St Patrick's Science Curriculum Progression Map

Statutory Framework for the EYFS ELG:

Pupils will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Below, we outline how we meet and go beyond the requirements

National Curriculum Subject Content for Key Stage 1:

Pupils will practise:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Pupils will be taught to:

Plants

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees
- 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

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

National Curriculum Subject Content for Key Stage 2:

Pupils will practise:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.
- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

	• 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 ***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 ***Seasonal changes*** • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies **Below, we outline how we meet and go beyond the National Curriculum requirements throughout Key Stage 1**	**Pupils will be taught to:** ***Plants*** • 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*** • 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 ***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 ***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 ***Forces and magnets*** • 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 ***Living things and their habitats*** • 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 • ***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 ***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 ***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 conductors • 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 ***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 ***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. ***Properties and changes of materials*** • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Key Vocabulary							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Seasonal changes: Cloudy, snow, sun, rain, weather, hot, cold, light, dark Animals: baby, caterpillar, butterfly, farm, bird, insect Plants: grass, flower, tree, seeds, growing, plant, garden Materials: wet, dry, hard, soft, ice, melt, freeze, float, sink Health and Senses: nose, eyes, mouth, skin, ears, healthy, unhealthy	Science skills: question, predict Seasonal changes: Cloudy, snow, sun, rain, weather, hot, cold, warm, icy, light, dark, season, spring, summer, autumn, winter Animals: baby, caterpillar, butterfly, egg, hatch, change, body, fur, feathers, farm, bird, insect, growth, habitat, plus parts of the body Plants: grass, flower, tree, seeds, growing, plant, roots, stem, leaves, petals, dead, alive, garden, compost, wood, blossom Materials: water, wet, dry, hard, soft, ice, melt, freeze, float, sink, brick, bendy, floppy, fabric, metal, see-through, paper, rock, smooth, rough, shiny, plastic Health and Senses: Eyes, nose, mouth, skin, ears, see, touch, smell, hear, taste, healthy, unhealthy, exercise	Science skills equipment, measure, observe, results, test Plants bulb, bark, trunk, evergreen, deciduous, branches, petals, fruit Animals inc humans senses, wild animals, pets, carnivores, herbivores, omnivores, *mammals, amphibians, reptiles, fish, birds* Materials absorbent, card / cardboard, clay, dull, elastic, foil, glass, material, plastic, rubber, stretchy, stiff, waterproof, property / properties Seasonal changes seasons, Spring, Summer, Autumn, Winter, seasonal change, day length, weather …and revisit words from Reception year.	Science skills describe, difference, group, patterns, Similar, sort Living things and their habitats basic needs, dead, alive, living, meadow, woodland, bushes, habitats, micro-habitat, pond, never been alive, shelter, suitable, suited, *food chain* Plants damp, dry, earth, growth, seedling, shoot, wither, germinate, survive, habitat Animals inc humans adult, toddler, child, adolescent, life cycle, growth, offspring, hygiene, survival, basic needs Uses of materials Changed, flexible *Reflective, non-reflective, opaque,* pull, push, rigid, roll, strong, weak, suitable, unsuitable, *translucent, transparent,* twist, use, useful …and revisit words from Year 1.	Science skills accurate, question, careful, comparative, data logger, results, fair test, gather, prediction, record, thermometer, scientific enquiry Plants dispersal, formation, transported, lifecycle, nutrients, pollination, root, pollinator, *stigma, stamen* Animals inc humans carbohydrates, fibre, fat, muscles, protection, protein, skeleton, skull, vertebra, tendons, *vertebrate, invertebrate, exoskeleton, endoskeleton,* Rocks crystals, fossils, grains, properties, organic matter Light Dark , light source, *opaque, reflect, reflective, shadow*, block Forces and magnets attract, magnet, force, poles, repel, friction, magnetic material, non-magnetic material	Science skills conclusion, identify, classify, evidence, keys, increase, decrease, present Living things and their habitats amphibians, birds, classification key, classify, environment, fish, human impact, invertebrates, mammals, reptiles, sort, vertebrates Animals inc humans canine, consume, food chain, incisor, intestines, molar, nutrients, oesophagus, predator, prey, producer, rectum, stomach States of matter air, condensation, condense, degrees Celsius, evaporate, evaporation, freeze, gas, liquid, melting point, solid, solidify, states of matter, transpiration, water cycle, water vapour Sound gas, liquid, solid, pitch, volume, travel, sound source, higher, lower, vibrate, louder, quieter Electricity battery, bulb, buzzer, cell, circuit, *component, conductor,* crocodile clip, insulator ,*positive, negative*, switch, wire.	Science Skills causal relationships, controlled variable, data, evidence, dependent variable, degree of trust, independent variable, line graph, present, scatter graph, variables Living things and their habitats asexual, sexual, germination, live young, pollen, reproduction, stamen, stigma Animals inc humans Drugs, diet, foetus, infant, puberty, middle age, old age, gestation Properties and changes of materials change state, dissolve, filter, insoluble, new material, non-reversible, particle, residue, sieving, solubility, soluble, Forces air resistance, effort, friction, fulcrum, gravity, lever, load, mechanism, transfer, water resistance Earth and Space Earth, Jupiter, Mars, Mercury, Moon, Neptune, orbit, planets, revolve, rotate, rotation,	Science Skills accuracy, evidence, identify, opinion, fact, order, precision, secondary sources, support, refute, types of scientific enquiry Living things and their habitats arachnid, Carl Linnaeus, class, classification, crustacean, fungus, micro-organism, organism Animals inc humans absorb, blood, blood vessel, circulatory system, carbon dioxide, drugs, large intestine small intestine, oxygen Evolution and Inheritance adapted, adaptation, characteristics, Darwin, evolve, evolution, generation, genes, inherit, inheritance, offspring, parent, suited, vary, variation Light absorb, reflect, reflective, shadow, transparent, translucent, opaque Electricity circuit diagram, circuit symbol, motor, positive, precaution,

					…and revisit words from Year 3.	Saturn, Solar System, spin, Sun, Uranus, Venus. …and revisit words from Year 4.	negative, switch, terminal, variation, volume, voltage. …and revisit words from Year 5.

Significant Figures within Science and planned Enrichment Opportunities							
All children within the school have the opportunity to take part in a sequence of Forest School sessions during their school career.							
Nursery	**Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Seasonal change and weather: Gardening throughout the year. **Plants and Animals:** Pond dipping Butterflies Visit from parent and new baby **Materials and Changes:** Cooking a range of foods Story-related and sensory role-play e.g. Three Pigs **Health and Senses:** Scientists within our school (Mrs Rogers, Chef etc)	**Seasonal change and weather:** Gardening throughout the year. **Plants and Animals:** Farm trip Ducklings Pond dipping Visit from parent and new baby **Materials and Changes:** Cooking a range of foods Story-related role-play and art e.g. ice art, three bears cookery **Health and Senses:** Scientists from our community (nurses, etc)	**Everyday materials:** Leonardo da Vinci **Animals inc. humans:** Visit to ducklings **Plants:** Visit to Sefton park Palm House and local wildflower meadow (Corinto Street)	**Everyday materials:** Zoe Loughlin Materials scientist study **Animals including humans:** Vet visit / video call if possible Duckling observation and weighing **Living things and their habitats:** Trip to World Museum **Plants:** Interview with RR about growing food Wangari Maathi – share book	**Forces:** **Light:** **Rocks:** Geologist visitor (Professor Pete) Visit to Catalyst Museum Marie Tharp Opportunity to increase composting in school **Animals including humans:** Doctor visit if possible **Plants:** Gardening in the school grounds	**States of Matter:** Glorious Gases Workshop – Catalyst Museum **Electricity:** Nikola Tesla **Sound:** Outside learning lesson **Animals inc. humans:** **Living Things and their habitats:** Crosby beach visit	**Forces:** **Earth and space:** Planetarium trip Maggie Aderin Pocock **Properties and changes of materials:** **Living things and their habitats:** Diane Fossey Duckling observation **Animals including humans:** Travelling zoo visit Jane Goodall study	**Light:** Light Fantastic Show at Catalyst Museum **Electricity:** **Living things and their habitats:** Carl Linneaus and statue trip Animals Take Over visit **Evolution and inheritance:** Charles Darwin and Mary Anning **Animals including humans:** Visit from doctor if possible

	Crucial knowledge and understanding	Skills
Nursery	To name different types of weather. To know plants and animals grow and change – To begin to understand life cycle of plants and animals. To know that things are made of different materials and look and feel different.	To talk about what they see, using a wide vocabulary e.g. naming familiar animals, natural objects and materials. To explore how things work. To talk about the differences between materials and changes they notice. To care for growing plants.
Reception	To understand some important processes and changes in the natural world around them, including the seasons and changing states of matter – e.g. to name and simply describe features of the four seasons, to know key features of the life-cycle of a plant, butterfly and bird, to describe melting and freezing, floating and sinking.	To explore the natural world around them making observations and drawing pictures of animals and plants. To comment and ask questions about aspects of their familiar world such as the place where they live or the natural world. To talk about why things happen and how things work (e.g. materials and changes). To describe their immediate environment using knowledge from observation.
Year 1	To name some deciduous and evergreen trees. To identify parts of a tree. To name some common wild and garden flowers. To identify parts of a flower. To identify and name animals including fish, amphibians, reptiles, birds and mammals and those kept as pets. To identify and name some common carnivores, herbivores and omnivores. To identify, name, draw and label basic parts of the human body. To observe changes across the four seasons. To identify, observe and describe weather associated with the seasons and how day length changes. To identify different materials (including wood, plastic, glass, metal, water and rock).	To ask simple questions. To observe closely using simple equipment. To perform a simple test. To gather data to answer a question. To record data to answer a question.
Year 2	To identify whether a material is suitable for a job. To know that solids can be malleable. To observe and describe the lifecycle of a seed and bulb. To investigate and describe what plants need to grow and stay healthy. To find out about the basic needs of animals, including humans, for survival To know that animals, including humans have offspring which grow into adults. To recognise some of the signs of growth (e.g. egg, chic, chicken, egg or baby, toddler, child, teenager, adult. To compare the differences between things that are living, dead and things that have never been alive. To identify that living things live in habitats to which they are suited. To use a food chain.	To ask simple questions and recognise they can be answered in different ways. To observe closely using simple equipment. To suggest answers to questions based on what I have observed. To perform a simple test. To identify and classify plants and animals. To gather data to answer a question. To record data to answer a question. To use simple equipment.
Year 3	To compare how things move on different surfaces. To know that magnets can attract or repel each other. To describe magnets as having two poles. To know that magnetic forces can act at a distance. To know that darkness is the absence of light. To know a shadow is formed when a light from a light source is blocked by a solid object. To compare different rocks based on their appearance and their physical properties. To group and identify different rocks based on their appearance and their physical properties. To describe how soil is made To describe how fossils are formed. To know that animals, including humans, need the right types and amounts of nutrition. To know that humans and some other animals have skeletons for support, protection and movement.	To ask relevant questions. To set up a simple scientific enquiry. To use data loggers. To use results to draw a simple conclusion. To make careful observations. To take accurate measurement using standard units of measure. To gather data to answer a question. To record data to answer a question. To report findings using simple scientific language. To report findings using drawings. To report findings using labelled diagrams. To report findings using a table. To report findings from an enquiry orally and in a written conclusion. To use results to draw a simple conclusion. To use results to make a prediction for further values. To identify difference, similarities and changes related to simple scientific ideas. To use scientific evidence to answer a question and support my findings.

	To that humans and some other animals have muscles for support, protection and movement. To identify the different parts of a flowering plant. To know the role of a flower in the lifecycle of a flowering plant. To know how flowers are pollinated. To know how seeds are dispersed.	
Year 4	To make a simple series electrical circuit. To name basic electrical components – cells, wires, bulbs, switches and buzzers. To recognise that a switch can be open or closed. To identify how sounds are made through vibration. To know that vibrations travel through a medium to our ears. To find patterns between the volume of a sound, the strength of the vibrations that produce it. To group materials based on whether they are a solid, liquid or gas. To associate the rate of evaporation with temperature. To identify the part played by evaporation and condensation in the water cycle. To explore and use classification keys to identify and name living things in their local environment. To explore and use classification keys to group living things in the wider environment. To know that environments can change and this can pose dangers to living things. To identify vertebrates and invertebrates. To name and describe the functions of the main parts of the digestive system in humans. To identify different types of teeth in humans. To construct simple food chains. To identify producers, predators and prey.	To ask relevant questions. To conduct a scientific enquiry to answer my own questions. To set up a comparative enquiry. To set up a fair test. To make systematic observations. To use thermometers. To use data loggers. To gather data to answer a question. To record data to answer a question. To classify data to answer a question. To report data to answer a question. To report findings using simple scientific language. To report findings using keys. To report findings using a bar chart. To report findings from an enquiry orally and in a written conclusion. To use results to suggest improvements to a method. To use results to develop further questions. To identify difference, similarities and changes related to simple scientific ideas. To use scientific evidence to answer a question and support my findings.
Year 5	To explain that unsupported objects fall towards Earth because of the force gravity. To identify the effects of friction. To know mechanisms allow a smaller force to have a greater effect To describe the movement of the moon relative to the earth. To describe the movement of the Earth, and other planets relative to the sun. To describe the Sun, Earth and Moon as approximately spherical bodies. To group and identify materials according to their properties (including hardness, solubility, transparency, conductivity and response to magnets)., based on first-hand observation; and justify the use of different every day materials for different uses. To know some materials dissolve in liquid to form a solution. To describe how to recover a substance from a solution. To use my knowledge of solids, liquids and gases to decide how to separate a mixture (including filtering, sieving and evaporating). To explain that some changes result in the formation of a new material and that this kind of change is usually irreversible. To identify the life process of reproduction in some plants To describe the different life cycles of mammals, amphibians, insects and birds To describe changes as humans develop to old age.	To plan different types of scientific enquiries to answer questions. To recognise and control variables. To take accurate and precise measurements using scientific equipment. To take repeat measurements where appropriate. To record data and results using diagrams with labels. To record data and results using tables. To use test results to make further predictions which will feed into further comparative and fair tests. To report findings from an enquiry both orally and in writing. To make a conclusion based on a test. To explain results from an enquiry.

Year 6	To name and describe the functions of the main parts of the human circulatory system. To recognise the impact of drugs on the way bodies function. To describe the way nutrients and water are transported within animals. To give reasons for classifying plants and animals based on characteristics. To describe how living things are classified into groups according to their characteristics, similarities and differences (micro-organisms, plants and animals) To know that living things have changed over time. To know that living things produce offspring, but normally offspring are not identical to their parents. To know that animals and plants are adapted to suit their environment in different ways. To know that adaptation can lead to evolution. To recognise that light travels in straight lines. To know that because light travels in straight line, I am able to see objects because they give out or reflect light into the eye. To use the idea that light travels in straight lines to explain the shape of shadows. To use recognised symbols to represent a simple series circuit on a diagram. To associate the brightness of a lamp and the volume of a buzzer with the voltage of cell used. To associate the brightness of a lamp and the volume of a buzzer with the number of cells used.	To plan different types of scientific enquiries to answer questions. To recognise and control variables. To take accurate and precise measurements using scientific equipment. To take repeat measurements where appropriate. To record data and results using classification keys. To record data and results using scatter graphs. To record data and results using bar and line graphs. To use test results to make further predictions which will feed into further comparative and fair tests. To report findings from an enquiry both orally and in writing. To make a conclusion based on a test. To identify causal relationships from an enquiry. To explain results from an enquiry. To identify a degree of trust within an enquiry. To identify scientific evidence that can be used to support or refute an idea or argument.