



Science *Curriculum*



Intent

At Maple it is our intention to deliver a stimulating, challenging and motivating science curriculum which celebrates and builds upon a child's natural curiosity and wonder of the world around them.

Through the process of science enquiry and investigation, in biology, physics and chemistry, we are resolved to increase our pupils' knowledge and understanding of the world and how science relates to their everyday life. Our aim is to equip our pupils with the scientific skills required to understand the uses and implications of science, today and for the future.

Through our teaching we encourage respect for all living organisms and the sustainability for our physical environment

Our curriculum promotes child led investigations through which pupils are encouraged to ask their own questions and are given opportunities to use their scientific skills/research to discover the answers. We believe this to be a process by which they can become independent, creative thinkers and problem solvers.

We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when they use equipment, plan and execute experiments, build arguments and justify their reasoning.

We strive to promote an excitement and pleasure in learning Science.



Implementation

- Teachers create a challenging, motivating and creative learning experience.
- Lessons are built on prior knowledge. Teacher precise questioning assesses gaps in knowledge and skills.
- Children's questions are celebrated and encouraged. They are used as a starting point for an investigation.
- Working scientifically is embedded in every science lesson and the skills learnt are built upon, along with supporting knowledge. Children are encouraged to plan, research and execute their own investigations.
- Children's confidence and knowledge of equipment is built on as they journey through the school. Choosing appropriate equipment is a key part of the investigative process.
- As the children progress through school they become more proficient at gathering and interpreting data making conclusions based on direct evidence.
- New scientific vocabulary is taught in each topic area. Vocabulary is used by the teacher in her questioning and is on display in the classroom. Pupils are expected to use new vocabulary in their

responses and in their writing, so that it becomes entrenched in their knowledge base and they are articulate in its use.

- The curriculum is broadened by extra-curricular activities such as visits, trips and visitors. These are purposeful and link with the knowledge being taught in class.
- There are opportunities to come off timetable to broaden and develop the acquisition and application of knowledge and skills. ie Special Events week, science trips. These occasions involve families and the wider school community.



Impact

At Maple our successful science curriculum along with creative, engaging, high quality teaching, equips our pupils with a good understanding of how the world around them works and the desire to know more.

The celebration of children's questioning and use of science vocabulary promotes confidence and development of thinking skills along with the ability to articulate and give justification for the children's thinking/reasoning.

Our Child Led Investigations enable our pupils to build on their working scientifically skills and develop independent problem solving skills. It builds confidence when choosing and using equipment, recording etc. and to understand the necessity for perseverance/creative thinking when trying to resolve some challenges.

The outdoor learning which is embedded in our curriculum enables the children to connect with and respect the living world that surrounds them.

The whole school ethos that all our children are capable of attaining high standards in science encourages all our pupils to feel sense of capability and achievement in their science learning. Regular talks from

visitors and parents whose careers encompass different scientific backgrounds enables children to realise the possibilities of future careers in science and the impact of science in our everyday lives.

Maple pupils express an enjoyment and excitement in their Science learning, making for engaged, motivated and inquisitive junior scientists.



Science

Curriculum Map

		Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	<p>Weather and trees</p> <p><u>Key Skills</u> Describe the physical changes they notice on and around a tree during the four season.</p> <p>Describe the observations of the weather they have made during the four seasons.</p> <p>Mixing materials</p> <p><u>Key Skills</u> Use comparative and descriptive language to talk about what they notice when they mix two or more materials together.</p> <p>Using their observations and ideas to suggest answers to questions</p>	<p>Seasonal Changes</p> <p><u>Key Skills</u> Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p> <p>Observing closely, using simple equipment</p> <p>Using their observations and ideas to suggest answers to questions</p> <p>Gathering and recording data to help in answering questions.</p> <p>Everyday Materials</p> <p><u>Key Skills</u> Distinguish between an object and the</p>	<p>Materials: Uses Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard, for particular uses.</p> <p><u>Key Skills</u> Classifying materials, carrying out comparative tests for different properties and using the results of their tests to suggest suitable (good) choices for a particular purpose.</p> <p>Materials: Changes Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Light and Shadows</p> <p><u>Key Skills</u> Recognise that we need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that shadows are formed when the light source is clocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Rocks and Soils - link to Earthquakes and Volcanoes and English focus.</p>	<p>Electricity Circuit making, conductors insulators -problem solving</p> <p><u>Key Skills</u> Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Set up simple practical enquiries and recording,</p>	<p>Earth & Beyond</p> <p><u>Key Skills</u> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <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> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking</p>	<p>Keys Classification</p> <p><u>Key Skills</u> Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Set up simple practical enquiries and recording, classifying and</p>	

		<p>Floating and sinking</p> <p><u>Key Skills</u> Talk about objects that float and sink, referring to the size, shape and mass of the object, and what it is made from, and link this to their first-hand experience.</p> <p>What goes through?</p> <p><u>Key Skills</u> Children can talk about the size of an object, how it goes through a sieve and therefore how the sieve can be used to separate objects.</p> <p>Observing closely, using simple equipment.</p> <p>What am I made of?</p> <p><u>Key Skills</u> -name different parts of their bodies and talk about what they can do</p>	<p>material from which it is made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Observing closely, using simple equipment</p> <p>Identifying and classifying</p> <p>Performing simple tests</p>	<p><u>Key Skills</u> Enquire through identifying and classifying comparative tests.</p> <p>Record using photographs, labelled drawings, Venn diagrams, tables and bar charts.</p> <p>measure using non-standard or standard measures</p> <p>compare findings with other children</p>	<p><u>Key Skills</u> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Recognise that soils are made from rocks and organic material.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within a rock.</p>	<p>classifying and presenting data in a variety of ways to help answer questions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p> <p>Sound</p> <p><u>Key Skills</u> Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Record findings using drawings and labelled diagrams. Use straightforward evidence to answer</p>	<p>repeat readings when appropriate</p> <p>Finding things out using a wide range of secondary sources of information</p> <p>Observing changes over different periods of time</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Feel the Force</p> <p><u>Key Skills</u> Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, including taking repeat readings when appropriate - Identifying scientific evidence</p>	<p>presenting data in a variety of ways to help answer questions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Use straightforward scientific evidence to answer questions or to support their findings.</p> <p>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 the local and wider environment.</p> <p>Light</p> <p><u>Key Skills</u> Recognise that light appears to travel in straight lines.</p>
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		Forest school				<p>questions or to support findings.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions diagrams.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including data loggers. Use results to draw simple conclusions. Set up simple comparative and fair tests. Ask relevant questions and use different types of scientific enquiries to answer them. Gather, record, classify and present data in a variety of ways to answer questions.</p>	<p>that has been used to support or refute ideas or arguments</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <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> <p>Recording data and results of increasing</p>	<p>Explain that objects are seen because they give out or reflect light. Light travels from sources to our eyes. Shadows have the same shape as the objects that cast them.</p>
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							<p>complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs</p> <p>Taking measurements, using a range of scientific equipment with increasing accuracy and precision, including taking repeat readings when appropriate</p> <p>Carrying out comparative simple and fair tests - noticing patterns</p>	
	<p>Spring</p>	<p>Weather and trees</p> <p><u>Key Skills</u> Describe the physical changes they notice on and around a tree during the four season. -Describe the observations of the weather they have made during the four seasons.</p> <p>What is the moon? What is in the sky?</p> <p><u>Key Skills</u> Name and describe a range of living and</p>	<p>Seasonal Changes (see above)</p> <p>Animals including Humans.</p> <p><u>Key Skills</u> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>Animals including Humans. Basic needs for survival.</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p><u>Key Skills</u> identifying and classifying food, using tables, and Venn and Carroll diagrams.</p> <p>make observations and collect data</p>	<p>Forces and Magnets</p> <p><u>Key Skills</u> Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Compare how things move on different surfaces.</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and</p>	<p>States of Matter (link to water cycle)</p> <p><u>Key Skills</u> Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Gather, record, classify and present data in a variety of ways to help in</p>	<p>All Change Our Changing World</p> <p><u>Key Skills</u> 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> <p>Using test results to make predictions to set up further</p>	<p>Electricity</p> <p><u>Key Skills</u> Associate the brightness of of a lamp or volume of a buzzer with number of voltage cells in the circuit. Compare and give reasons for variations in how componenets function. Use recognised symbols for electricity.</p> <p>Adaption of animals: Evolution</p> <p><u>Key Skills</u></p>

		<p>non-living things that are in the sky.</p> <p>Forces How does my toy work?</p> <p><u>Key Skills</u> Investigate how to make things move. Demonstrate how a push or a pull is needed to make an object move. Demonstrate and describe, using the words 'push', 'pull' and 'twist', what they need to do to make a toy move. Ask questions from their observations and to carry out their own investigations.</p> <p>Forest School</p>	<p>Observing closely, using simple equipment</p> <p>Identifying and classifying</p> <p>Gathering and recording data to help in answering questions.</p>	<p>while carrying out exercises</p> <p>use their observations and ideas to suggest answers to questions</p> <p>Notice that animals, including humans, have offspring which grow into adults</p> <p><u>Key Skills:</u> Finding out information from secondary sources, observing changes over time, identifying and classifying, and noticing patterns</p>	<p>identify some magnetic materials.</p> <p>Observe how magnets attract or repel each other and attract some material and not others.</p> <p>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Animals and human nutrition</p> <p>Identify that animals, including humans, need the right types and amount of nutrition and that they cannot make their own food. They get their nutrition from what they eat.</p> <p>Identify that humans and some animals have skeletons and muscles for</p>	<p>answering questions.</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>-Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use straightforward scientific evidence to answer questions or to support findings.</p> <p>Record findings using simple scientific language, drawings, labelled</p>	<p>comparative and fair tests</p> <p>Planning different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary</p> <p>Circle of Life</p> <p><u>Key Skills</u> 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> <p>- Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <p>Reproduction of Plants and Animals</p> <p><u>Key Skills</u> -Reporting and presenting findings from enquiries,</p>	<p>Recognise that living things have changed over time and the relevance of fossils Recognise that living things produce offspring of the same kind but with variations. Animals and plants are adapted to their environment.</p> <p>The Human Body - the heart, digestion etc</p> <p><u>Key Skills</u> Identify the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.</p>
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					support, protection and movement.	diagrams, keys, bar charts and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	including conclusions, causal relationships and explanations of and 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 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	
	Summer	Weather and trees <u>Key Skills</u> -Describe the physical changes they notice on and around a tree during the four season. -Describe the observations of the weather they have	Seasonal Changes (see above) Plants and Trees <u>Key Skills</u> Identify and name a variety of common wild and garden plants, including	Living things and their habitats. To explore and compare the differences between things that are living, things that are dead and things that have never been alive.	Plants <u>Key Skills</u> Identify and describe the functions of the different parts of the flowering plants: roots, stem, leaves and flowers.	Animals, including humans <u>Key Skills</u> Ask relevant questions. Gather, record, classify and present data in a variety of ways to help in answering questions.	Get sorted <u>Key Skills</u> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter	Healthy living Reproduction and puberty <u>Key Skills</u> Identify and name main parts of reproductive organs. Understand how a baby is made. Recognise change that happen in

	<p>made during the four seasons.</p> <p>Growing</p> <p><u>Key Skills</u> -identify plant structure and function -name the colours of different parts of a range of familiar plants, including flowering and non-flowering -observe changes over time when growing plants and vegetables</p> <p>Minibeasts – habitats and lifecycles</p> <p><u>Key Skills</u> Identify some animals that lay eggs and talk about the baby animals that hatch from them.</p> <p>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</p>	<p>deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>Observing closely, using simple equipment</p> <p>Identifying and classifying</p> <p>Gathering and recording data to help in answering questions.</p>	<p>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>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><u>Key Skills</u> Using observations and gathering evidence to suggest answers to questions</p> <p>Careful observations over time, using simple equipment and recording their observations in a range of different ways,</p>	<p>Investigate the way in which water is transported within plants.</p> <p>Explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Make systematic and careful observations.</p> <p>Use straightforward scientific evidence to answer questions or to support findings.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Set up simple practical enquiries,</p>	<p>graphs, and bar and line graphs</p> <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 Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Identifying scientific evidence that has been used to support or refute ideas</p> <p>Everyday Materials</p> <p><u>Key Skills</u> Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in</p>	<p>puberty, physical and emotional. Recognise the impact of diet, exercise, drugs, alcohol and lifestyle on the way their body functions.</p>
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	<p>Observe change over time Gather information to help answer own questions Melting</p> <p><u>Key Skills</u> Name some materials that melt -describe what they observe during the melting Process</p> <p>Use descriptive and comparative vocabulary about how something looks, feels and smells.</p> <p>Forest school 40-60 months (World) UW 6 W Looks closely at similarities, differences, patterns and change.</p> <p>ELG (World) Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their</p>		<p>using data to suggest answers to questions</p> <p>Plants- seeds and bulbs Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p><u>Key Skills</u> Observing change over time and comparative tests;</p> <p>Identifying and classifying, pattern finding and research using secondary sources (videos).</p> <p>Record a series of observations using labelled drawings and photographs in diaries.</p> <p>use existing knowledge and observations to make predictions</p>		<p>comparative and fair tests.</p> <p>Record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Living things and habitats</p> <p><u>Key Skills</u> Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Use straightforward scientific evidence to answer questions to support findings. -Report on findings from enquiries, including oral and written explanations, displays or presentations of</p>	<p>results, in oral and written forms such as displays and other presentations</p> <p>Planning different types of science enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a wide range of scientific equipment, with increasing accuracy and precision, and taking repeat readings when appropriate</p> <p>Identifying evidence that has been used to support or refute ideas or arguments</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Marvellous Mixtures</p> <p><u>Key Skills</u></p>	
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		own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.		making and comparing close observations and interpreting the changes		results and conclusions. Recognise statements that do and do not support an argument.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Using test results to make predictions to set up further comparative and fair tests	
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