



St. Luke's Catholic Primary School Progression of Skills in Science



Aspect	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically	<ol style="list-style-type: none"> 1. Classification, 2. Research, 3. Fair testing, 4. Observations over time and 5. Pattern seeking 6. Asking scientific questions, 7. Planning enquiries, 8. Making close observations, 9. Taking measurements, 10. Gathering and recording data, 11. Presenting and interpreting results 			<ol style="list-style-type: none"> 1. Classification, 2. Research, 3. Fair testing, 4. Observations over time and 5. Pattern seeking 6. Asking scientific questions, 7. Planning enquiries, 8. Making close observations, 9. Taking measurements, 10. Gathering and recording data, 11. Presenting and interpreting results 12. Making predictions, 13. Drawing conclusions and 14. Evaluating enquiries. 			
Biology: Animals, including humans	<ol style="list-style-type: none"> 1. Animals can be experienced using touch, smell, and sound (hands-on experience) 2. Close observation, draw pictures animals can be helped by making close observations 3. Familiar animals can be observed whilst outside 4. Different animals have 	<ol style="list-style-type: none"> 1. Animals can be organised into groups (e.g. fish, amphibians, reptiles and mammals). 2. Carnivores eat meat, herbivores eat plants and omnivores eat meat and plants. 3. The different groups of animals have different shaped bodies 	<ol style="list-style-type: none"> 1. Animals can be organised fish, amphibians, reptiles and mammals. 2. Carnivores eat meat, herbivores eat plants and omnivores eat meat and plants. 3. Different parts of our bodies help us to see, hear, smell, touch and taste. 	<ol style="list-style-type: none"> 1. Animals need the right types of food to survive 2. Skeletons give animals support, protection and allow movement 3. Different bones do different jobs within the skeleton 4. There are different food groups that we need to eat to stay healthy 	<ol style="list-style-type: none"> 1. The digestive system breaks down the food we eat so that we can absorb the nutrition and get rid of the waste. 2. Different teeth have different functions 3. Food chains show how energy travels from producers to consumers to 	<ol style="list-style-type: none"> 1. Humans continue to change throughout their lives (including during puberty). 2. The period from conception to birth is called gestation and it is different lengths for different animals. 3. The heart, blood vessels and blood are all part of the circulatory system 	Revise and revisit

	<p>different names and different characteristics that we can describe.</p>	<p>4. Different parts of our bodies help us to see, hear, smell, touch and taste. 5. Animals found in the local environment need to be returned carefully while some animals can be kept as pets. The main body parts are the head, neck, arms, elbows, hair, mouth and teeth).</p>	<p>4. The main body parts are the head, neck, arms, elbows, hair, mouth and teeth). 5. Animals have offspring that grow into adults 6. All animals need food, water and air 7. Humans exercise, eat healthy foods and wash to stay healthy and well 8. All baby animals grow into grown-up animals (including humans).</p>	<p>5. The digestive system breaks down the food we eat so that we can absorb the nutrition and get rid of the waste. 6. Different teeth have different functions 7. Food chains show how energy travels from producers to consumers to predators and decomposers.</p>	<p>predators and decomposers. 4. Humans continue to change throughout their lives 5. Puberty is the period when children become adults 6. The period from conception to birth is called gestation and it is different lengths for different animals.</p>	<p>4. Our diet, exercise, drugs and lifestyle impact on how well our bodies work 5. Nutrients and water are absorbed in the system in the stomach, small and large intestines. They enter the blood stream via the capillaries where they are passed through to the arteries. 6. The circulatory system helps the body to function well including our main body parts, our internal organs, the skeletal, muscular and digestive system. 7. Drugs and other substances are harmful to our bodies There is a relationship between diet, exercise, drugs, lifestyle and health.</p>	
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<p>Biology: Plants</p>	<ol style="list-style-type: none"> 1. Hands-on experience of plants involves, touching, smelling, and hearing the natural world 2. Focused and close observation helps me to draw pictures of the natural world, including plants 3. Naming, describing and commenting on plants helps me to recognise plants I am likely to see outside 4. Making observations and drawing pictures of plants helps me explore the natural world 	<ol style="list-style-type: none"> 1. There are many common wild and garden plants, including deciduous and evergreen trees 2. Flowering plants, including trees have a basic structure 3. Plants growing in their own habitat. 4. Plants are made up of leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem 4. Plants can be organised into different groups 5. Plants change over time 6. Plants can be grown from seed 	<ol style="list-style-type: none"> 1. Seeds and bulbs grow into mature plants 2. Plants need water, light and a suitable temperature to grow and stay healthy 3. Seeds need the right conditions to germinate 4. Plants grow and reproduce 5. Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them. 6. Plants grow and change over time from a seed or bulb. 	<ol style="list-style-type: none"> 1. the different parts of flowering plants (roots, stem/trunk, leaves and flowers) all have different functions 2. plants require air, light, water, nutrients from soil, and room to grow to survive but these requirements vary from plant to plant 3. water is transported within plants using xylems 4. flowers are important in the life cycle of flowering plants because they allow for pollination, seed formation and seed dispersal 5. Every part of a plant has a job to do: the roots and stem are needed for nutrition and support; leaves for nutrition and flowers for reproduction. 6. Plants can make their own food 7. The amount of light and the amount of 	<p>•</p>	<p>•</p>
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				fertiliser can impact how well a plant grows.			
Living things and Habitats			<ol style="list-style-type: none"> 1. Some things are living, some things are dead and some things have never been alive 2. Most living things live in habitats which provide for their basic needs including food and shelter 3. A habitat is a natural environment or home of a variety of plants and animals 4. Animals obtain their food from plants and other animals, 5. A microhabitat is a very small habitat, for example for woodlice under stones, logs or leaf litter 6. A food chain shows different sources of food that are linked together. 	<ol style="list-style-type: none"> 1. Living things can be grouped in a variety of ways including animals, flowering plants and non-flowering plants 2. Classification keys to help group, identify and name a variety of living things 3. Environments can change and that this can sometimes pose dangers to living things 4. My local environment is a habitat for many different plants and animal. 5. Habitats change throughout the year. Vertebrates can be classified as either fish, amphibians, reptiles, birds, or mammals 6. Invertebrates include snails and slugs, worms, 	<ol style="list-style-type: none"> 1. Living things can be grouped in a variety of ways including animals, flowering plants and non-flowering plants 2. Classification keys to help group, identify and name a variety of living things 3. Environments can change and that this can sometimes pose dangers to living things 4. My local environment is a habitat for many different plants and animal. 5. Habitats change throughout the year. 6. Vertebrates can be classified as either fish, amphibians, reptiles, birds, or mammals 7. Invertebrates include snails and 	<ol style="list-style-type: none"> 1. Different types of animals (mammals, birds, amphibians, insects) have different types of life cycles. 2. Plants and animals reproduce in different ways. 3. life-cycles change in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. 4. Naturalists and animal behaviourists such as David Attenborough and Jane Goodall study the natural world. 5. Plants reproduction can be either sexual or asexual whereas most animals reproduce sexually 6. Life cycles of 	<ol style="list-style-type: none"> 1. Living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals 2. Plants and animals are classified based on specific characteristics 3. Micro-organisms, plants and animals can be subdivided. 4. Commonly found invertebrates include insects, spiders, snails, worms. 5. Carl Linnaeus was a pioneer of animal classification. 6. Classification systems and keys help to identify some animals and plants in the

			<p>7. All living things have certain characteristics that are essential for keeping them alive and healthy.</p> <p>8. Living things depend on each other, for example, plants serving as a source of food and shelter for animals.</p> <p>9. Animals live in many different types of habitat including on the seashore, in woodland, in the ocean, in the rainforest.</p>	<p>spiders, and insects.</p> <p>7. Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants (including ferns and mosses).</p> <p>8. Humans impact on environments in positive ways (e.g. building nature reserves, ecologically planned parks, and garden ponds) and negative ways (e.g. population and development, litter and deforestation).</p> <p>9. Simple guides or keys help to explore and identify local plants and animals;</p>	<p>slugs, worms, spiders, and insects.</p> <p>8. Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants (including ferns and mosses).</p> <p>9. Humans impact on environments in positive ways (e.g. building nature reserves, ecologically planned parks, and garden ponds) and negative ways (e.g. population and development, litter and deforestation).</p> <p>10. Simple guides or keys help to explore and identify local plants and animals;</p>	<p>plants and animals in the local environment will be different to other habitats around the world (e.g. in the rainforest, in the oceans, in desert areas and in prehistoric times).</p> <p>7. You can grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</p> <p>8. Different animals reproduce in different ways.</p>	<p>immediate environment.</p> <p>7. Unfamiliar animals and plants from a broad range of other habitats can be sorted using a classification system.</p>
Biology: Rocks/ Evolution and inheritance	•	•	•	<p>1. Different kinds of rocks can be grouped together on the basis of their appearance and simple physical properties</p> <p>2. Fossils are formed when things</p>			<p>New learning Y6</p> <p>1. living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago</p>

				<p>that have lived are trapped within rock</p> <p>3. Soils are made from rocks and organic matter</p> <p>4. There are different kinds of rocks and soils, including those in the local environment.</p> <p>5. Rocks are used for different purposes and they change over time</p> <p>6. Some rocks have grains or crystals in them and some have fossils in them.</p> <p>7. Fossils are found in sedimentary rock</p> <p>8. There is a long process that forms fossils inside rocks.</p> <p>9. Different soils have different similarities and differences between them</p> <p>10. Changes can occur to rocks when they are rubbed together or when they are in water.</p>			<p>2. living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>3. animals and plants are adapted to suit their environment in different ways and adaptation may lead to evolution</p> <p>4. characteristics are passed from parents to their offspring, for instance breeds of dogs, (what happens when Labradors are crossed with poodles?)</p> <p>5. variation in offspring over time can make animals more or less able to survive in particular environments, (e.g. how giraffes' necks got longer, or the development of insulating fur on the arctic fox).</p>
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							<p>7. Mary Anning was a famous palaeontologists</p> <p>8. Charles Darwin and Alfred Wallace developed their ideas on evolution.</p> <p>9. WORKING SCIENTIFICALLY</p> <p>A) observe and raise questions about local animals and how they are adapted to their environment;</p> <p>B) compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.</p> <p>C) analyse the advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p>
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<p><u>Chemistry:</u> <u>Materials</u></p>	<p>1. Light: It is dangerous to look at the sun</p> <p>2. Light: The sun rises and sets in different parts of the sky</p> <p>3. Light: You can see through some objects but you can't see through others.</p> <p>4. Magnets: Magnets can stick to some objects but not all objects.</p>	<p>1. Objects are made from different materials such as brick, paper, fabrics, elastic, foil.</p> <p>2. Everyday materials include wood, plastic, glass, metal, water, and rock.</p> <p>3. Different materials have different properties.</p> <p>4. Some are hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent</p> <p>5. Materials can be grouped on the basis of their simple physical properties</p> <p>6. Questions to think about: 'What is the best material for an umbrella? ... for lining a dog basket? ... for</p>	<p>1. everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard, are only suitable for particular uses. For example, metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles</p> <p>2. Different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass).</p> <p>3. The properties of materials that make them suitable or unsuitable for particular purposes. Can you think of unusual and creative uses for everyday materials.</p> <p>4. John Dunlop, Charles Macintosh or John McAdam developed new materials that are really useful.</p>		<p>1. Materials can be grouped together, according to whether they are solids, liquids or gases</p> <p>2. Some materials change state when they are heated or cooled, and the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$)</p> <p>3. Evaporation and condensation play an important part in the water cycle and the rate of evaporation is linked with temperature</p> <p>4. Solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container</p> <p>5. Water can be a solid, a liquid and a gas</p> <p>6. Water changes when it is heated or cooled.</p> <p>7. The temperature can have an effect on</p>	<p>1. Everyday materials can be grouped on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>2. Some materials will dissolve in liquid to form a solution, but you can also recover a substance from a solution</p> <p>3. Using your knowledge of solids, liquids and gases can help you to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>4. There are particular uses of everyday materials such as metals, wood and plastic which can be evidenced through</p>	<p>Revise and revisit</p>
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		<p>curtains? ... for a bookshelf? ... for a gymnast's leotard?'</p>	<p>5. The shape of some materials can be changed by squashing, bending, twisting and stretching.</p>		<p>substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party).</p> <p>8. Temperature can change other materials, such as when iron melts or when oxygen condenses into a liquid.</p>	<p>comparative and fair tests.</p> <p>5. Dissolving, mixing and changes of state are reversible changes</p> <p>6. 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</p> <p>7. Reversible changes include evaporating, filtering, sieving, melting and dissolving (melting and dissolving are different processes).</p> <p>8. Some changes are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.</p> <p>9. Chemists create new materials, for</p>	
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						example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.	
<u>Physics: Electricity</u>	•		<ol style="list-style-type: none"> 1. Many common appliances run on electricity 2. Some appliances use plugs while others need batteries 3. Some appliances need charging when they run out of battery 4. electrical items either produce light, sound, movement or heat. 5. Electricity can be very dangerous - especially mains electricity. 6. batteries are also dangerous - especially button batteries 	•	<ol style="list-style-type: none"> 1. Many common appliances run on electricity 2. a simple series electrical circuit can be made using cells, wires, bulbs, switches and buzzers 3. a lamp will light in a simple series circuit if it is part of a complete loop with a battery 4. a switch opens and closes a circuit and this determines whether or not a lamp lights in a simple series circuit 5. some materials are common conductors and some are insulators of electricity - metals are good conductors 6. In a circuit you can include 		<ol style="list-style-type: none"> 1 .The brightness of a lamp or the volume of a buzzer is linked with the number and voltage of cells used in the circuit 2. The on/off position of switches has an impact on the circuits outputs. 3. There are recognised symbols when representing a simple circuit in a diagram 4. There are many different series circuits that you can make with a variety of components. 5. Electricity can be dangerous so it is important to be safe when working with electricity. 6. If you work systematically, you can identify the effect of changing

					<p>different components, for example, bulbs, buzzers and motors, and including switches, and you can use these circuits to create simple devices.</p> <p>7. Circuits can be drawn as a pictorial representation.</p> <p>8. Electricity can be very dangerous - especially mains electricity.</p> <p>9. Bulbs get brighter if more cells are added.</p> <p>10. Some materials can and some cannot be used to connect across a gap in a circuit.</p>		<p>one component at a time in a circuit</p> <p>7. circuits can be used to make simple products (e.g. designing and making a set of traffic lights, a burglar alarm, etc.)</p>
<u>Physics: Forces</u>	<ol style="list-style-type: none"> 1. Some things float on top of the water 2. Some things sink to the bottom of the water. 3. Objects that are in the middle count as floating 		•	<ol style="list-style-type: none"> 1. Things move differently on different surfaces 2. Some forces need contact between 2 objects, but magnetic forces can act at a distance 3. Magnets attract or repel each other and attract 		<ol style="list-style-type: none"> 1. Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object 2. Air resistance, water resistance and friction, act 	•

	<p>because they are not at the bottom.</p> <p>4. Some heavy things can float.</p> <p>5. Some light things can sink.</p> <p>6. You need to be careful near rivers and lakes.</p>			<p>some materials and not others</p> <p>4. Some everyday objects are attracted to a magnet because they are made of magnetic material. Materials that are not magnetic are non-magnetic.</p> <p>5. Magnets have 2 poles</p> <p>6. depending on which poles are facing each other, two magnets will either attract or repel each other</p> <p>7. Magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing).</p> <p>8. There are different types of magnets for example, bar, ring, button and horseshoe) which behave differently and have different uses.</p>		<p>between moving surfaces</p> <p>3. Some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p>4. Air resistance slows down objects as they fall (e.g. parachutes and sycamore seeds).</p> <p>5. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.</p> <p>6. Forces make things begin to move, get faster or slow down.</p> <p>7. friction slows down the movement of an object or stops it moving altogether (e.g. a brake on a bicycle)</p>	
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				<p>9. You can group things according to how they are made to move;</p> <p>10. Different magnets have different strengths</p>		<p>8. Levers and pulleys can produce movement on simple machines (e.g. pop-up books).</p> <p>9. Scientists Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p> <p>10. The best designed parachutes will fall slower than others.</p> <p>11. Resistance in water can be reduced or increased depending on the shape of the boat.</p> <p>12. Simple products can be made using levers, pulleys, gears and/or springs and explore their effects.</p>	
<p><u>Physics: Sound</u></p>	<p>1. You hear with your ear.</p> <p>2. You can make sounds by hitting something</p> <p>3. The harder you hit, the louder it</p>		<ul style="list-style-type: none"> • 	<p>1 Sounds are made by something vibrating</p> <p>2. Vibrations from sounds travel through a medium to the ear</p>		<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

	<p>will be while the softer you hit it, the quieter it will be.</p> <p>4. You can make sounds with you voice.</p> <p>5. different instruments make different kinds of sounds.</p> <p>6. You make use ear muffs and ear defenders to make loud noises less loud.</p>			<p>3. There are patterns between the pitch of a sound and features of the object that produce it</p> <p>4. There are patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>5. Sounds get fainter as the distance from the sound source increases</p> <p>6. Sound is made through vibration in a range of different musical instruments from around the world</p> <p>7. The pitch and volume of sounds can be changed in a variety of ways.</p> <p>8. Saucepan lids of different sizes or elastic bands of different thicknesses make different sounds</p> <p>9. Earmuffs can be made from a variety of different materials</p>			
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				to insulate against sound.			
<u>Physics: light</u>	•		•	<p>1. recognise that they need light in order to see things and that dark is the absence of light</p> <p>2. notice that light is reflected from surfaces</p> <p>3. recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>4. recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>5. find patterns in the way that the size of shadows change</p> <p>6. Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer</p>		•	<p>1. recognise that light appears to travel in straight lines</p> <p>2. 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</p> <p>3. 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</p> <p>4. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>5. Pupils should build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about</p>

			<p>questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</p> <p>7. Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.</p> <p>8. Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p>			<p>what happens and make predictions.</p> <p>6. Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could 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).</p>
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<p><u>Physics:</u> <u>Earth and</u> <u>Space</u></p>	•		•	•		<p>New Learning (Y5)</p> <ol style="list-style-type: none">1. The Earth and other planets orbit around the sun in the solar system2. The moon orbits around the Earth once every month3. The sun, Earth and moon are approximately spherical bodies4. The Earth completes a full rotation every day, giving us day and night.5. The sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars,	•
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						<p>Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).</p> <p>6. The moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).</p> <p>6. It is not safe to look directly at the sun, even when wearing dark glasses.</p> <p>7. The geocentric model of the solar system gave way to the heliocentric thanks to the work of scientists such as Ptolemy, Alhazen and Copernicus.</p>	
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						<p>8. The time of day at different places on the Earth can vary depending on where you are</p> <p>9. Simple shadow clocks and sundials can be calibrated to show midday and the start and end of the school day</p> <p>10. Some people think that structures such as Stonehenge might have been used as astronomical clocks.</p>	
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