fair tests (tooth decay) • Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units (tooth decay) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (digestive system organs, model of digestive system, food web) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (tooth decay) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (tooth decay)	• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (hand spans of different ages) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (**plot line graph of foetal development, hand spans line graph)** • 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 (hand span) • Identify scientific evidence that has been used to support or refute ideas or arguments (mammal life cycles, old age)	• Plan different types of scientific enquiries to answer questions (how are water and nutrients transported – osmosis experiment, heart rate) • Take measurements, using a range of scientific equipment, taking repeat readings when appropriate (how are water and nutrients transported – osmosis experiment, heart rate) • Record data and results of increasing complexity **pie chart to show components of the blood,** heart rate • Report and present findings from enquiries • Identify scientific evidence that has been used to support or refute ideas or arguments (functions of heart, effect of drugs and alcohol)

Knowledge Content: key objectives						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Living things and their habitats		• 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.		• 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	• 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	• 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

Enquiry Skills covered						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Living things and their habitats		• Asking simple questions and recognise that they can be answered in different ways (what animals live in different habitats? What is there to eat in this habitat? How does food get to the supermarket? why is the rainforest in danger? What is life like in the ocean?) • Observe closely, using simple equipment (minibeast hunt, what do foods have in common?) • Identify and classify (alive/dead/never alive, match animals to habitats, Arctic/Antarctic) • Using their observations and ideas to suggest answers to questions (nature hunt around school, soil audit) • Gather and record data to help in answering questions (nature hunt around school, create a food chain, litter audit of school)		• Gather, record, classify and present data in a variety of ways to help in answering questions (match living things to habitats, classify animals into groups, pond habitat) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (pond habitat) • Identify differences, similarities or changes related to simple scientific ideas and processes (research different habitats, create classification keys)	• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (cuttings of a plant – examine growth) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (cuttings of a plant) • 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 (cuttings of a plant) • Identify scientific evidence that has been used to support or refute ideas or arguments (plant reproduction, life cycle of mammal, amphibian/insect life cycles)	• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (mouldy bread, yeast investigation) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (yeast investigation) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs, yeast investigation • 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 (classification keys, mouldy bread) • Identify scientific evidence that has been used to support or refute ideas or arguments (Linnaeus Kingdoms of Life)

Knowledge Content: key objectives						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Plants	• Identify and name a variety of common and wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees	• Observe and describe how seeds and bulbs into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	• 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			

Enquiry Skills covered						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Plants	• Asking simple questions and recognise that they can be answered in different ways (deciduous/evergreen) • Observe closely, using simple equipment (seed germination, leaf rubbings, seeds vs stones in fruit plants) • Identify and classify (parts of a plant, deciduous/evergreen) • Using their observations and ideas to suggest answers to questions (where do plants grow?) • Gather and record data to help in answering questions (plant hunt, plant diary)	• Asking simple questions and recognise that they can be answered in different ways (how are seeds and bulbs different? • Observe closely, using simple equipment (seeds and bulbs, • Perform simple tests (best conditions for a plant to grow) • Identify and classify (seeds/bulbs, plants in different habitats) • Using their observations and ideas to suggest answers to questions (what happens to a plant with no sunlight/no water/no soil?) • Gather and record data to help in answering questions (plant growth)	• Ask relevant questions and use different types of scientific enquiries to answer them (how is water transported in plants? How are seeds dispersed?) • Set up simple practical enquiries, comparative and fair tests • Make systematic and careful observations, taking accurate measurements (growth of a plant functions of a flowering plant, dye in plants) • Gather, record, classify and present data in a variety of ways • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Report on findings from enquiries, presentations of **results and conclusions** (optimal plant growth conditions) • Use results to draw simple conclusions, make predictions			

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evolution and Inheritance						• 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

Enquiry Skills covered						
Evolution and Inheritance	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
						• 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 (Darwin beak investigation, peppered moth investigation) • Identify scientific evidence that has been used to support or refute ideas or arguments (evolution – dog breeding and Mr Men, animal adaptations, fossils as evidence for evolution)

Knowledge Content: key objectives						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Materials	• 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	• 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			• 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	

Enquiry Skills covered						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Materials	• Perform simple tests (float or sink, absorbent or waterproof) • Identify and classify (sort and identify materials, natural/manmade) • Using their observations and ideas to suggest answers to questions (what material is this made from, float and sink, bet material for a raincoat) • Gather and record data to help in answering questions (investigate properties of materials – use simple table, float and sink, venn diagram, best material for windows) • Ask simple questions (which structure will withstand wind, which material is the most waterproof)	• Perform simple tests (compare the strength of different materials – bridges, stretch tests) • Using their observations and ideas to suggest answers to questions (strength, stretch tests, waterproof clothing - Charles Mackintosh) • Gather and record data to help in answering questions (strength, stretch tests, melting road test)			• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables (how could I group these materials? Best insulator? Soluble or insoluble? How to recover a dissolved substance?) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (conductor/insulator, indicator, reversible/irreversible changes) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (conductor/insulator, rust investigation) • Use test results to **make predictions** to set up further comparative and fair tests (hardness of materials, rust) • 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 (separating mixtures, insulators/ conductors, reversible/irreversible changes, fizzing rockets)	

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seasonal Changes	• Observe changes across the 4 seasons • Observe and describe weather associated with the seasons and how day length varies					

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seasonal Changes	• Perform simple tests (create rain gauges) • Identify and classify (features of 4 seasons, weather) • Using their observations and ideas to suggest answers to questions (weather observations, create weather forecasts • Gather and record data to help in answering questions (weather station, rain gauges,					

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Rocks			• 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			

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Rocks			• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment (identify properties of rocks, weathering of rocks, soil types) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (weathering of rocks, soil types) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (weathering of rocks) • Identify differences, similarities or changes related to simple scientific ideas and processes (igneous rocks, fossil formation,			

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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		

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
States of Matter				• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment (investigate melting points) • Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (melting points, bar charts of freezing points, **line graph – rates of evaporation**) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (melting points) • Use straightforward scientific evidence to answer questions or to support their findings (explore and describe states of solids/liquids/gases)		

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space					• 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	

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space					• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (solar clock) • Use test results to make predictions to set up further comparative and fair tests (solar clock) • 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 (phases of moon) • Identify scientific evidence that has been used to support or refute ideas or arguments (order of planets, celestial bodies as spheres, understand how earth moves,	

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light			• 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			• 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

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light			• Gather, record, classify and present data in a variety of ways to help in answering questions (UV protection experiment, reflective materials, how to shadows change across the day) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (UV protection, shadows) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (UV protection, change size of a shadow) • Identify differences, similarities or changes related to simple scientific ideas and processes (light sources/non-light sources, reflective/non reflective)			• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (most reflective material) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (shadow investigation) • 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 (shadow swimming pool challenge) • Identify scientific evidence that has been used to support or refute ideas or arguments (phenomena related to light)

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces			• 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		• 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	

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces			• Set up simple practical enquiries, comparative and fair tests (contact and non-contact forces, types of magnets) • Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units (ramp test – friction) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (magnetic or not? friction ramp test) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (magnetic or not, strength of a magnet)		• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (investigate mass and gravity, force needed to drag a shoe - friction) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision**, taking repeat readings when appropriate** (parachutes and air resistance, mass and gravity, force needed to drag a shoe – friction **forcemeters**) • 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 (air resistance/water resistance, force needed to drag a shoe – friction, pulleys/levers) • Identify scientific evidence that has been used to support or refute ideas or arguments (Newton – gravity, pulleys/levers)	

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity				• 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 conductor		• 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

Enquiry Skills covered						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Electricity				• Ask relevant questions and using different types of scientific enquiries to answer them (why can electricity be dangerous? What objects conduct electricity?) • Set up simple practical enquiries, comparative and fair tests (series circuits, will a circuit work?) • Make systematic and careful observations and, where appropriate, taking accurate measurements • Gather, record, classify and present data in a variety of ways to help in answering questions (appliances that use electricity, conductors/insulators) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (conductors/insulators, switches) • Use straightforward scientific evidence to answer questions or to support their findings (drawing of a circuit)		• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (how to make a bulb brighter? Effect of adding more components to a circuit) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision • Record data and results of increasing complexity • Use test results to make predictions to set up further comparative and fair tests (will the circuit work) • 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

Knowledge Content: key objectives						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound				• 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		

Enquiry Skills covered						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound				• Set up simple practical enquiries, comparative and fair tests (best sound insulator, explore pitch, explore volume, explore effect of distance on volume) • Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including **data loggers** (sound insulator) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (sound insulator, **line graph for volume**) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Identify differences, similarities or changes related to simple scientific ideas and processes (sound travels through solids, liquids and air, insulators, different pitches)		