Long Itchington CE Academy - Science progression in Disciplinary knowledge

Disciplinary knowledge has been mapped in line with the PKC. Children will be taught the disciplinary knowledge across EYFS, KS1 and KS2 in the following areas:

Asking scientific questions
Asking questions that can be answered using a scientific enquiry.

Making predictions
Using prior knowledge to suggest what will happen in an enquiry.

Planning an enquiry
Deciding on the method and equipment to use to carry out an enquiry.

Observing closely and taking measurements
Using senses and measuring equipment to make observations about the enquiry.

Recording and presenting results
Using tables, drawings and other means to note observations and measurements.

Interpreting and communicating results Using information from the data to say what you **found out.**

Evaluating
Reflecting on the success of the enquiry approach and identifying further questions for enquiry.

	Reception	Key stage 1	Lower Key stage 2	Upper Key stage 2
Ask scientific questions 	Begin to ask questions about the world around them.	Ask a yes/no questions to aid sorting. • Ask one/two simple research questions linked to a topic. • Choose a question to undertake a fair test. • Ask a question about what might happen over time or that is looking for a pattern.	• Ask a range of Yes/No questions to aid sorting • Ask a range of research questions linked to a topic. • Ask a range of question to undertake a fair test. • Ask a range of question about what might happen over time or that is looking for a pattern.	Ask a range of Yes/No questions to aid sorting and decide which ways of sorting will give useful information. • Ask a range of questions recognising that some can be answered through research and others may not • Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results.
Making Predictions 			Use results from an investigation to make a prediction about a further result.	Use test results to make predictions for further investigations.
Plan an enquiry 		Identify the headings for the two classification groups (it is …., it is not ….) • Choose equipment to use and decide what to do and what to observe or measure in order to answer the question	Put appropriate headings onto intersecting Venn and Carroll diagrams. • Choose a research source from a range provided • Decide what to change and what to measure or observe • Decide how often to take a measurement.	Identify specific clear questions that will help to sort without ambiguity • Choose suitable sources to use • Recognise and independently control variables where necessary. • Decide how often to take a measurement

Observing closely 	Explore the natural world around them, making observations and drawing pictures of animals and plants.	Compare objects based on obvious, observable features e.g. size, shape, colour, texture etc. Make observations linked to answering the question.	Compare objects based on more sophisticated, observable features and present observations in labelled diagrams. • Make a range of relevant observations linked to the question	Compare not only based on physical properties but also on knowledge gained through previous enquiry. • Make a range of relevant observations linked to the question.

To take Measurements 		When appropriate, measure using standard units where all the numbers are marked on the scale.	Measure using standard units (according to age-related mathematics) where not all the numbers are marked on the scale, and take repeat readings where necessary • Use dataloggers to measure over time.	Measure using standard units using equipment that has scales involving decimals (according to age-related mathematics), and take repeat readings where necessary. • Use dataloggers to measure over time
To record results 	Record observations pictorially/photographs.	Record data in simple prepared tables, tally charts, pictorially or by taking photographs	Prepare own tables to record data.	Prepare own tables to record data, including columns for taking repeat readings
To present results 		Sort objects and living things into two group using a basic Venn diagram or simple table, • Present what they have learnt verbally, using pictures or block diagrams.	Sort objects and living things into groups using intersecting Venn and Carroll diagrams • Present what they learnt verbally or using labelled diagrams, bar charts, or time graphs	Create branching databases (tree diagrams) and keys to enable others to name livings things and objects • Present what they learnt in a range of ways e.g. different graphic organisers, line graphs and scatter graphs.
To interpret and communicate results 		Talk about the number of objects in each classification group i.e. which has more or less. • Answer their questions using simple sentences using their observations or measurements.	Spot patterns in the classification data, particularly two criteria with no examples - e.g. there are no living things with wings and no legs. • Answer questions using simple scientific language and refer directly to their evidence when answering their question.	Talk about the features that items share and do not share based on the information in the key etc. • Answer questions using scientific evidence gained from a range of sources. Describe causal relationships, change over time and identify patterns

			Draw simple conclusions, when appropriate, for patterns - e.g. a flying insect with no legs might always crash land. • Where appropriate provide oral or written explanations for their findings.	Use data to show that items grouped together have more things in common than with things in other groups • Provide detailed oral or written explanations for their findings.
To evaluate an enquiry 			Suggest improvement (e.g. a wider range of objects) and suggest new questions arising from the investigation. • Suggest limitations to research (e.g. only had one book) and suggest new questions arising from the investigation. • Suggest improvements (e.g. measurement method) and suggest new questions arising from the investigation.	Explain using evidence that the branching database or classification key will only work for the living things or materials it was created for. • Talk about their degree of trust in the sources they used. • Explain their degree of trust in their results (e.g. precision in measurements, variables that may not have been controlled, and accuracy of results.