

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

	material from which			classifying and	repeat readings	presenting data in a
Floating and sinking	it is made	Key Skills	Key Skills	presenting data in a	when appropriate	variety of ways to
r roaring and sinking		Enquire through	Compare and group	variety of ways to	When appropriate	help answer
Key Skills	Identify and name a	identifying and	together different	help answer	Finding things out	questions.
Talk about objects	variety of everyday	classifying	kinds of rocks on	questions.	using a wide range	questions.
that float and sink,	materials, including	comparative	the basis of their	questions.	of secondary	Use results to draw
referring to the	wood, plastic, glass,	tests.	appearance and	Use results to draw	sources of	simple conclusions,
size, shape and	metal, water, and	16313.	simple physical	simple conclusions,	information	make predictions
mass of the	rock	Record using	properties	make predictions	mjormanon	for new values,
object, and what it	Observing closely,	photographs,	proper res	for new values,	Observing changes	suggest
is made from, and	using simple	labelled drawings,	Recognise that soils	suggest	over different	improvements and
link this to their	equipment	Venn diagrams,	are made from	improvements and	periods of time	raise further
first-hand	Identifying and	tables and bar	rocks and organic	raise further	periods of Time	questions.
experience.	classifying and	charts.	material.	questions.	Identifying	questions.
experience,	, ,	Chui 15,	marerial,	questions.	scientific evidence	Use
What goes	Performing simple	measure using non-	Describe in simple	Use	that has been used	straightforward
through?	tests	standard or	terms how fossils	straightforward	to support or	scientific evidence
Till ought		standard measures	are formed when	scientific evidence	refute ideas or	to answer questions
Key Skills		Statidat a fileasares	things that have	to answer questions	arguments	or to support their
Children can talk		compare	lived are trapped	or to support their	ur guments	findings.
about the size of an		findings with other	within a rock.	findings.	Using test results	rinanigo.
object, how it goes		children	William a rock.	, manigo.	to make predictions	Recognise that
through a sieve and		Critical Cri		Sound	to set up further	living things can be
therefore how the				Sound	comparative and	grouped in a variety
sieve can be used to				Key Skills	fair tests	of ways. Explore
separate objects.				Identify	10010	and use
sopulare objects.				differences.	Feel the Force	classification keys
Observing closely,				similarities or	T GOT THE T OF GO	to help group,
using simple				changes related to	Key Skills	identify and name a
equipment.				simple scientific	Taking	variety of living
- 4k				ideas and	measurements, using	things in the local
What am I made				processes.	a range of scientific	and wider
of?				p. 1000000	equipment, with	environment.
- • •				Record findings	increasing accuracy	
Key Skills				using drawings and	and precision,	Light
-name different				labelled diagrams.	including taking	- 5
parts of their				Use	repeat readings when	Key Skills
bodies and talk				straightforward	appropriate	Recognise that light
about what they can				evidence to answer	- Identifying	appears to travel in
	i e	i e	i e		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 Promise 12 Comment 111

			questions or to	that has been used	Explain that
	Forest school		support findings.	to support or	objects are seen
	rorest school		support findings.	refute ideas or	because they give
			Normal of College		
			Report on findings	arguments	out or reflect light.
			from enquiries,	B1 : 1:66 :	Light travels from
			including oral and	Planning different	sources to our eyes.
			written	types of scientific	Shadowshave the
			explanations,	enquiries to answer	same shape as the
			displays or	questions, including	objects that cast
			presentations of	recognising and	them.
			results and	controlling variables	
			conclusions	where necessary	
			diagrams.		
				Using test results	
			Make systematic	to make predictions	
			and careful	to set up further	
			observations and,	comparative and	
			where appropriate,	fair tests	
			take accurate		
			measurements using	Taking	
			standard units,	measurements, using	
			using a range of	a range of scientific	
			equipment, including	equipment, with	
			data loggers.	increasing accuracy	
			Use results to draw	and precision, taking	
			simple conclusions.	repeat readings	
			Set up simple	when appropriate	
			comparative and	-Reporting and	
			fair tests.	presenting findings	
			Ask relevant	from enquiries,	
			questions and use	including conclusions,	
			different types of	causal relationships	
			scientific enquiries	and explanations of	
			to answer them.	and degree of trust	
			Gather, record,	in results, in oral and	
			classify and present	written forms such	
			data in a variety of	as displays and other	
			ways to answer	presentations	
			questions.	Recording data and	
			ques nons.	results of increasing	
				results of increasing	

Spring	Weather and trees Key Skills Describe the physical changes they notice on and around a tree during the four seasonDescribe the observations of the weather they have made during the	Seasonal Changes (see above) Animals including Humans. Key Skills Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Animals including Humans. Basic needs for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Key Skills	Forces and Magnets Key Skills Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Compare how things move on different surfaces.	States of Matter (link to water cycle) Key Skills Identify differences, similarities or changes related to simple scientific ideas and processes. Set up simple	complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs Taking measurements, using a range of scientific equipment with increasing accuracy and precision, including taking repeat readings when appropriate Carrying out comparative simple and fair tests - noticing patterns All Change Our Changing World Key Skills Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and	Electricity Key Skills 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
Spring	they notice on and around a tree during the four seasonDescribe the observations of the weather they have	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	humans of exercise, eating the right amounts of different types of food, and hygiene.	objects, but magnetic forces can act at a distance. Compare how things move on different	similarities or changes related to simple scientific ideas and processes.	presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in	lamp or volume of a buzzer with number of voltage cells in the circuit. Compare and give reasons for variations in how
	What is the moon? What is in the sky? Key Skills Name and describe	Identify and name a variety of common animals that are carnivores, herbivores and omnivores	classifying food, using tables, and Venn and Caroll diagrams.	Compare and group together a variety of everyday materials on the basis of whether they are attracted	comparative and fair tests. Gather, record, classify and present data in a variety of	as displays and other presentations Using test results to make predictions to set up further	recognised symbols for electricity. Adaption of animals: Evolution
	a range of living and		and collect data	to a magnet and	ways to help in	to set up turiner.	Key Skills

non-living things that are in the sky. Forces How does my toy work? Key Skills 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	Observing closely, using simple equipment Identifying and classifying Gathering and recording data to help in answering questions.	while carrying out exercises use their observations and ideas to suggest answers to questions Notice that animals, including humans, have offspring which grow into adults Key Skills: Finding out information from secondary sources, observing changes over time, identifying and classifying, and noticing patterns	identify some magnetic materials. Observe how magnets attract or repel each other and attract some material and not others. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. Animals and human nutrition Identify that	answering questions. 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 conclusionsReport on findings from enquiries, including oral and	comparative and fair tests Planning different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary Circle of Life Key Skills 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	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. The Human Body - the heart, digestion etc Key Skills Identify the main parts of the human circulatory system and describe the functions of the heart, blood vessels
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		which grow into adults Key Skills: Finding out information from secondary sources, observing changes over time, identifying and classifying, and	Predict whether two magnets will attract or repel each other, depending on which poles are facing. Animals and human nutrition	data loggers; report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -Report on findings from enquiries,	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	The Human Body - the heart, digestion etc Key Skills Identify the main parts of the human circulatory system and describe the functions of the

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				support, protection	diagrams, keys, bar	including	
				and movement.	charts and tables.	conclusions, causal	
						relationships and	
					Use results to draw	explanations of and	
					simple conclusions,	degree of trust in	
					make predictions	results, in oral and	
					for new values,	written forms such	
					suggest	as displays and	
					improvements and	other presentations	
					raise further		
					questions.	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	
	Weather and trees	Seasonal Changes	Living things and	Plants	Animals, including	Get sorted	Healthy living
		(see above)	their habitats.		humans		Reproduction and
	Key Skills		To explore and	Key Skills		Key Skills	puberty
	-Describe the	Plants and Trees	compare the	Identify and	Key Skills	Recording data and	
<u>c</u>	physical changes		differences	describe the	Ask relevant	results of	Key Skills
Summer	they notice on and	<u>Key Skills</u>	between things that	functions of the	questions.	increasing	Identify and name
Ę	around a tree	Identify and name a	are living, things	different parts of	Gather, record,	complexity using	main parts of
Ñ	during the four	variety of common	that are dead and	the flowering	classify and present	scientific diagrams	reproductive
	season.	wild and garden	things that have	plants: roots, stem,	data in a variety of	and labels,	organs. Understand
	-Describe the	plants, including	never been alive.	leaves and flowers.	ways to help in	classification keys,	how a baby is made.
	observations of the	r.s.r.s, morading			answering	tables, scatter	Recognise change
	weather they have				questions.		that happen in

made during the four seasons. Growing Key Skills -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 Minibeasts - habitats and lifecycles Key Skills Identify some animals that lay eggs and talk about the baby animals that hatch from them. 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	deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees. Observing closely, using simple equipment Identifying and classifying Gathering and recording data to help in answering questions.	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. 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. Key Skills Using observations and gathering evidence to suggest answers to questions Careful observations over time, using simple equipment and recording their observations in a range of different ways,	Investigate the way in which water is transported within plants. Explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Make systematic and careful observations. Use straightforward scientific evidence to answer questions or to support findings. Identify differences, similarities or changes related to simple scientific ideas and processes. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Set up simple practical enquiries,	graphs, and bar and line graphs 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 Identifying scientific evidence that has been used to support or refute ideas Everyday Materials Key Skills Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in	puberty, physical and emotional. Recognise the impact of diet, exercise, drugs, alcohol and lifestyle on the way their body functions.
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Obse	rve change	using data to	comparative and	results, in oral and
over		suggest answers to	fair tests.	written forms such
	er information	questions		as displays and
	lp answer own	1000	Record findings	other presentations
quest	·	Plants- seeds and	using scientific	F
Melti		bulbs Observe and	language, drawings,	Planning different
		describe how seeds	labelled diagrams,	types of science
Key S	Skills	and bulbs grow into	keys, bar charts,	enquiries to answer
I	e some	mature plants.	and tables.	questions, including
mater	rials that melt	·	Living things and	recognising and
-desc	cribe what they	Find out and	habitats	controlling variables
obser	rve during the	describe how plants		where necessary
melti	ng -	need water, light	Key Skills	
Proce	ess	and a suitable	Identify	Taking
		temperature to	differences,	measurements,
	descriptive and	grow and stay	similarities or	using a wide range
· · · · · · · · · · · · · · · · · · ·	arative	healthy.	changes related to	of scientific
	oulary about		simple scientific	equipment, with
	something	<u>Key Skills</u>	ideas and	increasing accuracy
I I	, feels and	Observing change	processes.	and precision, and
smell	S.	over time and		taking repeat
Fores	st school	comparative tests;	Gather, record,	readings when
40-60	0 months		classify and present	appropriate
(Wor		Identifying and	data in a variety of	
	6 W Looks	classifying, pattern	ways to help in	Identifying
close		finding and	answering	evidence that has
	arities,	research using	questions.	been used to
	rences,	secondary sources		support of refute
	erns and	(videos).	Use	ideas or arguments
chang			straightforward	
	()4(Record a series of	scientific evidence	Using test results
l 1	ren know about	observations using	to answer questions	to make predictions
	arities and	labelled drawings	to support findings.	to set up further
	erences in	and photographs in	-Report on findings	comparative and
	ion to places,	diaries.	from enquiries,	fair tests
	cts, materials		including oral and	AA II
•	iving things.	use existing	written	Marvellous
	talk about the	knowledge and	explanations,	Mixtures
I	ures of their	observations to	displays or	Kara Chilla
l l		make predictions	presentations of	<u>Key Skills</u>

own immediate		results and	Planning different
environment and	making and	conclusions.	types of scientific
how environments	comparing close		enquiries to answer
might vary from one	observations and	Recognise	questions, including
another. They make	interpreting the	statements that do	recognising and
observations of	changes	and do not support	controlling variables
animals and plants		an argument.	where necessary
and explain why			
some things occur,			Using test results
and talk about			to make predictions
changes.			to set up further
			comparative and
			fair tests