Science Progression of Skills at Woodstock CE Primary School

Working Scientifically: Progression of Skills Taught Through Our Science Curriculum

Asking Scientific Questions			
EYFS	Nursery & Reception	Can ask questions to find out more. Can talk about what they see using a wide vocabulary.	
Key Stage 1	Years 1&2	Can recognise that scientists find out about scientific ideas by asking questions and testing them. Can ask some simple questions to find out about the world around us and with teacher guidance, recognise that they can be answered using different types of enquiry (observing changes over time, noticing patterns, grouping/classifying, simple comparative tests and using secondary sources).	
		Can recognise that scientists collect evidence by making observations and measurements to answer a question. Can ask simple questions to find out about the world around us and make simple suggestions about the different types of enquiry that could be used to collect evidence to answer a question (observing changes over time, noticing patterns, grouping/classifying, simple comparative tests and using secondary sources).	
Key Stage 2	Years 3&4	Can recognise why it is important to collect evidence by making observations and measurements to answer a question, and that science has improved our lives. Can recognise how scientific ideas and concepts can be turned into relevant questions that can be investigate and put forward their own ideas about how to find the answer to a scientific question using different types of enquiries (observing changes over time, noticing patterns, grouping/classifying, comparative tests, fair tests and using secondary sources.)	
		Can recognise that scientific ideas are based on evidence, have made our lives better and that there is some risk in science. Can turn existing scientific ideas into a question form that can be investigated and begin to plan different types of scientific enquiries, including recognising and controlling variables with teacher guidance.	
	Years 5&6	Can describe how experimental evidence and creative thinking are combined to provide scientific explanations, that has changed over time. Can form scientific questions for enquiry based on scientific ideas/concepts and recognise which can be investigated and those which are theoretical. Plan different types of enquiries to answer questions, including identifying and controlling variables.	
		Can describe how experimental evidence and creative thinking are combined to provide scientific explanations, that change over time and has both positive and negative effects. Can explore scientific ideas/concepts and form clear enquiry questions about scientific phenomena, recognising which can be investigated and those which are theoretical. Select and plan the most appropriate types of enquiry to answer questions, including identifying and controlling variables, where necessary.	

Plan & Set Up an Enquiry			
EYFS	Nursery & Reception	Can ask why questions. Can choose the right resources to carry out their plan.	
Key Stage 1	Years 1&2	Can plan and set up a simple test guided by the teacher.	
		Can make a simple plan for a test and set it up within a framework provided by the teacher, e.g. using a planning frame or set of questions, focusing on a limited number of variables.	
Key Stage 2	Years 3&4	Can make and set up a simple plan which identifies the basic features of the test including practical enquiries and consideration of fair tests, e.g. what is being changed, what is being measured and which variables are being controlled to keep the test fair.	
		Can set up simple practical enquiries and consider comparative and fair tests. Can decide on a clear plan to answer the question which identifies the key features of a fair test, e.g. what is being changed, what is being measured and which variables are being controlled to keep the test fair.	
	Years 5&6	Can set up practical enquiries and use results to begin to set up comparative and fair tests. Can decide on an appropriate way to collect data to answer a question and with guidance, create a clear plan which identifies the independent, dependent and control variables.	
		Can set up practical enquiries and use results to plan and set up further comparative and fair tests. Can identify and plan an appropriate approach to answer a scientific question, identifying clear independent, dependent and control variables.	

Observe Closely			
EYFS	Nursery & Reception	Can use new vocabulary. Can talk about what they see using a wide vocabulary. Can compare quantities using language, 'more than' 'fewer than' 'less than'.	
Key Stage 1	Years 1&2	Can begin to observe closely using simple equipment provided.	
		Can use simple equipment provided to make observations related to the test.	
Key Stage 2	Years 3&4	Can make observations which are relevant to the test.	
		Can select suitable equipment for a test and make a series of accurate observations which are adequate for the test.	
	Years 5&6	Can select apparatus for a range of tests and use effectively, making a series of systematic observations and comparisons. Can recognise patterns and begin to repeat observations, offering simple explanations for any differences found.	
		Can select apparatus for a range of tests and use effectively, making a series of systematic observations and comparisons with precision appropriate to the test. Can recognise patterns and repeat observations, offering possible explanations for any differences found.	

Take Measurements			
EYFS	Nursery & Reception	Can develop their small motor skills so that they can use a range of tools competently, safely and confidently.	
Key Stage 1	Years 1&2	Can begin to measure in non-standard units. For example, compare length, area and volumes visually, mass by feel, temperature by touch, time by clapping or ordering, sound, light force using senses.	
		Can use simple equipment provided to make measurements related to the test, measuring in standard and non-standard units.	
Key Stage 2	Years 3&4	Can use simple equipment to measure quantities in standard units, using a range of simple equipment.	
		Can select suitable equipment for a test and make a series of accurate measurements which are adequate for the test.	
	Years 5&6	Can select apparatus for a range of tests and use effectively, making a series of systematic measurements and comparisons. Can recognise patterns and begin to repeat measurements, offering simple explanations for any differences found.	
		Can select apparatus for a range of tests and use effectively, making a series of systematic measurements and comparisons with precision appropriate to the test. Can recognise patterns and repeat measurements, offering possible explanations for any differences found.	

Gather and Record Results			
EYFS	Nursery & Reception	Make comparisons between objects relating to size, length, weight and capacity.	
Key Stage 1	Years 1&2	Can describe simple features, observations and measurements and record in a variety of simple ways, e.g. pictures, words, provided tables.	
		Can describe observations and measurements in a variety of ways, including simple tables, labelled drawings, bar charts and using scientific vocabulary.	
Key Stage 2	Years 3&4	Can record observations and measurements in a variety of ways, including ICT. Can record results in a variety of ways, including simple tables, labelled diagrams, keys and bar charts.	
		Can record observations, measurements and comparisons using tables, including ICT. Can construct their own tables, choosing headings and the number and range of measurements, draw labelled diagrams, keys and bar charts.	
	Years 5&6	Can record observations and measurements systematically, including the use of ICT. Can begin to choose the best method, e.g. scientific diagrams, classification keys, tables, bar and line graphs, repeated tests and averaging (mean).	
		Can record observations and measurements systematically, including the use of ICT. Can record results of increasing complexity and choose the best recording method, e.g. scientific diagrams, classification keys, tables, bar and line graphs, repeated tests and averaging (mean).	

Present Results			
EYFS	Nursery & Reception	Write short captions, phrases or sentences with words with known sound letter correspondence. Begin to describe a sequence of events, real or fictional using words such as first. Draw information from a single map.	
Key Stage 1	Years 1&2	Can, where appropriate, record observations in a bar chart (e.g. pictogram) with axis labelled by the teacher.	
		Can, where appropriate and supported by the teacher, record observations and measurements in simple bar charts.	
Key Stage 2	Years 3&4	Can, where appropriate, record observations and standard measurements in bar charts, deciding on the axes.	
		Can, where appropriate, record observations, measurements and comparisons using bar charts, choosing scale and labelling axes. Can begin to plot points to form simple graphs and use these to point out and interpret patterns in data.	
	Years 5&6	Can, where appropriate, present data as bar charts and line graphs. Can construct bar and line graphs, selecting scale and labelling axes. Can begin to interpret and systematically explain patterns in data.	
		Can, where appropriate, choose to present increasingly complex data as bar charts and line graphs. Can construct bar and line graphs, selecting scale and labelling axes. Can interpret and systematically explain patterns in data.	

Interpret Results: Answer the Question			
EYFS	Nursery & Reception	Can articulate their ideas and thoughts in well – formed sentences.	
Key Stage 1	Years 1&2	Can recognise unfairness and what is being changed in a test.	
		Can, with teacher guidance, identify what is being changed, what is being measured, and one or two variables which need to stay the same to make the test fair.	
Key Stage 2	Years 3&4	Can carry out a fair test which identifies the variable being changed, measured and controlled. Recognise and explain why it is fair.	
		Can make a plan which identifies how one variable is changed, while all the others are kept the same.	
	Years 5&6	Can identify key variables to be considered and with teacher guidance, choose one independent variable to change, decide how to measure the effect (dependent variable) and which variables to control.	
		Can identify key variables to be considered and choose an appropriate variable to be varied (independent variable), measured for effect (dependent variable) and variables that need to be controlled.	

Draw Conclusions: Explain the Results Using Knowledge			
EYFS	Nursery & Reception	Can talk about findings using a wide vocabulary and listen to others' ideas.	
Key Stage 1	Years 1&2	Can talk about what happened, communicating their findings in a simple way, e.g. talk, drawing, simple charts.	
		Can explain what happened and relate this to their earlier prediction made.	
Key Stage 2	Years 3&4	Can identify and explain simple patterns in recorded measurements and observations, and communicate what has been found in a simple scientific way.	
		Can begin to relate conclusions to patterns in data and to prior scientific knowledge and understanding. Can explain conclusions using appropriate scientific language.	
	Years 5&6	Can draw conclusions which are consistent with evidence and relate these to scientific knowledge and understanding. Can use appropriate scientific language and conventions to communicate quantitative and qualitative data.	
		Can draw clear conclusions, which are linked to evidence from data patterns and relate these to scientific knowledge and understanding. Can use accurate scientific language and conventions to communicate quantitative/qualitative data and explain causal relationship.	

Make a Prediction or Hypothesis			
EYFS	Nursery & Reception	Can begin to make a simple prediction, 'I think…'	
Key Stage 1	Years 1&2	Can make a simple prediction, 'I think…'	
		Can make a prediction with a simple reason, 'I think…because…'	
Key Stage 2	Years 3&4	Can make a prediction, giving a reason based on everyday experience.	
		Can make a prediction, giving a reason which considers scientific ideas and is based on everyday experience.	
	Years 5&6	Can hypothesise, giving a reason which considers scientific ideas and uses knowledge of a similar everyday experience applied it to a new situation, e.g. I think little bits of sugar dissolve faster than a sugar lump.	
		Can hypothesise, giving a reason which is based on scientific concepts and uses knowledge of a similar everyday experience, applied it to a new situation, e.g. I think little bits of sugar dissolve faster than a sugar lump.	

Evaluate an Enquiry			
EYFS	Nursery & Reception	Can say which parts of the test were done well.	
Key Stage 1	Years 1&2	Can identify which parts of the test have been done well and which need to be improved.	
		Can question how carefully the test has been carries out and what needs improvement.	
Key Stage 2	Years 3&4	Can suggest improvements to the test to improve accuracy.	
		Can suggest improvements to the tests, giving reasons.	
	Years 5&6	Can evaluate the accuracy of tests and make practical suggestions about how working methods could be improved.	
		Can evaluate the effectiveness of their tests, the limitations and suggestion how methods could be improved.	