Love Trust Courage Forgiveness

Drake Primary School – Enquiry Skills Progression

Skill	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking Questions 	Being curious and starting to ask questions about the world around them.	Use everyday language/begin to use simple scientific words to ask or answer a scientific question.	Suggest ideas, ask simple questions and know that they can be answered / investigated in different ways including simple secondary sources, such as books and video clips.	Use prior knowledge when posing questions independently, about the world around them. Independently use a range of questions stems e.g. why, how, when etc.	Suggest relevant questions and know that they could be answered in a variety of ways, including using secondary sources such as ICT, books, articles etc. Answer questions using straight forward scientific evidence	Raise different types of scientific questions, and hypotheses based on scientific experiences or prior knowledge.	Pose/select the most appropriate line of enquiry to investigate scientific questions based on prior knowledge or scientific experience. Understand that secondary resources may be necessary to answer a question if practical work cannot.
Making predictions 	To observe the world around them and answer questions about what might happen next.	Begin to say what might happen in an investigation.	Begin to make predictions based on own experiences and some scientific knowledge.	Make predictions and begin to give reasons for them based on own experiences and some scientific knowledge.	Make predictions and give reasons for them using simple scientific vocabulary.	Make predictions and give a reason using scientific vocabulary and scientific knowledge.	Make predictions and give a reason using scientific vocabulary and base predictions on findings from previous investigations and research.

Setting up tests 	Can perform a simple test with adult support and can describe and explain what they have done verbally	Follow instructions to complete a simple test individually or in a group.	Do things in the correct order when performing a simple test independently and begin to recognise when something is unfair.	Discuss possible enquiry methods and describe a fair test.	Make decisions about different enquiries, including recognising when a fair test is necessary and begin to identify variables.	Plan a range of science enquiries, including comparative and fair tests.	Select and plan the most suitable line of enquiry, explaining which variables need to be controlled and why, in a variety of comparative and fair tests.
Making observations 	Discuss what they can see, touch, smell, hear or taste Use simple equipment to help them make observations e.g. magnifying glass.	Observe objects, materials and living things and describe what they see using scientific vocabulary.	Observe something closely and describe changes over time using simple equipment such as magnifying glass, metre stick etc.	Begin to make decisions about what to observe during an investigation and how this will be done.	Make systematic and careful observations.	Plan and carry out comparative and fair tests, making systematic and careful observations.	Make their own decisions about which observations to make, using test results and observations to make predictions or set up further comparative or fair tests.
Measuring 	Begin to take measurements of size using non-standard units e.g. multilink cubes or Lego blocks.	To begin to understand that measurements involving numbers help scientists to make conclusions. Adults to model this to the children in group investigations. Independently use non-standard units to measure results.	With adult support, begin to use simple equipment such as rulers to take measurements, and independently use tallies to count the number of times.	Begin to use a range of simple equipment with support to make accurate measurements using standard units (m, cm, °C, kg, g, ml).	To independently make accurate measurements using standard units (e.g. cm, m, °C, N, g, kg, ml), using a range of simple equipment, e.g. rulers, measuring cylinder and thermometers.	To be able to take measurements, in standard units, using a range of scientific equipment, with increasing accuracy and precision.	To take measurements, in standard units, using a range of scientific equipment, with increasing accuracy and precision and take repeat readings when appropriate.

Recording data 	Begin to use diagrams and labels to show what they have observed.	Begin to record simple data in charts with support and modelling.	Gather data using simple charts and tables such as tally charts.	Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts.	Choose appropriate ways to record and present information, findings and conclusions for different audiences (e.g. displays, oral or written explanations).	Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models.	Choose the most effective approach to record and report results, linking to mathematical knowledge.
Interpreting results 	Verbally explain what they have recorded.	Use every day or simple scientific language to ask and/or answer a question on given data.	Identify simple patterns and/or relationships using simple comparative language.	Gather, record and use data in a variety of ways to answer a simple question.	Identify, with help, changes, patterns, similarities and differences in data to help form conclusions. Use scientific evidence to support their findings.	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.	Identify and explain causal relationships in data and identify evidence that supports or refutes their findings, selecting fact from opinion.
Drawing conclusions 	Answer simple questions about what they have found out.	Talk about their findings and explain what they found out with support and modelling.	Use simple scientific language to explain what they have found out.	Draw, with help, a simple conclusion based on evidence from an enquiry or observation.	Use recorded data to make predictions, pose new questions and suggest improvements for further enquiries.	Use a simple mode of communication to justify their conclusions on a hypothesis. Begin to recognise how scientific ideas change over time.	Identify validity of conclusion and required improvement to methodology. Discuss how scientific ideas develop over time.

	KS1	LKS2	UKS2
Asking questions and recognising that they can be answered in different ways 	***Asking simple questions and recognising that they can be answered in different ways.*** • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	***Asking relevant questions and using different types of scientific enquiries to answer them.*** • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	***Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.*** • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.
Engaging in practical enquiry to answer questions 	***Performing simple tests.*** • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. Identifying and classifying • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.	***Setting up simple practical enquiries, comparative and fair tests.*** • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. ***Explanatory note*** A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.	***Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.*** • The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

Making observations and taking measurements 	***Observing closely, using simple equipment.*** • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units.	***Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.*** • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	***Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.*** • The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. • During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).
Recording and presenting evidence 	***Gathering and recording data to help in answering questions.*** • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. • They classify using simple prepared tables and sorting rings.	***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.*** • The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question.	***Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.*** • The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. Children present the same data in different ways in order to help with answering the question.

Answering questions and concluding 	***Using their observations and ideas to suggest answers to questions.*** • Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources.	***Using straightforward scientific evidence to answer questions or to support their findings.*** • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.	***Identifying scientific evidence that has been used to support or refute ideas or arguments.*** • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. • They talk about how their scientific ideas change due to new evidence that they have gathered. • They talk about how new discoveries change scientific understanding.
Evaluating and raising further questions and predictions 		***Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.*** • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.	***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.*** • They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data. Using test results to make predictions to set up further comparative and fair tests • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.

Communicating their findings 		***Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.*** • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.	***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.*** • They communicate their findings to an audience using relevant scientific language and illustrations.