

SCIENCE

Knowledge and Skills Progression



We are inspired, strengthened and encouraged by our Catholic faith.
 We place Jesus at the centre of everything we do and say, **listening** to Him with our hearts.
 We spread **love** everywhere we go, valuing and caring for each other.
 We strive to be the best **learners** we can, using and celebrating our God given gifts.

“For he who is mighty has done great things for me, and Holy is his name”
Luke 1: 49

“A community that cherishes the little details of love, whose members care for one another and create an open and evangelising environment, is a place where the risen Lord is present, sanctifying it in accordance with the Father’s plan.”

Pope Francis

EYFS

Autumn

Me and My Small World

- Identifying our own features
- Who is in my family?
- Naming Body Parts
- Looking after ourselves- hygiene, screen time, sleep, diet
- Animals- naming different animals

What’s in my basket?

Trying different food – fruit and veg at snack time.
 Autumn- seasonal foods, Harvest and change in seasons.

Senses

Explore the senses of sight, touch, sound, smell and taste.
 Understand which part of our body is connected to which sense.

Spring

Night and Day

Nocturnal Animals
 Stars, sky, planets. Know that the Earth is a planet. Name some other planets. Know that the stars and moon can be seen at night and the sun during the day.
 Know and identify some animals are nocturnal.
 Make observations and explore light and shadow

Pushes and Pulls

-Forces (push and pull STEM activities)

Let it Flow

Floating, sinking, and exploring materials

- Explore a range of objects and identify which float/ sink.

Summer

Watch it Grow

Planting seeds and growing – identify what plants need to grow. Observe plants grow and harvest fruits and veg.

Hatching butterflies – Life cycles. Observe and order the life cycle of a butterfly.

Explore life cycles of other creatures- frogs, moths, bees.

Naming different insects.

Animal Detectives

-School trip – Farm or Sea life Centre
 Naming farm animals and their offspring.
 -Reptile visit

Let's Go Outside and What's Changed

Exploring seasons and the world around them

Identify change of seasons across the year.

Explore different weather types and link this to clothing we need.

- Explore the properties of materials and identify simple properties
- Sort objects by simple properties and materials.

Let's Go Outside and What's Changed

Exploring seasons and the world around them

Identify change of seasons across the year.

Explore different weather types and link this to clothing we need.

-Looking after our Oceans – pollution and how we can help look after our world.

- Sea Creatures – naming different sea creature

Let's Go Outside and What's Changed

Exploring seasons and the world around them

Identify change of seasons across the year.

Explore different weather types and link this to clothing we need.

	<u>Disciplinary knowledge (Working Scientifically)</u>		
	<u>Year 1 and 2</u>	<u>Year 3 and 4</u>	<u>Year 5 and 6</u>
Asking Questions	Pupils should be taught to: <ul style="list-style-type: none"> ask simple questions and recognise that they can be answered in different ways 	Pupils should be taught to: <ul style="list-style-type: none"> ask relevant questions and use different types of scientific enquiries to answer them set up simple practical enquiries, comparative and fair tests 	Pupils should be taught to: <ul style="list-style-type: none"> plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Measuring and Recording	Pupils should be taught to: <ul style="list-style-type: none"> observe closely, using simple equipment perform simple tests gather and record data to help in answering questions 	Pupils should be taught to: <ul style="list-style-type: none"> make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables gather, record, classify and present data in a variety of ways to help in answering questions 	Pupils should be taught to: <ul style="list-style-type: none"> take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Concluding	Pupils should be taught to: <ul style="list-style-type: none"> identify and classify use their observations and ideas to suggest answers to questions 	Pupils should be taught to: <ul style="list-style-type: none"> identify differences, similarities or changes related to simple scientific ideas and processes report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions use straightforward scientific evidence to answer questions or to support their findings 	Pupils should be taught to: <ul style="list-style-type: none"> identify scientific evidence that has been used to support or refute ideas or arguments 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
Evaluating		Pupils should be taught to: <ul style="list-style-type: none"> use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 	Pupils should be taught to: <ul style="list-style-type: none"> use test results to make predictions to set up further comparative and fair tests

Substantive Knowledge

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
Plants	<ul style="list-style-type: none"> • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees 	<ul style="list-style-type: none"> • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy 	<ul style="list-style-type: none"> • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal 			

Animals including humans	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • describe the changes as humans develop to old age 	<ul style="list-style-type: none"> • 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
Living Things and their habitats		<ul style="list-style-type: none"> • 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 habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other 		<ul style="list-style-type: none"> • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things 	<ul style="list-style-type: none"> • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals 	<ul style="list-style-type: none"> • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics

		<ul style="list-style-type: none"> • 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 				<p>Evolution and Inheritance</p> <ul style="list-style-type: none"> • 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
Light			<ul style="list-style-type: none"> • 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 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 			<ul style="list-style-type: none"> • 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

Forces and Magnets			<ul style="list-style-type: none"> • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing 		<ul style="list-style-type: none"> • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect 	
Seasonal Changes	<ul style="list-style-type: none"> • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies 					
Earth and Space					<ul style="list-style-type: none"> • describe the movement of the Earth, and other planets, relative to the Sun • 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 	

Sound				<ul style="list-style-type: none"> • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases 		
Electricity				<ul style="list-style-type: none"> • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors 		<ul style="list-style-type: none"> • 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

Properties and Changes of 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 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

- 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 ($^{\circ}\text{C}$)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

- 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