

HOLY TRINITY CATHOLIC SCHOOL SCIENCE CURRICULUM

RECEPTION

AUTUMN 1 This is me	AUTUMN 2 Celebrations	SPRING 1 Dig, dig, dig!	SPRING 2 Once Upon a Time	SUMMER 1 This is Me!	SUMMER 2 Aye Aye Captain
Seasons Autumn / Winter Explore the natural world around them. Encourage enjoyment for the outdoors and a curiosity for the natural world. Describe what they see, hear and feel whilst outdoors.	Forces and materials Describe what they see, hear and feel including natural processes from hands on experiences.	Living things and their habitats Explore the natural world around them and offer opportunities to interact with and describe what they can see, hear and feel. Recognise that some environments that are different from the ones in which they live.	Seasons Spring Explore the natural world around them. Encourage enjoyment for the outdoors and a curiosity for the natural world. Describe what they see, hear and feel whilst outdoors.	Plants Explore the natural world around them. Create opportunities to discuss how we can care for the natural world. After observations draw pictures and discuss living things such as plants. Health Know and talk about different factors that support their overall health and wellbeing.	Seasons Summer Explore the natural world around them. Encourage enjoyment for the outdoors and a curiosity for the natural world. Describe what they see, hear and feel whilst outdoors.

Early Learning Goal (GLD) for the end of Reception:

- Explore the natural world around them making observations and drawing pictures of animals and plants
- Know some of the 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

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Science Knowledge

Year1	Year2	Year3	Year4	Year5	Year6
<p>Everyday 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</p> <p>New Forces exploratory unit Find out about, and describe the movement of, familiar things [for example, cars going</p>	<p>Uses of everyday materials 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</p> <p>New Light exploratory unit Identify different light sources, including the Sun</p>	<p>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</p> <p>Light Recognise that they need light in order to see things and that</p>	<p>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.</p> <p>Electricity</p>	<p>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.</p> <p>Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between</p>	<p>Living things and their habitats 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.</p> <p>Animals, including humans Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p>

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<p>faster, slowing down, changing direction] Know that pushes and pulls are examples of forces Recognise that when things speed up, slow down or change direction, there is a cause [for example, a push or a pull].</p> <p>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)</p>	<p>Know that darkness is the absence of light</p> <p>Plants 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.</p> <p>New exploratory sound unit Know that there are many kinds of sound and sources of sound Know that sounds travel away from sources, getting fainter as they do so, and that they are heard when they enter the ear.</p> <p>Animals, including humans Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans,</p>	<p>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</p> <p>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</p>	<p>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.</p> <p>States of Matter Compare and group materials together, according to whether</p>	<p>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.</p> <p>Properties and changes to 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</p>	<p>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.</p> <p>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.</p>
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<p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p>Plants Identify and name a variety of common wild and garden plants, including deciduous and evergreen plants Identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p>Living things and their habitats (Year 2 unit) Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p>	<p>for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>that have lived are trapped within rock Recognise that soils are made from rocks and organic matter.</p> <p>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.</p> <p>Forces and magnets Compare how things move on different surfaces</p>	<p>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.</p> <p>Living things and their habitat 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.</p>	<p>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</p> <p>Properties and changes to materials - <i>continued</i> 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</p> <p>Living things and their habitats Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p>	
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<p>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>		<p>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 of 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.</p>	<p>Animals, including humans 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</p>	<p>Describe the life process of reproduction in some plants and animals. Describe the changes as humans develop to old age</p>	
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Science Skills Progression

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Ideas and Evidence in Science

Can recognise that scientists find out about scientific ideas by asking questions and testing them.	Can recognise that scientists collect evidence by making observations and measurements in order to answer a question.	Can recognise why it is important to collect evidence by making observations and measurements to answer a question, and that science has made our lives better.	Can recognise that scientific ideas are based on evidence, have made our lives better and that there is some risk in science.	Can describe how experimental evidence and creative thinking are combined to provide scientific explanations, that has changed over time.	Can describe how experimental evidence and creative thinking are combined to provide scientific explanations, that change over time and has both positive and negative effects.
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Asking Questions and Enquiry

Can ask some simple questions to find out about the world around us and with teacher guidance, recognise that they can be answered using different types of enquiry (observing changes over time, noticing patterns, grouping/classifying, simple comparative tests and using secondary sources).	Can ask simple questions to find out about the world around us and make simple suggestions about the different types of enquiry that could be used to collect evidence to answer a question (observing changes over time, noticing patterns, grouping/classifying, simple comparative tests and using secondary sources)	Can recognise how scientific ideas and concepts can be turned into relevant questions that can be investigated and put forward their own ideas about how to find the answer to a scientific question using different types of enquiries (observing changes over time, noticing patterns, grouping/classifying, comparative tests, fair tests and using secondary sources)	Can turn existing scientific ideas into a question form that can be investigated and begin to plan different types of scientific enquiries, including recognising and controlling variables with teacher guidance.	Can form scientific questions for enquiry based on scientific ideas/concepts and recognise which can be investigated and those which are theoretical. Plan different types of enquiries to answer questions, including identifying and controlling variables.	Can explore scientific ideas/concepts and form clear enquiry questions about scientific phenomena, recognising which can be investigated and those which are theoretical. Select and plan the most appropriate types of enquiry to answer questions, including identifying and controlling variables, where necessary.
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Predicting and Hypothesising

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Can make a simple prediction, 'I think...'	Can make a prediction with a simple reason, 'I think...because...'	Can make a prediction, giving a reason based on everyday experience	Can make a prediction, giving a reason which considers scientific ideas and is based on everyday experience	Can hypothesise, giving a reason which considers scientific ideas and uses knowledge of a similar everyday experience applied it to a new situation, e.g. I think little bits of sugar dissolve faster than a sugar lump	Can hypothesise, giving a reason which is based on scientific concepts and uses knowledge of a similar everyday experience, applied it to a new situation, e.g. I think little bits of sugar dissolve faster than a sugar lump
Planning an Enquiry					
Can plan a simple test guided by the teacher	Can make a simple plan for a test within a framework provided by the teacher, e.g. using a planning frame or set of questions, focusing on a limited number of variables	Can make a simple plan which identifies the basic features of the test, e.g. what is being changed, what is being measured and which variables are being controlled to keep the test fair	Can decide on a clear plan to answer the question which identifies the key features of a fair test, e.g. what is being changed, what is being measured and which variables are being controlled to keep the test fair	Can decide on an appropriate way to collect data to answer a question and with guidance, create a clear plan which identifies the independent, dependent and control variables	Can identify and plan an appropriate approach to answer a scientific question, identifying clear independent, dependent and control variables
Fair Testing					
Can recognise unfairness and what is being changed in a test	Can, with teacher guidance, identify what is being changed, what is being measured, and one or two variables which need to stay the same in order to make the test fair	Can carry out a fair test which identifies the variable being changed, measured and controlled. Recognise and explain why it is fair 1.	Can make a plan which identifies how one variable is changed, while all the others are kept the same	Can identify key variables to be considered and with teacher guidance, choose one independent variable to change, decide how to measure the effect (dependent variable) and which variables to control.	Can identify key variables to be considered and choose an appropriate variable to be varied (independent variable), measured for effect (dependent variable) and variables that need to be controlled.

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Observing and Measuring

Can begin to observe closely using simple equipment provided and measure in non-standard units. For example, compare length, area and volumes visually, mass by feel, temperature by touch, time by clapping or ordering, sound, light force using senses	Can use simple equipment provided to make observations and measurements related to the test, measuring in standard and non-standard units.	Can make observations and measurements which are relevant to the test. Can measure quantities in standard units, using a range of simple equipment.	Can select suitable equipment for a test and make a series of accurate observations and measurements which are adequate for the test.	Can select apparatus for a range of tests and use effectively, making a series of systematic observations, measurements and comparisons. Can recognise patterns and begin to repeat observations and measurements, offering simple explanations for any differences found.	Can select apparatus for a range of tests and use effectively, making a series of systematic observations, measurements and comparisons with precision appropriate to the test. Can recognise patterns and repeat observations and measurements, offering possible explanations for any differences found.
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Investigating

Can perform simple tests with support	Can perform simple tests	Can set up simple practical enquiries and consider fair tests	Can set up simple practical enquiries and consider comparative and fair tests	Can set up practical enquiries and use results to begin to set up comparative and fair tests	Can set up practical enquiries and use results to plan and set up further comparative and fair tests
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Recording Results

1. Can describe simple features, observations and measurements and record in a variety of simple ways, e.g. pictures, words, provided tables	1. Can describe observations and measurements in a variety of ways, including simple tables, labelled drawings, bar charts and through the use	Can record observations and measurements in a variety of ways, including ICT. Can record results in a variety of ways, including simple tables, labelled	Can record observations, measurements and comparisons using tables, including ICT. Can construct their own tables, choosing headings and the number and range of measurements, draw	Can record observations and measurements systematically, including the use of ICT. Can begin to choose the best method, e.g. scientific diagrams, classification keys, tables, bar and line graphs, repeated tests and averaging (mean)	Can record observations and measurements systematically, including the use of ICT. Can record results of increasing complexity and choose the best recording method, e.g. scientific diagrams, classification keys, tables, bar and line graphs,
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	of scientific vocabulary	diagrams, keys and bar charts.	labelled diagrams, keys and bar charts.		repeated tests and averaging (mean)
Presenting Results					
1. Can, where appropriate, record observations in a bar chart (e.g. pictogram) with axis labelled by the teacher	1. Can, where appropriate and supported by the teacher, record observations and measurements in simple bar charts	1. Can, where appropriate, record observations and standard measurements in bar charts, deciding on the axes	Can, where appropriate, record observations, measurements and comparisons using bar charts, choosing scale and labelling axes. Can begin to plot points to form simple graphs and use these to point out and interpret patterns in data	Can, where appropriate, present data as bar charts and line graphs. Can construct bar and line graphs, selecting scale and labelling axes. Can begin to interpret and systematically explain patterns in data.	Can, where appropriate, choose to present increasingly complex data as bar charts and line graphs. Can construct bar and line graphs, selecting scale and labelling axes. Can interpret and systematically explain patterns in data.
Drawing Conclusions					
Can talk about what happened, communicating their findings in a simple way, e.g. talk, drawing, simple charts	Can explain what happened and relate this to their earlier prediction made	Can identify and explain simple patterns in recorded measurements and observations, and communicate what has been found in a simple scientific way	Can begin to relate conclusions to patterns in data and to prior scientific knowledge and understanding. Can explain conclusions using appropriate scientific language	Can draw conclusions which are consistent with evidence and relate these to scientific knowledge and understanding. Can use appropriate scientific language and conventions to communicate quantitative and qualitative data	Can draw clear conclusions, which are linked to evidence from data patterns and relate these to scientific knowledge and understanding. Can use accurate scientific language and conventions to communicate quantitative/qualitative data and explain causal relationship.
Reviewing the Test					

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Can identify which parts of the test have been done well and which need to be improved	Can question how carefully the test has been carried out and what needs improvement	Can suggest improvements to the test to improve accuracy	Can suggest improvements to the tests, giving reasons	Can evaluate the accuracy of tests and make practical suggestions about how working methods could be improved	Can evaluate the effectiveness of their tests, the limitations and suggest how methods could be improved
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