Procedural Knowledge Progression in Scientific Enquiry

Observing					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Discuss and describe what they can see, touch, smell, hear or taste. Observe closely using simple equipment Use their observations and ideas to suggest answers to questions	Observe closely using simple equipment and use their observations and ideas to suggest answers to questions Observe changes over time and with guidance begin to notice patterns and relationships	Observe changes over time. Ask their own questions about what they observe	Make systematic and careful Observations including changes over time, noticing patterns Ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best way of answering them.	Continue to make systematic and careful observations of changes over different periods of time.	Make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them.

Performing Tests and Obtaining Evidence

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Can use simple measurements and equipment to perform a simple test under guidance. Group and classify different items with guidance	Can use equipment to perform a simple test Decide how to group and classifying different items and objects. With support find things out using secondary sources.	Perform simple comparative and fair tests. Group and classify. Follow and carry comparative and fair tests. Find things out using secondary sources.	Set up and perform simple comparative and fair tests. Notice and begin to explain patterns. Group and classify. Choose from a range of examples and carry out comparative and fair tests Independently select and use a range of secondary sources to find information. Take accurate measurements using standard units, using a range of equipment including thermometers and data loggers	Can take measurements using range of scientific equipment with increasing accuracy and precision. Carry out accurate and fair tests Recognise which secondary sources will be the most useful to research their ideas.	Can take measurements using range of scientific equipment with increasing accuracy and precision. Take repeat readings when appropriate. Select appropriate equipment and carry out comparative and fair tests. Recognise, control variables accurately and fairly, including changes over different periods of time. Notice patterns, groupings and classify. Recognise which secondary sources will be the most useful to research their ideas and begin to separate opinion form fact.

Questioning, Prediction and Planning					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use prompts to ask simple questions and recognise they can be answered in different ways. Under guidance make simple verbal predictions.	Ask relevant questions and recognise they can be answered in different ways. With prompts, begin to make and record simple predictions.	Choose relevant questions and use different types of scientific enquiry to answer them. Can use different ideas and suggest how to find something out. Make and record a prediction. Set up simple comparative and fair tests. Decide which observations to make and the equipment to use.	Ask relevant questions and use different types of scientific enquiry to answer them. Make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions. Make and record a prediction based on prior knowledge. Decide which observations to make, how long to make them for and the equipment to use. Set up simple comparative and fair tests.	Plan different types of scientific enquiry to answer their own questions, including recognising and controlling variables. Make a prediction and explain why. Identify the key factors when planning a fair test.	Select and plan, justify (giving reasons) and carry out scientific enquiry to answer their own questions, explain which variables need to be controlled and why. Use information and test results to make predictions and further comparative tests. Vary one factor whilst keeping the others the same and explain why.

Recording and Presenting

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Gather and record data to help answer questions Talk about what they have found out. Can show their work using pictures, labels and captions. Record and communicate their findings in a range of ways.	Can use text, diagrams, pictures, charts and tables to record their findings and observations. Measure using simple equipment Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. **(Maths Statistics)**	Can record their findings in different ways (labelled diagrams, charts etc.) Record findings using scientific language. Report on findings from enquiries including oral and written explanations. Interpret and present data using bar charts pictograms and tables. **(Maths Statistics)**	Gather, record and classify what they have found in a range of ways to help in answering questions. Select and record findings using scientific language, drawings, labelled diagrams, keys, bar graphs and tables Report on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions. Interpret and present discrete and continuous data using graphical methods. **(Maths Statistics)**	Can record data of increasing complexity using scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs. Complete, read and interpret information in table, including timetables. **(Maths Statistics)**	Use test results to make predictions to set up further comparative and fair tests. Decide which unit of measurement they need to uses. Explain why a measurement needs to be repeated. Record measurements systematically using a range of scientific equipment with increasing accuracy and precision. Interpret and construct pie charts and line graphs. **(Maths Statistics)**

Considering Evidence and Evaluating					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Talk about what they have found out and how they found it out.	To begin to say what happened in my investigation and whether I was surprised at the results or not.	Draw simple conclusions and use scientific language to talk about what they have found out. Identify differences, similarities or change related to simple scientific ideas and processes.	Use results to draw simple conclusions, make predictions for new values. Suggest improvements and raise further questions Identify differences similarities or changes related to simple scientific ideas or processes. Use straightforward scientific evidence to answer quest5ions or to support their findings.	Present and report findings from enquiries, including conclusions, casual relationships and explanations of a degree of trust in results, through writing, display and presentation.	Identify scientific evidence that has been used to support or refute ideas or arguments. Find a pattern from data and explain what it shows. Report findings from investigations through written explanations and conclusions using appropriate scientific language.

Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pupils should read and spell scientific vocabulary at a level consistent with their increasing word and spelling knowledge. Refer to and use specific scientific vocabulary for their year group.		Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and knowledge skills. Refer to and use specific scientific vocabulary for their year group.		Pupils should read, spell and pronounce scientific vocabulary correctly. Refer to and use specific scientific vocabulary for their year group.	