Methely Primary School

Science Progression of Skills – Enquiry

NC Working Scientifically	
KS1	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.
LSK2	• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • Using straightforward scientific evidence to answer questions or to support their findings.
UKS2	• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests 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 • identifying scientific evidence that has been used to support or refute ideas or arguments.

Enquiry				
		Plan	**Do**	**Review**
Research	EYFS	• Be encouraged to show curiosity about the world around them • With direction ask questions and find ways to answer them	• Listen carefully • Know that information in books and electronic media can help answer questions • Find pictures of things • Talk to people about what they do and how things work	• Talk about the things they have found out
	Year 1	• With support ask questions about how things are and the way they work • Ask people questions • Share and discuss simple texts to find information	• With support use simple books and electronic media to find things out • With support ask questions to find out what people do and how things work • Record in words and pictures what they have found out	• With support begin to use scientific language to talk about what they have found out • With support talk about whether the information souce was useful • With support give an opinion about some things they have found out.
	Year 2	• Explore the world around them and raise their own simple questions about how things are and how they work. • With support make suggestions about how to find things out. • Begin to use use simple texts with help, to find information	• Use simple books and electronic media to find things out • Begin to independently ask questions to find out what people do and how things work • Record in simple sentences and pictures what they have found out	• Independently begin to use scientific language to talk about what they have found out • Talk about whether the information source was useful • Give an opinion about some things they have found out.
	Year 3	• Raise own relevant questions about the world around them. • Talk about how things might work based on previous knowledge. • With support identify when questions can be answered using secondary sources and when another method is needed. • Begin to use texts by themselves to find out information	• With support use a range of equipment to collect data using standard measures • Make records using tables • With support begin to use and interpret graphs for data analysis.	• Draw simple conclusion from what I have found out from different sources • With support talk about what the information and data means using some of the taught scientific language.
	Year 4	• Raise own relevant questions about the world around them. • Suggest answers based on their previous knowledge before using secondary sources to find the answer. • Use texts independently to find information that cannot be answered through practical investigations.	• Use a range of equipment to collect data using standard measures • Make records using tables and bar graphs • Begin to use and interpret graphs for data analysis.	• Draw simple conclusion from what I have found out from different sources • With support talk about what the information and data means using some of the taught scientific language. • Suggest ways to improve how they find out and use information.
	Year 5	• Talk about how scientific ideas have developed over time. • Use their science experiences to explore ideas and raise different kinds of questions Decided what method of research will best support a well informed answer	• Use equipment correctly • With support select the most appropriate way of recoding data • Present date in line graphs • Interpreted changes in data	• Draw valid conclusions from the data collect from the observations • Begin to recognise the significance of things changing over time

		• Use a range of sources to answer specific questions. • Begin to separate opinion from fact.	• Begin to discuss the effect of changing the time and number of observations	• Talk about and explain changes making links between scientific knowledge and understanding • Evaluate how well they observed over time.
	Year 6	• Talk about how scientific ideas have developed over time. • Use their science experiences to explore ideas and raise different kinds of questions. • Recognise which sources will be most useful to research their ideas and begin to separate opinion from fact.	• Use and select the most appropriate equipment correctly • Select the most appropriate way of recoding data • Present date in the most appropriate way (demonstrate all skills taught) • interpret changes in data and suggest reasons for the changes • Recognise the effect of changing the time and number of observations	• Draw valid conclusions from the data about the changes • Recognise the significance of things changing over time and the impact this has • Talk about and explain changes using scientific knowledge and understanding • Evaluate the validity of their data and suggest improvements for observing over time.
		Plan	**Do**	**Review**
Identifying and classifying	EYFS	• Chn encouraged to be curious about similarities and differences • With help ask questions about similarities and differences • Talk about ideas for sorting or matching things.	• Use senses to sort and match things • Match things that are the same • Find things that are different • Sort and group in own way • Use simple equipment to sort into (boxes, hoops)	• Talk about how they have sorted or matched things.
	Year 1	• Begin to compare one object, living thing or event with another and, where appropriate, begin to decide how to sorting into groups • Ask questions about how things are different	• With support make comparisons between simple features of objects, living things and materials. • Record comparisons in simple words and pictures • With support sort objects by observable and behavioural features • Record sorting in circles.	• Identify similarities and differences and talk about them • With support begin to use scientific language to describe the differences. • With support begin to use own records to help sort or identify other things.
	Year 2	• Decide how to sort things into groups using scientific groupings e.g. waterproof and not waterproof • Ask questions about how and why things are different,	• Make comparisons between simple features of objects, living things and materials. • Record comparisons in words, pictures or simple tables • Sort objects by observable and behavioural features • Order objects, living things and events through my observations • Record sorting in circles or tables.	• Begin to use simple scientific language to talk about how things are similar or different • Try to use own records to help sort or identify other things.
	Year 3	• With support identify and talk about the criteria they will use to sort and classify things • With support decide what equipment to use to identify and classify things • Talk about things that can be grouped • With support ask questions that can be answered using sorting and classifying.	• Sort and classify objects, living things and events with given criteria • Carry out simple test to sort and classify according to properties • With support use Carroll diagrams and tables to sort things • Use simple keys to identify things	• With support draw simple conclusions about the things they have classified using some scientific language • Talk about the similarities and differences they have identified
	Year 4	• Suggest a wide range of scientific criteria to identify, group and order objects and living things. • Decide what equipment is needed to identify and classify things • Talk about things that can be grouped and recognise then questions can be answered by sorting and classifying.	• Sort and classify objects, living things and events using an identified criteria • Carry out simple test to sort and classify according to properties • With support use Carroll diagrams, Venn diagrams and tables to sort things • Use simple keys and branching keys to identify things that have clear differences.	• Draw simple conclusions about the things they have classified using scientific language • Talk about the similarities and differences they have identified using scientific language • Suggest alternative ways to identify and sort.
	Year 5	• Decide when identifying and classifying will help answer own questions • Decide what equipment and tests to use to identify and classify things	• Use specific tests to sort and classify objects, living things and events with precise criteria e.g. solid, liquid, gas. • Make own keys and branching diagrams with 4 items • Use more than one piece of scientific evidence to identify and classify things	• Draw valid conclusions when identifying and classifying. • Recognise the significance of sorting and classifying • Talk about and explain what they have done using scientific knowledge
	Year 6	• Ask specific questions and decided when identifying and classifying will help answer Decide what equipment, tests and secondary sources of information to use to identify and classify things	• Use a series of tests to sort and classify objects, living things and events with precise criteria using correct scientific language • Make own keys and branching diagrams with 4 + items • Use more than multiple pieces of scientific evidence to identify and classify things	• Draw valid conclusions and make links to scientific knowledge when identifying and classifying. • Recognise the significance of sorting and classifying and how this connects with other lines of enquiry • Talk about and explain what they have done using specific scientific knowledge

				• Evaluate the validity of keys created.
		Plan	**Do**	**Review**
Observations over time	EYFS	• Be curious about things that change • With support begin to ask questions about things changing • Talk about ideas for finding out how things change	• Use all their sense to observe changes • Look closely at how things change • Make simple records of how things change •	• Talk about what they have done and what they have noticed.
	Year 1	• Begin to ask questions about how and why things change • With support identify changes to observe.	• With support use non-standard units and simple equipment to record changes • Record in words or pictures .	• Begin to identify simple changes and talk about them • Begin to sequence changes • With support use some scientific language to talk about the changes •
	Year 2	• Ask questions about how and why things change • With support identify changes to observe and measure and suggest how to do it.	• Use non-standard units and simple equipment to record changes • Record in words or pictures or in simple prepared formats such as tables and charts.	• Identify simple changes and talk about them • Sequence changes • Begin to independently use some scientific language to talk about the changes • Talk about whether the change was expected •
	Year 3	• With support talk about things changing and begin to recognised when questions can be answered by observing over time. • With support decide what observations to make, how often and what equipment to use.	• With support use a range of equipment to collect data using standard units of measure. • Make records using tables • Begin to interpret graphs.	• With support draw simple conclusions from the changes observed • With support talk about these changes using scientific language • With support suggest improvements.
	Year 4	• Talk about things changing and begin to recognised when questions can be answered by observing over time. • Decide what observations to make, how often and what equipment to use.	• Use a range of equipment to collect data using standard units of measure. • Make records using tables and bar charts • Begin to interpret graphs produced by data loggers.	• Draw simple conclusions fromt the changes observed • Talk about these changes using scientific language • Suggest improvements.
	Year 5	• Begin to decide when observing over time will help answer specific questions. • Begin to decide how detailed observations need to be and what equipment to use to make the measurements as accurate as possible.	• Use equipment with growing accuracy • Begin to record data appropriately without direction • Begin to interpret changes in the data • Begin to recognise the effect of changing over time and the number of observations made.	• Begin to draw valid conclusions from data about changes • Begin to recognise the significance of things changing over time • With support talk about and explain changes using scientific knowledge and understanding
	Year 6	• Decide when observing over time will help answer specific questions. • Decide how detailed observations need to be and what equipment to use to make the measurements as accurate as possible.	• Use equipment accurately • Record data appropriately without direction Interpret changes in the data • Recognise the effect of changing over time and the number of observations made.	• Draw valid conclusions from data about changes • Recognise the significance of things changing over time • Talk about and explain changes using scientific knowledge and understanding • Evaluate how well they have observed over time.
		Plan	**Do**	**Review**
Pattern Seeking	EYFS	• Show that they are curious about patterns • With support, ask questions about patterns • Talk about their ideas doe finding out about patterns	• Use all their senses to look closely for patterns • Observe more than one thing at a time • Make simple recordings of what they notice • Use simple equipment to observe and record patterns	• Talk about what they have done and the patterns they noticed.
	Year 1	• With support ask questions about how and why things are linked • With support decide what patterns to observe and measure.	• With support use non-standard units and simple equipment to record events that might be related • Record in words or pictures or in simple prepared formats such as tables .	• With support identify simple patterns and talk about them • Begin to make links between two sets of observations • With support begin to use scientific language to talk about patterns •
	Year 2	• Ask questions about how and why things are linked • With support decide what patterns to observe and measure and suggest how to do it. .	• Use non-standard units and simple equipment to record events that might be related • Record in words or pictures or in simple prepared formats such as tables, Tally charts and maps.	• Identify simple patterns and talk about them • Make links between two sets of observations • Begin to use scientific language to talk about patterns • Talk about whether the pattern was what I expected.
	Year 3	• Talk about where patterns are found. • With support decide on which sets of data to collect, what observations to make and what equipment to use.	• With support use a range of equipment to collect data using standard units of measure. • Make records using tables	• With support draw simple conclusions about simple patterns between two sets of data • With support talk about these changes using scientific language

				• With support suggest improvements.
	Year 4	• Talk about where patterns are found and recognise when questions can be investigated by pattern seeking. • Decide on which sets of data to collect, what observations to make and what equipment to use.	• Use a range of equipment to collect data using standard units of measure. • Make records using tables and bar charts • Begin to interpret graphs produced by data loggers.	• Draw simple conclusions about simple patterns between two sets of data • Talk about these changes using scientific language • Suggest improvements to the way they looked for patterns. .
	Year 5	• Begin to recognise when variables cannot be controlled and decide when pattern seeking will help to answer a question. • With support, decide how detailed their data needs to be and which equipment to use to make measurements as accurate as possible.	• Use equipment with growing accuracy • Begin to record data appropriately without direction • Begin to interpret changes in the data • Begin to recognise the effect of changing over time and the number of observations made.	• Begin to draw valid conclusions from data about patterns and recognise their limitations • Begin to recognise the significance of relationships between sets of data. • With support talk about and explain cause and effect patterns using scientific knowledge and understanding
	Year 6	• Recognise when variables cannot be controlled and decide when pattern seeking will help to answer a question. • Decide how detailed their data needs to be and which equipment to use to make measurements as accurate as possible.	• Use equipment accurately • Record data appropriately without direction Interpret changes in the data • Recognise the effect of changing over time and the number of observations made.	• Draw valid conclusions from data about patterns and recognise their limitations • Recognise the significance of relationships between sets of data. • Talk about and explain cause and effect patterns using scientific knowledge and understanding • Evaluate how well they have looked for patterns.
		Plan	**Do**	**Review**
Comparative and Fair Testing	EYFS	• Encouraged to be curious about how things behave • With support as questions about things that they can test • Talk about ideas for testing how things behave	• Use senses to look closely at how things behave • Carry out simple tests • Make simple records of what they notice • Use simple equipment to observe and record	• Talk about what they have done and what they notice • Talk about whether something makes a difference
	Year 1	• Ask why questions • Make simple comparisons • With support notice links to explain cause • With support begin to identify a variable to change and measure • With support plan simple comparative tests	• With support use non-standard units and simple equipment to record data • With support record in words or pictures, or in simple prepared formats such as tables.	• With support talk about their data • With support use comparative data to rank materials or objects • With support use simple scientific language to describe simple relationships
	Year 2	• Ask how and why questions • Make simple comparisons about how things behave • With support notice links between cause and effect • With support begin to identify a possible variables to change and measure • Plan simple comparative tests	• Use non-standard units and simple equipment to record data • Record in words or pictures, or in simple prepared formats such as tables and Tally charts.	• Talk about their data • Use comparative data to rank materials or objects • Use simple scientific language to describe simple causal relationships • With support say f a test was fair • Say if the relationship was what they expected.
	Year 3	• Talk about links between cause and effect and pose questions for comparative testing • Plan comparative tests identifying appropriate variables. • With support decide what data to collect and how to collect it • With support decide what equipment to use and how to make observations.	• Use specific equipment to collect data using standard measures • Make recordings in tables • With support begin to use and interpret data collected through dataloggers	• With support draw simple conclusions from comparative and fair tests • Talk about the causal relationships using scientific language • With support suggest ways a test could be improved.
	Year 4	• Talk about links between cause and effect and pose questions for comparative testing and fair testing (with support). • Plan comparative or fair test identifying the range variables. • Decide what data to collect and how to collect it • Decide what equipment to use and how to make observations.	• Use a range of equipment to collect data using standard measures • Make recordings in tables • Begin to use and interpret data collected through dataloggers	• Draw simple conclusions from comparative and fair tests • Talk about the causal relationships using scientific language • With support suggest ways a test could be improved.
	Year 5	• Recognise when variables need to be controlled and with support decide when a comparative or fair test is the best way to answer a question • Plan a comparative or fair test, selecting variables to measure, changed and keep the same. • Decide what equipment to use to make measurements as accurate as possible.	• Use equipment and increase accuracy to collect observations • Record data appropriately and increase accuracy • With support present data in line graphs • Begin to identify causal relationships	• With support draw valid conclusions based on the data • Begin to recognise the significance of the results of comparative and fair testing • Begin to talk about and explain causal relationships using scientific knowledge and understanding • Begin to evaluate effectiveness of my comparative and fair

				testing, recognising variables that were difficult to control.
	Year 6	• Recognise when variables need to be controlled and decide when a comparative or fair test is the best way to answer a question • Plan a comparative or fair test, recognising the difference between the two when selecting variables to measure, changed and keep the same. • Decide what equipment to use to make measurements as accurate as possible and identify possible reasons for less accurate measures ie (equipment available,)	• Use equipment accurately to collect observations • Record data appropriately and accurately • Present data in line graphs • Identify causal relationships	• Draw valid conclusions based on the data • Recognise the significance of the results of comparative and fair testing • To talk about and explain causal relationships using scientific knowledge and understanding • To evaluate effectiveness of my comparative and fair testing, recognising variables that were difficult to control.

Commented [WU1]: