Laughton Junior & Infant School

Learning together, achieving together

Working Scientifically Skills Progression

	Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum	**Planning**						
KS1 *During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:* *Asking simple questions and recognising that they can be answered in different ways.* *Observing closely, using simple equipment.* *Performing simple tests.* *Identifying and classifying.* *Using their observations and ideas to suggest answers to questions.* *Gathering and recording data to help in answering questions.*	Questions why things happen (30 -50 months) Asks questions about aspects of their familiar world. Generating a variety of ideas for testing (not always appropriate/ realistic)	Recognises the difference between a statement and a question. Begins to shape questions using different question stems. Decides which questions can be answered practically and which cannot. Suggests next step, or a sequence of steps, in a plan.	With support, suggest own questions that they might investigate. Decides independently simple questions that could be answered practically and some that cannot.	Asks questions independently and generate own ideas to explore through Scientific enquiry. Recognises when to answer a question by using a fair test method and when other methods might be needed. In a fair test identifies what to keep the same and sometimes ant to change and measure.	Asks questions and offers ideas for a range of scientific enquiry. With support, improves focus of question to clarify its scientific purpose. Knows when to answer a question by using a fair test method and when better evidence could be generated in other ways, e.g. through a survey, diary/log or research. Sets up a fair test controlling variables, what to keep the same, what to change, measure or observe.	Independently asks questions and offers ideas for scientific enquiry, which have a clear scientific purpose. Identifies the most appropriate enquiry methods to use to generate evidence needed to solve problems and answer scientific questions. Plan familiar enquiry types in appropriate detail.	Recognises scientific questions that do not yet have definitive answers. Selects methods to use to solve problems or answer questions, including a full range of enquiry methods, which are planned in detail.
	Observing						
KS2 *During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:* *Asking relevant questions and using different types of scientific enquiries to answer them.* *Setting up simple practical enquiries, comparative and fair tests.* *Making systematic and careful observations and, where appropriate,*	Closely observe what animals, people and vehicles do (8-20 months) Use senses to explore the world around them. Measure by direct comparison. Non-standard units of measurement. Simple comparative vocabulary – bigger, smaller.	Begins to choose appropriate equipment to use to make observations and follows simple instructions for using it correctly and safely. Makes relevant observations in familiar contexts. With support take some non-standard measurements.	Chooses appropriate equipment from a selection and follows instructions for using it, sometimes working independently of adult support. Makes relevant observations. Takes non-standard measurements. Begins to use basic equipment for measuring length	Selects from a wider range of equipment what to use in an investigation. Uses basic equipment correctly, safely and with increasing accuracy. Makes relevant observations throughout an investigation. Uses standard measuring equipment for quantities, such as volume and temperature.	Uses a wide range of equipment for example thermometers and data loggers, correctly, safely, and accurately. Deals with most equipment difficulties independently before asking for help if necessary. Chooses to make a series of observations that will add to the evidence they collect while investigating.	Selects the most appropriate equipment to use in a range of contexts and enquiries. Takes measurements using a range of science equipment with increasing accuracy and precision. Chooses to make a series of observations or measurements that will add to the quality of the evidence	Explains why particular pieces of equipment or information sources will provide better quality evidence. Repeats sets of observations or measurements, where appropriate, selecting suitable ranges and intervals, to give sufficient depth of evidence.

taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. *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.* *Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.* *Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.* *Identifying differences, similarities or changes related to simple scientific ideas and processes.* *Using straightforward scientific evidence to answer questions or to support their findings.*	General sensory observations of animals and plants. Simple descriptions of the world around them. Looking at objects and pictures and discussing what they can see.		or mass, in standard units.		With support, takes accurate readings on measuring equipment, recognising when to repeat them.	collected while investigating.	
Recording							
KS2 *During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:* *Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.* *Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.* *Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.* *Using test results to make predictions to set up further comparative and fair tests.* *Reporting and presenting findings from enquiries, including conclusions, causal*	Talking about objects and events. Simple recording – pictures/images.	Use drawings and labels to present evidence. With support, uses prepared simple tables and charts, including ICT forms.	Uses drawings and labels to present evidence. Uses prepared tables and block graphs, including ICT forms.	Gathers, records, classifies and presents data in a variety of ways to help in answering questions. Sometimes creates own tables and bar charts, using ICT where appropriate. Interprets a line graph with support.	Selects the most appropriate way to present evidence they have collected. Records findings using drawings, labelled diagrams, bar charts, tables and graphs, using ICT where appropriate. Uses simple scientific language effectively to communicate outcomes.	Records data and results of increasing complexity using scientific diagrams, classification keys, tables, bar and line graphs and models. Communicates findings in written form, displays and uses other forms of presentation. Uses scientific language to communicate increasingly detailed analysis.	Decides on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables. Communicates findings in written form, across a range of genre, and uses multi-media and other forms of presentation.

relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. *Identifying scientific evidence that has been used to support or refute ideas or arguments.*							
Concluding							
	Builds up vocabulary that reflects the breadth of their experience (30 -50 months) Uses talk to connect ideas, explain what is happening and anticipate what might happen next, recall and relive past experiences. (30-50 months) Noticing 'which worked best' – simple comparative statements. Answer initial question simply. Answer how and why questions about their experiences	Describes simple observations of an object or objects or of an event and with support makes a simple comparison. With support, recognises the links between cause and effect in simple, familiar situations.	Describes what has happened, making comparisons where appropriate. With support, sequences results, e.g. from smallest to largest. Recognises the link between cause and effect in simple, familiar situations. Begins to notice simple patterns in results.	Reports on findings from enquiries, including oral and written, displays or presentations of results and conclusions. Makes a general statement about simple patterns they notice in a set of results. Provides explanations for simple patterns in results, referring to everyday experiences when explaining reasoning.	Makes a comparative statement, sometimes referring to the factors under investigation. Identifies differences, similarities, or changes related to simple scientific ideas and processes. Uses straightforward scientific evidence to answer questions or to support their findings. Relates explanations of patterns in results to scientific knowledge and understanding when explaining reasoning.	Where appropriate, makes a comparative statement, describing relationships between factors being investigated. Uses simple models to help describe scientific ideas. Relates explanations of evidence gathered to scientific knowledge and understanding. Makes generalisations about what that evidence seems to indicate.	Uses scientific evidence to answer questions or support findings. Draws valid conclusions that utilise more than one piece of supporting evidence. Provides explanations for differences repeated observations or measurements, identifying reasons for any anomalies noticed.
Evaluating							
		Reviews their work and with support, recognises some of the difficulties encountered.	Reviews their work and recognises some of the difficulties encountered. With support, suggests how these might have been avoided.	Suggests how an enquiry might be improved. With support, recognises some of the limitations and significance of evidence.	Suggest how much to trust results, identifying some of the limitations of evidence. Suggests new questions and predictions for setting up further tests.	Recognises some of the limitations of their evidence and can suggest why it should not be trusted. Uses test results to set up further comparative tests.	Evaluates the effectiveness of their working methods, making practical suggestions for improving them. Identifies scientific evidence that has been used to support or refute ideas or arguments.