## **Science Skills Progression Map**



## Rationale

This document has been produced in conjunction with the National Curriculum (DfE, 2013) and Statutory framework for the early years foundation stage (DfE, 2021)

Statements have been taken directly from the above documents, and have been categorised to coordinate specifically with the detail in the 'nature, processes and methods of science' section of the science curriculum.

Areas in grey indicate a 'non-statutory' element of the curriculum. Their inclusion allows a coherent, fluid transition between year groups, and thus ensures transparent and coherent progression throughout. Care has been taken to ensure that statements align as closely as possible to allow a clear view of progression. Consideration has been offered towards impact throughout – categories represent key areas of planning that a science teacher will consider when writing a single or unit of science lessons. For example, categories such as 'Setting up enquiries', 'Observing over time' and 'Testing and Gathering data' are directly relatable to elements of a science lesson. Key 'working scientifically' skills can therefore be identified, and attached to appropriate planning.

Where Ofsted (2011) identified ways in which primary schools can improve teaching standards from 'satisfactory' to 'outstanding' in science, it was highlighted that 'the most important focus for schools is to ensure that pupils are engaged and challenged by their work in science, particularly in scientific investigation and how science works'. Where a lack of understanding in 'working scientifically' progression may exist across primary schools in England, this document represents an important tool in raising this understanding, and identifying patterns in progression across the years at St Mary's.

## References

Statutory framework for the early years foundation stage (DfE, 2021) Setting the standards for learning, development and care for children from birth to five <a href="https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/974907/EYFS\_framework - March\_2021.pdf">https://assets.publishing.service.gov.uk/government/uploads/system/uploads/system/uploads/attachment\_data/file/974907/EYFS\_framework - March\_2021.pdf</a>
The National Curriculum in England (DfE, 2013)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/425601/PRIMARY\_national\_curriculum.pdf
Successful science, an evaluation of science education in England 2007-2010 (Ofsted, 2011). https://dera.ioe.ac.uk/2148/1/Successful%20science.pdf

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning	Listen attentively	Ask simple	Ask questions	Ask some relevant	Ask relevant	Begin to explore	Explore and talk
	and respond to	questions about	about the world	questions and use	questions and use	and talk about	about ideas, ask
	what they hear	the world around	around us.	different types of	different types of	ideas, ask their	their own
	with relevant	us. Begin to	Recognise that	scientific enquiries	scientific enquiries	own questions	questions about
	questions.	recognise that they	they can be	to answer them.	to answer them.	about scientific	scientific
	Make comments	can be answered in	answered in			phenomena,	phenomena,
	about what they	different ways.	different ways			analyse functions,	analyse functions,
	have heard and ask					relationships and	relationships and
	questions to clarify					interactions more	interactions more
	their					systematically	systematically.
	understanding.						
Setting up	Be confident to try	Begin to recognise	Begin to recognise	Begin to set up	Set up simple	Begin to plan	Plan different
enquiries	new activities and	ways in which they	ways in which they	simple practical	practical enquiries,	different types of	types of scientific
	show	might answer	might answer	enquiries,	comparative and	scientific enquiries	enquiries to
	independence,	scientific questions	scientific questions	comparative and	fair tests	to answer	answer questions,
	resilience and			fair tests		questions,	including
	perseverance in				Make some	including	recognising and
	the face of			Begin to make	decisions about	recognising and	controlling
	challenge			some decisions	which types of	controlling	variables where
				about which types	enquiry will be the	variables where	necessary.
				of enquiry will be	best way of	necessary.	
				the best way of	answering		Recognise when
				answering	questions.	Begin to recognise	and how to set up
				questions		when and how to	comparative and
					Recognise when a	set up comparative	fair tests and
				Begin to recognise	simple fair test is	and fair tests and	explain which
				when a simple fair	necessary and help	explain which	variables need to
				test is necessary	to decide how to	variables need to	be controlled and
				and help to decide	set it up	be controlled and	why
				how to set it up		why	
					Help to make		Make their own
				Begin to help make	decisions about	Begin to make	decisions about
				decisions about	what observations	their own decisions	what observations
				what observations	to make, how long	about what	to make, what
				to make, how long	to make them for	observations to	measurements to
				to make them for	and the type of	make, what	use and how long
				and the type of	simple equipment	measurements to	to make them for,
				simple equipment	that might be used	use and how long	and whether to

Observing over time	Explore the natural world around them, making observations and drawing pictures of animals and plants	Begin to observe closely, using simple equipment.	Observe closely, using simple equipment.	Begin to make systematic and careful observations	Make systematic and careful observations	to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately.  Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate	repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately.  Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.
Pattern Seeking	Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	With guidance, begin to notice patterns and relationships	With guidance, begin to notice patterns and relationships	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Begin to identify patterns that might be found in the natural environment.	Identify patterns that might be found in the natural environment.
Identifying, classifying and grouping	Know some similarities and differences	Identify and classify with some support	Identify and classify	Begin to identify differences, similarities or	Identify differences, similarities or	Begin to use and develop keys and other information	Use and develop keys and other information

	between the natural world around them and contrasting environments, drawing on their experiences and what has been	To begin to observe and identify, compare and describe.  Use simple features to	Observe and identify, compare and describe.  Use simple features to compare objects, materials and living	changes related to simple scientific ideas and processes.  Begin to talk about criteria for grouping, sorting	changes related to simple scientific ideas and processes.  Talk about criteria for grouping, sorting and	records to identify, classify and describe living things and materials	records to identify, classify and describe living things and materials
	read in class.	compare objects, materials and living things and, with help, decide how to sort and group them	things and, with help, decide how to sort and group them	and classifying; and use simple keys	classifying; and use simple keys		
Researching using secondary sources	Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role play.	To begin to use simple secondary sources to find answers	Use simple secondary sources to find answers.	Begin to recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	Begin to recognise which secondary sources will be most useful to research their ideas	Recognise which secondary sources will be most useful to research their ideas
Testing and Gathering Data	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function	Perform simple tests with support.  Gather and record data with some adult support, to help in answering questions  Experience different types of scientific enquiries, including practical	Perform simple tests.  Gather and record data to help in answering questions  Experience different types of scientific enquiries, including practical activities	Begin to take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers  Participate in a range of scientific experiences to	Take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers  Participate in a range of scientific experiences to enable them to	Take measurements, using an increasing range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate  Begin to decide how to record data	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate  Decide how to record data from a
		activities	activities	enable them to	raise their own	from a choice of	choice of familiar

			Use simple	raise their own	questions about	familiar	approaches
		Use simple	measurements and	questions about	the world around	approaches	
		measurements and	equipment (for	the world around	them		
		equipment (for	example, hand	them			
		example, hand	lenses, egg timers)		Learn how to use		
		lenses, egg timers)	to gather data,	Learn how to use	new equipment,		
		to gather data,	carry out simple	new equipment,	such as data		
		carry out simple	tests	such as data	loggers,		
		tests		loggers,	appropriately		
				appropriately	, , , , , , , , , , , , , , , , , , , ,		
Analysing and	Offer explanations	Begin to use their	Use their	Record findings	Record findings	Record data and	Record data and
Presenting Data	for why things	observations and	observations and	using simple	using simple	results of	results of
	might happen	ideas to suggest	ideas to suggest	scientific language,	scientific language,	increasing	increasing
		answers to	answers to	drawings, labelled	drawings, labelled	complexity using	complexity using
		questions	questions	diagrams, keys, bar	diagrams, keys, bar	scientific diagrams	scientific diagrams
				charts, and tables	charts, and tables	and labels,	and labels,
		Talk about what	Talk about what			classification keys,	classification keys,
		they have found	they have found	Report on findings	Report on findings	tables, scatter	tables, scatter
		out and how they	out and how they	from enquiries,	from enquiries,	graphs, bar and	graphs, bar and
		found it out. With	found it out. With	including oral and	including oral and	line graphs	line graphs
		help, they should	help, they should	written	written		
		record and	record and	explanations,	explanations,	Use test results to	Use test results to
		communicate their	communicate their	displays or	displays or	make predictions	make predictions
		findings in a range	findings in a range	presentations of	presentations of	to set up further	to set up further
		of ways and begin	of ways and begin	results and	results and	comparative and	comparative and
		to use simple	to use simple	conclusions	conclusions	fair tests	fair tests
		scientific language.	scientific language.				
				Use results to draw	Use results to draw	Report and present	Report and present
				simple conclusions,	simple conclusions,	findings from	findings from
				make predictions	make predictions	enquiries, including	enquiries, including
				for new values,	for new values,	conclusions, causal	conclusions, causal
				suggest	suggest	relationships and	relationships and
				improvements and	improvements and	explanations of	explanations of
				raise further	raise further	and a degree of	and a degree of
				questions	questions	trust in results, in	trust in results, in
						oral and written	oral and written
				Identify	Identify	forms such as	forms such as
				differences,	differences,	displays and other	displays and other

	similarities or	similarities or	presentations	presentations
	changes related to	changes related to		
	simple scientific	simple scientific	Identify scientific	Identify scientific
	ideas and	ideas and	evidence that has	evidence that has
	processes	processes	been used to	been used to
			support or refute	support or refute
	Use	Use	ideas or arguments	ideas or argument
	straightforward	straightforward		
	scientific evidence	scientific evidence	Look for different	Look for different
	to answer	to answer	causal	causal
	questions or to	questions or to	relationships in	relationships in
	support their	support their	their data and	their data and
	findings.	findings.	identify evidence	identify evidence
			that refutes or	that refutes or
	Collect data from	Collect data from	supports their	supports their
	their own	their own	ideas.	ideas.
	observations and	observations and		
	measurements,	measurements,	Use their results to	Use their results to
	using notes, simple	using notes, simple	identify when	identify when
	tables and	tables and	further tests and	further tests and
	standard units, and	standard units, and	observations might	observations migh
	help to make	help to make	be needed	be needed
	decisions about	decisions about		
	how to record and	how to record and		
	analyse this data.	analyse this data.		
	NACE la alea casse la	AA/ith halm madila		
	With help, pupils should look for	With help, pupils should look for		
	changes, patterns, similarities and	changes, patterns, similarities and		
	differences in their	differences in their		
	data in order to	data in order to		
	draw simple	draw simple		
	conclusions and	conclusions and		
	answer questions	answer questions		
	With support, they	With support, they		
	should identify	should identify		

				new questions	new questions		
				arising from the	arising from the		
				data, making	data, making		
				predictions for new	predictions for new		
				values within or	values within or		
				beyond the data	beyond the data		
				they have	they have		
				collected, and	collected, and		
				finding ways of	finding ways of		
				improving what	improving what		
				they have already	they have already		
				done.	done.		
Vocabulary	Early Adopter	Begin to use simple	Begin to use simple	Begin to use	Use relevant	Use relevant	Use relevant
	communication	scientific language	scientific language	relevant scientific	scientific language	scientific language	scientific language
	and language, and			language to discuss	to discuss their	and illustrations to	and illustrations to
	literacy goals	Pupils should read	Pupils should read	their ideas and	ideas and	discuss,	discuss,
		and spell scientific	and spell scientific	communicate their	communicate their	communicate and	communicate and
		vocabulary at a	vocabulary at a	findings in ways	findings in ways	justify their	justify their
		level consistent	level consistent	that are	that are	scientific ideas and	scientific ideas and
		with their	with their	appropriate for	appropriate for	should talk about	should talk about
		increasing word-	increasing word-	different audiences	different audiences	how scientific ideas	how scientific ideas
		reading and	reading and			have developed	have developed
		spelling knowledge	spelling knowledge	Read and spell	Read and spell	over time	over time
		at key stage 1.	at key stage 1.	scientific	scientific		
				vocabulary	vocabulary	Read, spell and	Read, spell and
				correctly and with	correctly and with	pronounce	pronounce
				confidence, using	confidence, using	scientific	scientific
				their growing	their growing	vocabulary	vocabulary
				word-reading and	word-reading and	correctly	correctly
				spelling	spelling		
				knowledge.	knowledge.		