

Science Enquiry Skills	Planning to investigate				Choosing and using equipment		Generating and communicating evidence		Considering evidence			Evaluating evidence
	1. Asking questions 	2. Methods 	3. Planning detail 	4. Predictions 	5. Choosing equipment 	6. Using equipment 	7. Observation 	8. Presenting evidence 	9. Drawing Conclusions 	10. Comparing results 	11. Explaining evidence 	12. Evaluating 
EYFS	Have a curious disposition and ask questions about objects and events they experience.	Try out different practical methods suggested to them.	Sometimes suggest next step/s in a plan.	Sometimes suggest what they think might happen in a specific context (in response to a prompt question).	Recognise that different equipment might be needed to do different things.	Follow simple instructions for using equipment, usually under adult supervision.	Be able to observe simple features of things they see and events they experience.	Use drawing to present evidence with support, use prepared simple tables and charts, including forms of ICT.	With support, describe a simple observation of an object or of an event.	Notice when something unexpected happens.	Respond to question prompts from an adult about cause and effect in simple, familiar situations.	Review their work and with support, recognise some of the difficulties encountered.
KS1	Recognise the differences between a statement and a question. Begin to shape questions using different question stems. With support suggest their own question for investigation.	Starting to independently to decide which simple questions can be answered practically and which cannot.	Suggest next step, or a sequence of steps, in a plan. With support, can describe the observations or measurements they might need to make.	Suggest what might happen in a specific context (in response to a prompt question). With support, sometimes predict what might happen during an investigation.	Begin to choose appropriate equipment from a limited selection, with support from an adult.	Follow simple instructions for using equipment correctly and safely sometimes working without an adult.	Make relevant observations. Take non-standard measurements. Begin to use basic equipment for measuring length and mass, in standard units.	Use drawings and labels to present evidence. With support, use prepared simple tables and charts including ICT forms.	Describe what has happened making simple comparisons where appropriate. With support can sequence results, e.g. from smallest to largest.	Say what happened was as expected. With support, make further predictions based on actual results and in familiar contexts.	Recognise the link between cause and effect in simple familiar situations. Begin to notice simple patterns in results.	Review their work and identify some of the difficulties encountered. With support suggest how some of the difficulties might have been avoided.
LKS2	Ask questions independently and generate own ideas to explore through a range of scientific enquiry. With support, improve focus of question to clarify scientific purpose.	With support, can identify when to answer questions by carrying out a fair test and when evidence should be generated using other methods. Can spot when a plan will lead to an unfair test.	In a fair test, identify what to keep the same and with support, plan for other variables. Plans main steps in other types of enquiry.	Spontaneously predicts what might happen during an investigation and sometimes suggests why.	Select from a wider range of equipment to best items to use in an investigation. With support, consider the scale and degree of accuracy required from some measuring equipment.	Use basic equipment correctly, safely and with increasing accuracy. Begin to deal with equipment failures independently.	Make relevant observations throughout an investigation. Use standard measuring equipment for quantities, such as volume and temperature.	Create own tables and bar charts, using ICT when appropriate. Interpret a line graph with support.	Independently make a general statement about simple patterns evident in a set of results.	Make further predictions based on actual results and in familiar contexts.	Provide explanations for patterns in results, referring to everyday experiences in explaining reasoning.	Suggest how an enquiry of their own and others, might be improved. With support, recognise some of the limitations and significance of evidence. Begin to suggest how much to trust the results.
UKS2	Ask questions and independently offer ideas for scientific enquiry, which have a clear scientific purpose. Recognise scientific questions that do not yet have a definitive answer.	Know when a question can be answered by using a fair test method and when evidence should be generated in other ways, e.g. through a survey diary/ log or research. Can independently identify appropriate methods to use to generate evidence. Suggests solutions to problems or answer questions by drawing on abstract ideas or models.	Set up a fair tests controlling variables, what to change and measure or observe and what to keep the same. With support, consider whether to take repeat readings and plans the details of what to do in other types of enquiry. Recognise significant variables in investigations, selecting the most suitable to investigate.	Predict outcomes and where appropriate sketch a graph showing the expected pattern in results. Justify their predictions using scientific knowledge and understanding.	Select the most appropriate equipment to achieve the best results in a range of contexts, taking into account the scale and degree of accuracy required from measuring equipment. Explain why particular pieces of equipment or information sources are appropriate for the questions or ideas under investigation.	Uses a wide range of equipment correctly, safely and accurately. Deals with most equipment difficulties independently before asking for help if necessary. Make and act on, suggestions to control obvious risks to themselves and others.	Choose to make a series of observations that will add to the evidence collected while investigating. With support, take accurate readings on measuring equipment, recognising when to repeat it. Repeat sets of observations or measurements where appropriate, selecting suitable ranges and intervals.	Decide on the most appropriate format to present a set of scientific data, such as line graph for continuous variables. Creates own bar charts, tables and graphs, including those for repeated readings, using ICT where appropriate.	Make a comparative statement, describing the relationship between factors under investigation and using scientific language effectively to communicate detailed analysis. Interpret data in a variety of formats, recognising obvious inconsistencies.	Make further predictions from results and use these to test out the likely pattern in data that would be generated by any further practical investigation.	Relate explanation of patterns in results to scientific knowledge and understanding. Make generalisations about what evidence indicates.	Identify how much to trust the results and justify decisions. Explain why similar enquires yield different results. Recognise the limitations of the evidence. Evaluate the effectiveness of their working methods, making suggestions for improving them.

- Taken from STEM Learning Limited.
STEM Learning operates the National STEM learning centre and Newtownk, alongside other projects supporting STEM Education.

