



St George and St Teresa Catholic Primary School

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Progression of Skills and Knowledge

Science

National Curriculum Aims and Purpose	School Aims and Intent: Skills, attitudes and knowledge that we want all children to develop on their journey through our school
<p>Purpose of Study:</p> <p>A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.</p> <p>Aims:</p> <p>The national curriculum for science aims to ensure that all pupils:</p> <ul style="list-style-type: none"> • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future 	<p>At St George and St Teresa Catholic Primary School, we believe that science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live, through exploration, discovery and investigation.</p> <p>We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability.</p> <p>School Aims</p> <ul style="list-style-type: none"> • Prepare our children for life in an increasingly scientific and technological world. • Foster concern about, and activate care for, our environment. • Help children to acquire a growing understanding of scientific ideas. • Help develop and extend our children's scientific concept of their world. • Develop our children's understanding of the international and collaborative nature of science <p>Attitudes</p> <ul style="list-style-type: none"> • Encourage the development of positive attitudes to science. • Build on children's natural curiosity and develop a scientific approach to problems, appreciating that in our teaching aims we do not always know the answers and results when carrying out scientific enquiry. • Encourage open-mindedness, self-assessment, perseverance and responsibility. • Build on children's social skills to work cooperatively with others.



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	<ul style="list-style-type: none"> • Provide children with an enjoyable experience of science, so that they will develop a deep and lasting interest and maybe motivated to study science further. <p>Skills</p> <ul style="list-style-type: none"> • Give children an understanding of scientific processes • Children will acquire practical scientific skills • Develop the following skills of investigation - observation, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating. • Develop the use of scientific language, recording and techniques. • Develop the use of technology in investigating and recording • Enable children to become effective communicators of scientific ideas, facts and data. • Encourage children to develop ways of finding out for themselves and to allow them to investigate problem solving. • Creating opportunities for children to work collaboratively
Links to other curriculum areas	Experiences every child should have
<p>Science is threaded in to all areas of the National Curriculum.</p> <p>Our Catholic faith runs simultaneously within our science curriculum. Children use their scientific knowledge and skills to explore God's marvellous world.</p> <p>Science naturally lends itself to Mathematics. Our children will apply their knowledge of measure and statistics when working in science.</p> <p>Computing and use of technology allows children to explore knowledge and skills in science. Using search engines, sourcing reliable information online and using programmes such as Purple Mash to gather and present data is key to producing successful scientists.</p> <p>We expect children to apply their reading and writing skills in science. Reading to learn will allow children to grasp new knowledge and writing in the context of science will broaden children's writing skills.</p> <p>When making observational drawings or designing and making products in D&T, children will draw upon their skills from science.</p> <p>PE is closely linked to the biology aspect of science and children know how to look after their bodies.</p>	<ul style="list-style-type: none"> • To have a sense of wonder and awe when exploring science • To engage in practical, hands-on experience science investigations from EYFS to Y6 • To use safe, age appropriate scientific equipment that will allow them to discover scientific concepts for themselves • Time to reflect and discuss the scientific concepts that they now know • The opportunity to learn about a range of significant scientists from a range of different backgrounds • The opportunity to ask questions in science • The opportunity to learn outside of the classroom i.e. on our school field, in the local area, during day visits and residential trips



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Learning about significant scientists is linked to History and certainly the physical aspect of geography links concepts from science.
 Music is explored in units such as sound where children have practical experiences of instruments and sound waves.

We want our children to be well rounded scientists, and therefore citizens, who know about and appreciate the world around them.
 Within our science curriculum, there are many ways in which we thread through the CST, CSPP and BV principles.
 Opportunities including, but not limited to:





- The rights and responsibilities of significant scientists in shaping our world today – for example when exploring the work of Mary Anning
- Curious when observing the world around them – for example when observing the change in seasons and when growing plants. Active when suggesting how to ensure that our environment and natural world can be preserved
- Scientists in our school work in a democratic fashion when conducting investigations. Everybody has an equal right and freedom to choose their role within science

Opportunities to develop Catholic Social teaching, Catholic School Pupil Profile Virtues and British Values

Catholic Social Teaching:	Catholic School Pupil Profile:	British Values:
<p>Including, but not limited to:</p> <ul style="list-style-type: none"> • Dignity of the human person – through biology, children learn about the human body that God has created. They learn about the body and how to look after it as we are all made in the image and likeness of God. • We are called to Stewardship – children know that God gives the human race everything that is needed to sustain life for all living creatures. Through science, they learn how to respect and look after plants and animals including humans. • The Dignity and Rights of Workers – children explore the work of great scientists and the important role that they play as scientists too. They know that scientific work is ever evolving and this work serves so that we can live. 	<p>Including, but not limited to:</p> <p>Grateful for their own gifts, for the gift of other people, and for the blessings of each day; and generous with their gifts, becoming men and women for others – how science is applied in our world and the way in which scientists work to make our world a better place.</p> <p>Learned, finding God in all things; and wise in the ways they use their learning for the common good – how using our scientific skills and knowledge can have a positive impact on our planet.</p> <p>Curious about everything; and active in their engagement with the world, changing what</p>	<p>Including, but not limited to:</p> <p>Democracy – children work together practically in groups which encourages them to share views and opinions and take instructions from others. There are opportunities to debate issues where students can share their opinions and listen to the views of others.</p> <p>The rule of law - children follow rules, particularly when working practically in science. They understand that rules in science are there to keep everybody safe.</p> <p>Individual liberty -There are opportunities for children to work independently and make choices in a safe environment when carrying out</p>

	<p>they can for the better – asking scientific questions and investigating scientific ideas. Knowing that their findings can improve their world</p>	<p>investigations. They know that they can share their scientific ideas in a safe and respectful environment.</p> <p>Mutual respect for and tolerance of those with different faiths and beliefs, and for those without faith - children work together practically in groups which encourages teamwork and respect for others. There are opportunities to learn about scientific discoveries by a diverse range of people from our culture and other cultures.</p>
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Opportunities to develop and use Building Learning Power in our curriculum

<p>Reciprocity</p> 	<ul style="list-style-type: none"> • Being ready, willing and able to learn alone and with others during scientific investigations • Being empathetic and listen to fellow scientists' ideas and opinions • Sharing ideas and methods to become even better scientists
<p>Resourcefulness</p> 	<ul style="list-style-type: none"> • Being ready, willing and able to learn in different ways when working in science – particularly when working practically and using scientific equipment • Make links from across the curriculum and from their own lives when exploring scientific concepts • Asking questions and allowing the chance to be curious thinkers • Thinking rigorously and methodically when investigating scientific concepts
<p>Reflectiveness</p> 	<ul style="list-style-type: none"> • Being ready, willing and able to become more strategic in science when investigating scientific concepts • Allowing time to reflect on their work and understanding themselves as scientists – what went well? What could have been better? What would you do next time? • Children plan their method in advance • What did you learn from that experience? How are you now a better scientist?
<p>Resilience</p> 	<ul style="list-style-type: none"> • Being ready, willing and able to lock on to learning • Manage distractions and reduce interruptions – staying focussed on the scientific task at hand • Children absorb and notice the scientific happenings – explaining why. • Persevere when the science may not be as they had hoped. What can you do to help you?

Working Scientifically Skills Progression at St George and St Teresa Catholic Primary School

The working scientifically statements from the science National Curriculum for England are presented in bold.

The bullet points that follow each statement are additional guidance that clarifies the expectations.

Working scientifically statements that feature in more than one of the broader skills definitions are shown in italics.

Year group	Asking questions and recognising that they can be answered in different ways	Making observations and taking measurements	Engaging in practical enquiry to answer questions	Recording and presenting evidence	Answering questions and concluding	Evaluating and raising further questions and predictions	Communicating their findings
EYFS	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group 	<ul style="list-style-type: none"> • show curiosity and ask questions • make observations using their senses and simple equipment • make direct comparisons • use equipment to measure • record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets • use their observations to help them to answer their questions • talk about what they are doing and have found out • identify, sort and group

KS1	<p>Asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered. 	<p>Observing closely, using simple equipment</p> <ul style="list-style-type: none"> • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units. 	<p>Performing simple tests</p> <ul style="list-style-type: none"> • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. <p>Identifying and classifying</p> <ul style="list-style-type: none"> • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing 	<p>Gathering and recording data to help in answering questions</p> <ul style="list-style-type: none"> • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. • They classify using simple prepared tables and sorting rings. 	<p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> • Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. 		<p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <ul style="list-style-type: none"> • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.
LKS2	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <ul style="list-style-type: none"> • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. 	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> • The children make systematic and careful observations. 	<p>Setting up simple practical enquiries, comparative and fair tests</p> <ul style="list-style-type: none"> • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple 	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p>	<p>Using straightforward scientific evidence to answer questions or to support their findings</p> <ul style="list-style-type: none"> • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they 	<p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. 	<p>Reporting and presenting 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</p> <ul style="list-style-type: none"> • They communicate their findings to an

	<ul style="list-style-type: none"> The children answer questions posed by the teacher. Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. 	<ul style="list-style-type: none"> They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements. 	<p>fair tests; observations over time; and pattern seeking.</p> <p>Explanatory note: A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship</p>	<ul style="list-style-type: none"> The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. Children are supported to present the same data in different ways in order to help with answering the question. 	<p>have gained from secondary sources. The answers are consistent with the evidence.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <ul style="list-style-type: none"> Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. <p><i>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</i></p> <ul style="list-style-type: none"> They draw conclusions based on their evidence and current subject knowledge 	<p>Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface.</p> <ul style="list-style-type: none"> Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. 	<p>audience using relevant scientific language and illustrations</p>
UKS2	<p><i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</i></p> <ul style="list-style-type: none"> Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their 	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, 	<p><i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</i></p> <ul style="list-style-type: none"> The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what 	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> The children decide how to record and present evidence. They record observations e.g. using annotated photographs, 	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <ul style="list-style-type: none"> Children answer their own and others' questions based on observations they have made; measurements they have taken or information they have gained from 	<p><i>Reporting and presenting 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</i></p>	

	<p>developed understanding following an enquiry.</p> <ul style="list-style-type: none"> Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work. 	<p>force meter with a suitable scale.</p> <ul style="list-style-type: none"> During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value). 	<p>observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.</p>	<p>videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.</p> <ul style="list-style-type: none"> Children present the same data in different ways in order to help with answering the question 	<p>secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer.</p> <ul style="list-style-type: none"> They talk about how their scientific ideas change due to new evidence that they have gathered. They talk about how new discoveries change scientific understanding <p><i>Reporting and presenting 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</i></p> <ul style="list-style-type: none"> In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge. 	<ul style="list-style-type: none"> They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. They identify any limitations that reduce the trust they have in their data. Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. 	
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Scientific Knowledge Progression at St George and St Teresa Catholic Primary School

National Curriculum statements in red are from other linked topics.

Plants

Nursery	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.
Reception	Draw information from a simple map. (Reception – Living things and their habitats) Explore the natural world around them. (Reception – Living things and their habitats) Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats) Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)
Year 1	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.
Year 2	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. Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)
Year 3	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.
Year 4	Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Year 5	Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
Year 6	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. (Y6 - Living things and their habitats) Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)



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Living things and their habitats	
Nursery	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Begin to understand the need to respect and care for the natural environment and all living things.
Reception	Draw information from a simple map. Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live.
Year 1	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 –Animals, including humans) Observe changes across the four seasons. (Y1 - Seasonal change)
Year 2	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. Identify and name a variety of plants and animals in their habitats, including microhabitats. 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. Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)
Year 3	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	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. Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)
Year 5	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.
Year 6	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)



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Animals Including Humans	
Nursery	Use all their senses in hands-on exploration of natural materials. Begin to make sense of their own life-story and family's history. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things.
Reception	Talk about members of their immediate family and community. Name and describe people who are familiar to them. Recognise some environments that are different to the one in which they live.
Year 1	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.
Year 2	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. <i>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. (Y2 - Living things and their habitats)</i>
Year 3	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.
Year 4	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.
Year 5	Describe the changes as humans develop to old age. <i>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)</i> <i>Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</i>
Year 6	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. <i>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. (Y6 - Living things and their habitats)</i> <i>Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)</i>



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Evolution and Inheritance	
Nursery	Begin to understand the need to respect and care for the natural environment and all living things. (Nursery – Living things and their habitats)
Reception	Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats)
Year 1	
Year 2	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. (Y2 - Living things and their habitats) Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)
Year 3	Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Year 5	Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)
Year 6	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.



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Seasonal Changes	
Nursery	Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans)
Reception	Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them.
Year 1	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.
Year 2	
Year 3	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)
Year 4	
Year 5	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)
Year 6	



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Materials	
Nursery	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.
Reception	Explore the natural world around them. Describe what they see, hear and feel whilst outside.
Year 1	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.
Year 2	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.
Year 3	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) 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. (Y3 - Forces and magnets)
Year 4	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. Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)
Year 5	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.
Year 6	



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Rocks	
Nursery	Use all their senses in hands-on exploration of natural materials. (Nursery – Living things and their habitats) Explore collections of materials with similar and/or different properties. (Nursery – Living things and their habitats)
Reception	Explore the natural world around them. (Reception – Living things and their habitats) Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)
Year 1	Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)
Year 2	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)
Year 3	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.
Year 4	
Year 5	
Year 6	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)



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Light	
Nursery	Explore how things work. Talk about the differences in materials and changes they notice.
Reception	Describe what they see, hear and feel whilst outside.
Year 1	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)
Year 2	
Year 3	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.
Year 4	
Year 5	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. (Y5 - Properties and changes of materials)
Year 6	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.



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Forces	
Nursery	Explore how things work. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.
Reception	Explore the natural world around them. Describe what they see, hear and feel whilst outside.
Year 1	
Year 2	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)
Year 3	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 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.
Year 4	
Year 5	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.
Year 6	



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Sound	
Nursery	Explore how things work.
Reception	Describe what they see, hear and feel whilst outside.
Year 1	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)
Year 2	
Year 3	
Year 4	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.
Year 5	
Year 6	



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Electricity	
Nursery	Explore how things work.
Reception	
Year 1	
Year 2	
Year 3	
Year 4	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.
Year 5	
Year 6	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.



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Earth and Space	
Nursery	
Reception	Explore the natural world around them. Describe what they see, hear and feel whilst outside.
Year 1	Observe changes across the four seasons. (Y1 – Seasonal changes) Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes)
Year 2	
Year 3	
Year 4	
Year 5	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.
Year 6	

Science Curriculum Plan

Year Group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	About Me Seasons - Autumn	Space	Seasons – Winter and Ice	New Life – animals Growth - planting	The Farm – babies and adults Seasons - Summer	Life Cycles - butterflies
Reception	Me and My Senses Living Things – Farm Animals	Pets Seasons - Autumn	Weather – Winter Changing states	Forces – floating and sinking, rolling and sliding Seasons – Spring Growth – beans Life cycles	Minibeasts	Forces – Pushes and Pulls
1	Seasons	1.3 Everyday Materials	Weather	1.2 Animal Kingdom	1.4 Plants	Habitats and Seasons
	1.1 Our Environment – threaded throughout the year					
2	2.1 – Habitats (Parts One)	2.5 - Materials	2.4 Plants	2.3 Animals and their Needs	2.2 – Living Things	2.6 – Habitats (Part Two)
3	3.2 – Animals and Skeletons	3.6 - Rocks	3.3 – Forces and Magnets	3.5 - Light	3.4 - Plants	3.1 – Animal Homes
4	4.1 – Respecting the Environment	4.2 Classification	4.6 States of Matter	4.3 – Digestion	4.5 - Sound	4.4 - Electricity
5	5.6 - Forces	5.3 - Earth and Space	5.4 - Mixtures and Reactions (Part One)	5.4 - Mixtures and Reactions (Part Two)	5.5 - Life Cycles	5.6 - Human Development – through <i>Ten:Ten RSE</i>
6	6.2 – Heart and Lungs	6.5 – Light	6.3 – Classification	6.6 – Evolution	6.4 - Electricity	Consolidation
	6.1 - Field Studies– threaded throughout the year					



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SEND Support

Opportunities and resources that may support SEND children in Science:

- Differentiated tasks. See: Engaging Science, Twinkl, Oak Academy
- Video tutorials on Oak Academy to embed concepts and allow children to go at their own pace.
- Small group/1:1 session.
- Considered use of equipment: laptop/desktop/iPad.
- Peer support.
- Subject lead support.
- Consider enlarging font on screen/adjusting colours of paper and font
- Use of apps/features within a programme such as dictate and immersive reader.
- Additional support resources for Parents/Carers such as: Oak National Academy