Holy Cross Catholic Primary School

Science Progression

\\\\\\\\\\		Year 1	Year 2	Year 3/4	Year 5/6
Working Scientifically	**Observing Over Time** **Plan** **Do** **Review**	• I ask questions about how and why things change •With help, I identify changes to observe and measure and suggest how to do it • I use non-standard units and simple equipment to record changes • I record in words or pictures, or in simple prepared formats such as tables and charts • I identify simple changes and talk about them I sequence the changes I begin to use scientific language to talk about changes • I talk about whether the change was what I expected		•I talk about things changing and decide when questions can be answered by observing over time •I decide what observations to make, how often and what equipment to use • I use a range of equipment to collect data using standard measures • I make records using tables and bar charts • I begin to use and interpret graphs produced by data loggers •I draw simple conclusions from changes I observed •I talk about changes using some scientific language I suggest improvements to the ways I observe	• I recognise when observing changes over time will help to answer my questions • I decide how detailed my observations need to be, and what equipment to use. to make my measurements as accurate as possible • I use equipment accurately without support • I record data appropriately I present data in line graphs • I interpret changes in the data • I recognise the effect of changing the time and number of observations •I draw valid conclusions from data about changes •I recognise the significance of things changing over time talk about and explain changes using scientific knowledge and understanding • I evaluate how well I observed over time

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	Identifying and Classifying	• I ask questions about how and why things ore similar or different • I decide what to observe to identify or sort things •I make comparisons between simple features of objects, materials or living things •I record my observations in words or pictures or simple tables •I sort objects by observable and behavioural features •I record my sorting in sorting circles or tables • I identify similarities and differences and talk about them begin to use simple scientific language to talk about how things are similar or different •I to use my records to help sort or identify other things	• I talk about what criteria I will use to sort and classify things I decide what equipment to use to identify and classify things •I talk about things that can be grouped and decide when questions can be answered by sorting and classifying • I carry out simple tests to sort and classify according to properties or behaviour • I use Carroll diagrams, Venn diagrams and more complex tables to sort things • I use simple keys and branching databases to identify things • I make simple branching databases (keys) for things that hove clear differences • I draw simple conclusions about the things have sorted and classified • I talk about the similarities and differences I identified using some scientific language •I suggest improvements to the way I sort and identify things	• I recognise when identifying and classifying will be helpful to answer my questions I decide what equipment, tests and secondary sources of information to use to identify and classify things •I use a series of tests to sort and classify materials • I use secondary sources to identify and classify things • I make my own keys and branching databases with four or more items • I use more than one piece of scientific evidence to identify and classify things •I draw valid conclusions when sorting and classifying • I recognise the significance of sorting and classifying • I talk about and explain what I have done using scientific knowledge • I evaluate how well my keys worked
	Pattern Seeking	•I ask questions about why and how things are linked • With help, I decide what patterns to observe and measure and	• I talk about where patterns might be found and decide when	• I recognise when variables cannot be controlled and

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		suggest how to do it • I use non-standard units and simple equipment to record events that might be related. •I record in words or pictures, or in simple prepared formats such as tables, tally chars and maps • I identify simple patterns and talk about them • I make links between two sets of observations • I begin to use scientific language to talk about patterns • I talk about whether the pattern was what I expected	questions can be investigated by pattern seeking •I decide on which sets of data to collect, what observations to make and what equipment to use • I use a range of equipment to collect data using standard measures • I make records using tables, bar charts simple scatter graphs • I begin to use and interpret data collected through dataloggers • I draw conclusions about simple patterns between two sets of data •I talk about patterns using some scientific language • I suggest improvements to the way I looked for patterns	when pattern seeking will help to answer my question • I decide how detailed my data needs to be, and which equipment to use, to make my measurements as accurate as possible • I use equipment accurately to collect observations • I record data appropriately and accurately I present data in scatter graphs and frequency charts • I recognise patterns in results • I recognise the effect of sample size on reliability • I draw valid conclusions from data about patterns and recognise their limitations • I recognise the significance of relationships between sets of data • I talk about and explain cause and effect patterns using scientific knowledge and understanding • I evaluate how well looked for patterns

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	Research	• I ask questions about how things are and the way they work •With help, I make suggestions about how to find things out • I use simple books and electronic media to find things out • I ask questions to find out what people do and how things work • I record in words and pictures what found out •I begin to use scientific language to talk about what I found out • I talk about whether the information source was useful •I give an opinion about some things I found out	•I talk about how things are and the way they work and decide when questions can be answered by research using secondary • I use information sources to find the information I need •I use someone else's data • I record what I found out in my own words I present information in different ways • I draw conclusions from what I found out from different sources •I talk about what the information and data means using some scientific language • I suggest ways to improve how find out and use information	• I recognise when research using secondary sources will help to answer my questions • I decide which sources of information might answer my questions • I use relevant information and data from a range of secondary sources • I recognise how data has been obtained • I start to notice when information and data is biased or based on opinions rather than facts • I present my findings in suitable formats • I draw valid conclusions from my research • I talk about and explain my research using scientific knowledge and understanding • I evaluate how well my research has answered my questions • I recognise that some scientific questions may not have been answered definitively

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	Fair Testing	• I ask questions about why and how • With help, I notice links between cause and effect • With help, I identify simple variables to change and measure • I plan simple comparative tests • I use non-standard units and simple equipment to record data • I record in words or pictures, or in simple prepared formats such as tables and tally charts • I interpret and talk about my data • I begin to use simple scientific language to identify and describe simple causal relationships • With help, I can say if my test was fair • I say if the relationship was what I expected	• I talk about links between cause and effect and (with help) pose a fair test question • I help to plan a fair test • I decide what data to collect • I decide what equipment to use and how to make observations • I use a range of equipment to collect data using standard measures • I make records using tables and bar charts • I begin to use and interpret data collected through dataloggers • I draw simple conclusions from my fair tests • I talk about and explain, simple causal relationships using some scientific language • I suggest ways that I can improve my fair tests	• I recognise when variables need to be controlled and when a fair test is the best way to answer my question •I plan a fair test, selecting the most suitable variables to measure, change and keep the same • I decide what equipment to use to make my measurements as accurate as possible • I use equipment accurately to collect observations • I record data appropriately and accurately I present data in line graphs • I identify causal relationships • I draw valid conclusions based on the data •I recognise the significance of the results of fair tests • I talk about and explain causal relationships using scientific knowledge and understanding • I evaluate the effectiveness of my fair testing, recognising variables that were difficult

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						to control	
	Vocabulary	question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record – diagram, chart		oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research – relevant question equipment – thermometer, data – gather, standard units, record, classify, present record – drawings, labelled diagrams, keys, bar charts, tables		plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present – conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence – support, refute, ideas or arguments biology, physics, chemistry	
	Plants	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	observe and describe how seeds and bulbs grow into mature plants find out and describe how	identify and describe the functions of different parts of flowering plants:			

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		identify and describe the basic structure of a variety of common flowering plants, including trees	plants need water, light and a suitable temperature to grow and stay healthy	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			

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	Vocabulary	deciduous, evergreen, tree, leaf, flower (blossom), petals, fruit, bulb, seed, roots, stem, trunk, branches	growth, germinate, light, temperature reproduce, lifecycle	air, water, transportation, nutrients, soil, reproduction, seed formation, seed dispersal, pollination			
	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	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	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	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

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		body and say which part of the body is associated with each sense		skeletons and muscles for support, protection and movement	chains, identifying producers, predators and prey		describe the ways in which nutrients and water are transported within animals, including humans
	Vocabulary	amphibians, fish, reptiles, mammals, birds (+ 1 example of each) herbivore, omnivore, carnivore head, nose, ear, neck, shoulder, arm, elbow, wrist, hand, back, chest, hip, leg, knee, ankle, foot wing, beak, tail, fin sight, smell, touch, taste, hearing	survival, water, air, food reproduce, adult, baby, offspring, kitten, calf, puppy food chain, prey, predator, camouflage, protection exercise, hygiene, balanced die	skeleton, skull, bones, muscles, movement, support, protection,	nutrition mouth, tongue, teeth, oseophagus, stomach, small intestine, large intestine, nutrients, absorb, canine, incisor, molar producer, consumer, apex predator	womb, foetus, embryo, gestation, baby, toddler, teenager, elderly growth, development, puberty	Animals including humans function, circulatory system, heart, valve, blood vessel, vein, artery transport, oxygenated, deoxygenated lifestyle, drug
	Living things and their habitats		explore and compare the difference 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		describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of	describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the	describe how living things are classified into broad groups according to common observable characteristics

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			habitats provide 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 micro-habitats 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		reproduction in some plants and animals	life process of reproduction in some plants and animals	and based on similarities and differences, including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics

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			to living things				
	Vocabulary		living, dead, habitat, microhabitat, woodland, meadow, hedgerow, pond		vertebrates, invertebrates (+ 1 example of each) environment, habitat, classification key	life process, reproduction, offspring,	characteristic, classification, organism, micro-organism
	Light			recognise that they need light in order to see things and that the 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 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

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				recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows changes			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
	Vocabulary			light source, mirror, reflect, reflective, reflection shadow, blocked transparent, translucent, opaque			refraction, reflection, spectrum, rainbow

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	Forces and magnets		*find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching* **(Year 2 materials unit)**	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 on whether they are attracted to		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	

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				a magnet, 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		greater effect	
	Vocabulary			force, contact, surface, magnetic, attract, repel, poles		air resistance, water resistance, friction, gravity lever, gear, pulley, Newtons	
	Seasonal change	observe changes across the four seasons observe and describe weather associated with the seasons and how day length					

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		varies					
	Vocabulary	season, spring, summer, autumn, winter, month, year, day, night, sun, moon, light, dark					
	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,	

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						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	

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						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	

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						of soda	
	Vocabulary	wood, plastic, glass, paper, metal, rock, hard, soft, rough, smooth, shiny, dull, bendy, stiff	brick, fabric, elastic, foil property, solid, waterproof, absorbent, opaque, transparent, squash, bend, flexible, twist, stretch push, pull, roll, slide, bounce			hardness, transparency, conductivity (electrical, thermal) solubility, solution dissolve, filter, evaporate, sieve, reversible, irreversible	
	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			

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				lived are trapped within rock recognise that soils are made from rocks and organic matter			
	Vocabualry			sandstone, granite, marble, pumice absorbent, crumble sedimentary, layer, sediment igneous, magma, lava, gas bubbles (tiny holes/spaces) metamorphic, change, squeeze, pressure			
	Evolution and inheritance						recognise that living things have changed over time and that fossils provide

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							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

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							evolution
	Vocabulary						adaptation, evolution, characteristic, reproduction, genetics, survival
	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		

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					played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature		
	Vocabulary				solid, liquid, gas, evaporation, condensation, particle, temperature, freezing, heating		
	Earth and space					describe the movement of the Earth, and other planets, relative to the Sun describe the movement of the Moon relative to the	

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						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	
						Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation	
	Sound				identify how sounds are made, associating		

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					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		

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					the sound source increases		
	Vocabulary				vibration, wave, volume, pitch, tone, insulation		
	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		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

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					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		switches use recognised symbols when representing a simple circuit in a diagram
	Vocabulary				appliance, battery power, main power, circuit, series, cell, battery,		circuit - series, parallel voltage, volts, amps

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					wire, bulb, switch, break in circuit conductor, insulator		