WL and BJS Science Disciplinary Knowledge Progression

KS1	To ask scientific questions	To Set up a test	To observe closely and take measurements	To record data	To present and interpret results	To make a prediction	To evaluate an enquiry
Identifying, grouping and Classifying	Be able to ask a Yes/No questions to aid sorting	Identify the headings for the two groups (it is …., it is not ….)	Be able to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.		Sort objects and living things into two group using a basic Venn diagram or simple table. Talk about the number of objects in each group i.e. which has more or less	Children in KS1 are not expected to make scientific predictions as they do not have the subject knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess.	Children in KS1 are not expected to evaluate. However, children should be encouraged to consider their method and adapt this where necessary.
Researching	Ask one or two simple questions linked to a topic				Present what they have learnt verbally or using pictures. Be able to answer their questions using simple sentences		
Comparative/fair testing	Identify the question to investigate from a scenario or choose a question from a range provided	Choose equipment to use and decide what to do and what to observe or measure in order to answer the question	Make observations linked to answering the question. When appropriate, measure using standard units where all the numbers are marked on the scale	Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally, using pictures or block diagrams. Answer their question in simple sentences using their observations or measurements		
Observing over time	Ask a question about what might happen in the future based on an observation			Record data in simple prepared tables, pictorially or by taking photographs	Present what they learnt verbally or using pictures		
Pattern seeking	Ask a question that is looking for a pattern based on observations			Record data in simple, prepared tables and tally charts	Present what they learnt verbally		
Problem solving	Ask a question in response to a problem based on previous scientific knowledge			Record data in simple prepared tables, pictorially or by taking photographs	Record data in simple prepared tables, pictorially or by taking photographs		

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LKS2	To ask scientific questions	To Set up a test	To observe closely and take measurements		To record data	To present and interpret results	To make a prediction	To evaluate an enquiry
Identifying, classifying and grouping	Be able to ask a range of Yes/No questions to aid sorting	Be able to put appropriate headings onto intersecting Venn and Carroll diagrams	Be able to compare objects based on more sophisticated, observable features. Present observations in labelled diagrams.			Sort objects and living things into groups using intersecting Venn and Carroll diagrams Spot patterns in the data particularly two criteria with no examples e.g. there are no living things with wings and no legs Draw simple conclusions, when appropriate, for patterns e.g. a flying insect with no legs might always crash land		Suggest improvement e.g. a wider range of objects – only looked at British trees. Suggest new questions arising from the investigation.
Researching	Ask a range of questions linked to a topic	Choose a source from a range provided				Present what they learnt verbally or using labelled diagrams Be able to answer their questions using simple scientific language		Suggest limitations e.g. only had one book. Suggest new questions arising from the investigation.
Comparative/fair testing		Decide what to change and what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary	Prepare own tables to record data	Present data in bar charts Refer directly to their evidence when answering their question Where appropriate provide oral or written explanations for their findings	Use results from an investigation to make a prediction about a further result	Suggest improvements e.g. to method of taking measurements. Suggest new questions arising from the investigation.
Observing over time		Decide what to measure or observe. Decide how often to take a measurement.	Make a range of relevant observations	Measure using standard units where not all the numbers are marked on the scale. Use dataloggers to measure over time.		Present data in time graphs		
Pattern seeking		Decide what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale.		Use ICT package to present data as a scattergram		
Solving Problems	Ask a question linked to previous science knowledge	Decide what to change and what to measure or observe	As for KS1	Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary		Present data in bar charts Refer directly to their evidence when answering their question Where appropriate provide oral or written explanations for their findings		

WL and BJS Science Disciplinary Knowledge Progression

UKS2	To ask scientific questions	To set up tests	To observe closely And take measurements	To record data	To present results and interpret results	To make a prediction	To evaluate an enquiry
Identifying, grouping and classifying	Be able to ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information	Identify specific clear questions that will help to sort without ambiguity	Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry		Create branching databases (tree diagrams) and keys to enable others to name livings things and objects Be able to talk about the features that objects and living things share and do not share based on the information in the key etc. Be able to use data to show that livings things and materials that are grouped together have more things in common than with things in other groups		Be able to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for
Researching	Ask a range of questions recognising that some can be answered through research and others may not	Choose suitable sources to use			Present what they learnt in a range of ways e.g. different graphic organisers Be able to answer their questions using scientific evidence gained from a range of sources		Be able to talk about their degree of trust in the sources they used
Comparative/fair testing	Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results.	Recognise and control variables where necessary	Observing as for KS1 Measure using standard units using equipment that has scales involving decimals	Prepare own tables to record data, including columns for taking repeat readings	Choose an appropriate form of presentation, including line graphs Be able to answer their question, describing causal relationships Provide oral or written explanations for their findings	Use test results to make predictions for further investigations	Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results
Observing over time				As for LKS2	Be able to answer their questions, describing the change over time		
Pattern seeking					Choose an appropriate form of presentation, including scatter graphs Be able to answer their questions identifying patterns		
Problem solving				Prepare own tables to record data, including columns for taking repeat readings	Choose an appropriate form of presentation, including line graphs Be able to answer their question, describing causal relationships		