

Working Scientifically		Making Connections		Equipment and Research		Scientific Pioneers	
<p><i>Working Scientifically skills are embedded across the curriculum and describe the processes and skills pupils are taught, and use, to find out more about the world and how it works. Children are taught working scientifically skills through three main areas; Plan, Do and Review. These areas of scientific enquiry are further broken down to give children the following key skills:</i></p> <ul style="list-style-type: none"> <li>• Plan (Terms 1 and 2)</li> <li>- Ask questions and plan enquires</li> <li>- Set up enquiries</li> <li>• Do (Terms 3 and 4)</li> <li>- Observe and measure</li> <li>- Record</li> <li>• Review (Terms 5 and 6)</li> <li>- Interpret and report information</li> <li>- Evaluate</li> </ul>		<p><i>Connections are central to scientific discovery and many scientific processes. The children are taught the importance of connections in science; both between people and within different areas of science. They will discover the different ways connections appear across all areas of science. They will also understand that nearly all innovations in STEM are built on connections between people including individual scientists, research groups and institutions.</i></p>		<p><i>One key skill of being a scientist is being able to gather scientific information through measurement, observation and the use of various sources.</i></p> <p><i>Children will be taught to accurately use a range of scientific equipment. They will be taught the various first- and second-hand sources that can be used to gather scientific knowledge and will be given opportunities to gather their own data and conduct their own observations and research.</i></p>		<p><i>One way of increasing children’s science capital is for them to learn about scientists that they can identify with. Children are taught about significant individuals in science who are relevant to the taught topics. In doing this they will understand how scientific knowledge has developed over time, how it is used in our everyday lives and is vital to our future prosperity. Children will see scientists who they can identify with and whose work they can relate to.</i></p>	
Curriculum Thread	EYFS	KS1		LKS2		UKS2	
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	<p><i>I can... Make observations of animals and plants and explain why some things occur, and talk about changes.</i></p>	<p><i>I can... Ask simple questions when prompted. Perform simple tests with support. Make relevant observations. Suggest how findings could be recorded with support. Identify and classify. Use observations and ideas to suggest answers to questions with prompting.</i></p>	<p><i>I can... Ask simple questions and recognise that they can be answered in different ways. Perform simple tests. Observe closely using simple equipment. Gather and record data to help in answering questions. Identify and classify using appropriate scientific language to communicate ideas. Use observations and ideas to suggest answers to questions.</i></p>	<p><i>I can... Ask relevant questions when prompted. Set up simple practical enquiries, comparative and fair tests with support. Make systematic observations using simple equipment. Gather, record, classify and present data in a variety of ways, using simple scientific language, to help in answering questions when prompted. Suggest how findings could be reported. Suggest conclusions from enquiries with prompting. Identify differences, similarities or changes related to simple scientific ideas and processes. Use results to draw simple conclusions, suggest improvements and raise further questions when prompted. Use straightforward scientific evidence to answer questions or to support their findings.</i></p>	<p><i>I can... Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment including thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identify differences, similarities or changes related to simple scientific ideas and processes.</i></p>	<p><i>I can... Plan different types of scientific enquiry to answer questions and with prompting recognise and control variables where necessary. Use test results to make predictions to set up further comparative and fair tests with support. Select and use appropriate equipment to take readings using precise measurements of standard units. Take and process repeat readings with prompting when appropriate. Record data and results using labelled diagrams, keys, tables, charts and line graphs. Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships. Present findings from enquiries orally and in writing, with support. Identify that not all results may be trustworthy, with prompting.</i></p>	<p><i>I can... Plan different types of scientific enquiry to answer their own questions, including recognising and controlling variables where necessary. Use test results to make predictions to set up further comparative and fair tests. Take measurements using a range of scientific equipment, with increasing accuracy and precisions, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations, using appropriate scientific language. Explain degree of trust in results. Identify and evaluate scientific evidence (their own and</i></p>

					Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings.	Suggest how evidence can support or refute conclusions.	others') that has been used to support or refute ideas or arguments.
Coverage and knowledge	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Vocabulary	observe, explain, change	question, test, observe, record, identify, classify, answer	question, test, observe, record, identify, classify, answer	enquiry, fair testing, compare, systematic, record, data, conclusion	enquiry, fair testing, compare, systematic, record, data, conclusion	variables, predict, precise, diagram, report, causal relationship, support, refute	variables, predict, precise, diagram, report, causal relationship, support, refute
<b>Making Connections</b>	<i>I know about similarities and differences in relation to places, objects, materials and living things. I can talk about the features of my own immediate environment and how environments might vary from one another. I can make observations of animals and plants and explain why some things occur, and talk about changes.</i>	<i>I can begin to use simple features to compare objects, materials and living things I can begin to decide how to sort and group objects, materials and living things with support. I can begin to observe changes over time with support. I can begin to notice patterns and relationships with support. I can begin to make connections to my local environment with support.</i>	<i>I can use simple features to compare objects, materials and living things I can decide how to sort and group objects, materials and living things with support. I can begin to observe changes over time. I can begin to notice patterns and relationships. I can begin to make connections to my local environment.</i>	<i>I can begin to talk about, test and develop ideas about the relationships between living things and familiar environments. I can begin to develop my ideas about functions, relationships and interactions with support. I can observe changes over time. I can group, sort and classify things and begin talk about the criteria used to do this. I can begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them with support.</i>	<i>I can talk about, test and develop ideas about the relationships between living things and familiar environments. I can begin to develop my ideas about functions, relationships and interactions. I can observe changes over time. I can group, sort and classify things and talk about the criteria used to do this. I can begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. I can explore examples of human impact on environments.</i>	<i>I can begin to analyse functions, relationships and interactions systematically. I can begin to recognise how abstract ideas help me to understand and predict how the world operates. I can begin to observe changes over different periods of times. I can begin to notice patterns and group and classify things. I can begin to identify patterns that might be found in the natural environment.</i>	<i>I can analyse functions, relationships and interactions systematically. I can begin to recognise how abstract ideas help me to understand and predict how the world operates. I can observe changes over different periods of times. I can notice patterns and group and classify things. I can identify patterns that might be found in the natural environment.</i>
Coverage and knowledge	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Vocabulary	observe, environment, similar, different, change	compare, sort, group, observe, pattern, relationship, connection, environment	compare, sort, group, observe, pattern, relationship, connection, environment	functions, interactions, classify, criteria, naturally occurring, data	functions, interactions, classify, criteria, naturally occurring, data	analyse, functions, interactions, abstract	analyse, functions, interactions, abstract
<b>Equipment and Research</b>	<i>I can make observations of animals and plants and explain why some things occur, and talk about changes.</i>	<i>I can observe closely. I can ask people questions. I can use simple secondary sources to find answers including photos and video. I can use simple measurements and equipment (magnifying glasses and egg timers) to gather information.</i>	<i>I can observe first hand and through pictures and video. I can ask questions. I can measure first hand and use simple equipment including magnifying glasses and egg timers to gather my information and data.</i>	<i>I can observe first hand and through pictures and video. I can ask relevant questions. I can use scientific equipment including microscopes and magnifying glasses appropriately. Children may also begin to use data loggers and thermometers if appropriate. I can collect data from my own measurements using standard units. I can recognise when and how secondary sources might help me to answer questions that</i>	<i>I can observe first hand and through pictures and video. I can ask relevant questions. I can use scientific equipment including data loggers and thermometers appropriately. I can collect data from my own measurements using standard units. I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical investigations.</i>	<i>I can begin to make my own decisions about what observations to make, what measurements to use and how long to take them for, and whether to repeat them. I can begin to choose the most appropriate equipment to make measurements and explain how to use it accurately. I can begin to ask my own questions about scientific phenomena. I can begin to find things out using a wide range of</i>	<i>I can make my own decisions about what observations to make, what measurements to use and how long to take them for, and whether to repeat them. I can choose the most appropriate equipment to make measurements and explain how to use it accurately. I can ask my own questions about scientific phenomena. I can find things out using a wide range of secondary sources of information.</i>

				cannot be answered through practical investigations.		secondary sources of information. I can take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	I can take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
Coverage and knowledge	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing
Vocabulary	observe, explain, change	Equipment, measurement, photograph, video, magnifying glass, timer, information	Equipment, measurement, photograph, video, magnifying glass, timer, information	First hand, secondary sources, microscope, thermometer, data logger, standard units	First hand, secondary sources, microscope, thermometer, data logger, standard units	Primary sources, secondary sources, phenomena	Primary sources, secondary sources, phenomena
Scientific Pioneers		I can begin to name some important scientific figures linked to my learning. I can begin to say if these scientific figures are from now or long ago. I can name some scientific jobs linked to my learning.	I can name some important scientific figures linked to my learning and begin to explain their achievements. I can say if these scientific figures are from now or long ago. I can name some scientific jobs linked to my learning and begin to explain some of the key skills in these jobs.	I can name some important scientific figures linked to my learning and explain their achievements. I can begin to explain the differences between historical and modern scientific thinking linked to my learning. I can name some scientific jobs linked to my learning and explain some of the key skills in these jobs.	I can name some important scientific figures linked to my learning both from history and present day and explain their achievements. I can explain the differences between historical and modern scientific thinking linked to my learning. I can name some scientific jobs linked to my learning and explain some of the key skills in these jobs.	I can name some important scientific figures linked to my learning both from history and present day and explain their achievements. I can begin to explain how these scientists' achievements and discoveries have developed our scientific understanding over time. I can name a range of scientific jobs linked to my learning and explain some of the key skills in these jobs.	I can name some important scientific figures linked to my learning both from history and present day and explain their achievements. I can explain how these scientists' achievements and discoveries have developed our scientific understanding over time. I can name a range of scientific jobs linked to my learning and explain some of the key skills in these jobs.
Coverage and knowledge		Florence Nightingale – nurse and epidemiology pioneer. Anna Atkins –botanist. Ole Kirk Christiansen – inventor of Lego. Neil Armstrong – astronaut. Mae Jemison – astronaut. George James Symons – meteorologist. William Kirby – entomologist.	Joseph Banks – naturalist. Prem Singh Gill – polar scientist. Daniella Dos Santos – veterinary surgeon. Dr Pearl Agyakwa – materials scientist.	Charles Darwin – natural historian. Mary Anning – palaeontologist. Jane Goodall – conservationist. Marie Curie – physicist. Thomas Edison – inventor. Isaac Newton – mathematician and physicist.	Wangari Maathai – biologist and environmental activist. Liz Bonnin – conservationist. Paul Sharpe – bioengineer. Washington and Lucius Sheffield – dentists. Daniel Fahrenheit – physicist. Anders Celcius – astronomer. Aristotle – philosopher. Isaac Newton – mathematician and physicist. Thomas Edison – inventor. Zubera Iqbal – chemist.	Carl Linnaeus – botanist and zoologist. David Attenborough – naturalist. Jane Goodall – conservationist. Caroline and William Herschel – astronomers. Valentine Tereshkova – astronaut. Brahmagupta – mathematician and astronomer. Jamie Garcia – chemist. Tim Peake – astronaut.	Carl Linnaeus – botanist and zoologist. Charles Darwin – natural historian. Ruth Ella Moore – bacteriologist and immunology researcher. Ibn al-Haytham (Alhazen) – physicist and mathematician. Mildred S Dresselhaus – materials scientist
Vocabulary		Inventor, scientist, biologist, botanist, meteorologist, epidemiologist, entomologist, astronaut	Naturalist, veterinary surgeon, materials scientist, polar scientist	Naturalist, palaeontologist, conservationist, physicist, inventor, mathematician	Environmental activist, conservationist, bioengineer, physicist, astronomer, mathematician, chemist, inventor	Botanist, zoologist, naturalist, conservationist, astronomer, astronaut, chemist	Botanist, zoologist, naturalist, bacteriologist, immunologist, physicist, mathematician, materials scientist