



The T-RF Science Disciplinary Progression



	F1 Nursery	F2 Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning, enquiring and making predictions	Ask questions about why things might happen and how things work. Try things out With help suggest what will happen; what is the best/ worst? To use all their senses in hands-on exploration	Ask questions to clarify their understanding about the world around them Try things out Answer what will happen; what is the best/ worst? Understand ‘why’ questions, like: “Why do you think the caterpillar got so fat?”	Use everyday language and simple scientific words to ask or answer a scientific question using a range of question stems: ‘Why, what, how?’ Recognise the difference between a statement and a question. Test ideas suggested to them Begin to say what might happen in an investigation. To be aware of famous scientists.	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. Make predictions ‘I think.....might happen’ and listen to the ideas of others To be able to talk about the work of a particular scientist.	Use ideas to pose questions, independently, about the world around them and based on prior learning and life experiences Make predictions and begin to explain with a reason (cause and effect) Study the work of a particular scientist.	Suggest relevant questions and know that they could be answered in a variety of ways, including using secondary sources such as ICT. Make predictions and give a reason using simple scientific vocabulary. Study the work of a particular scientist.	Raise different types of scientific questions, and hypotheses. Begin to understand that scientific ideas change over time so some books and secondary source information may not be relevant anymore. Make predictions and support these with an explanation of thinking using straight forward scientific evidence. Study the work of a particular scientist.	Ask questions and offer own ideas for enquiry which have a clear scientific purpose and hypotheses. Make accurate predictions based on scientific knowledge and understanding from previous investigations. Study scientific evidence that has been used to refute or support ideas or an argument. Study the work of a particular scientist. Recognise scientific questions that do not yet have definitive answers.
Planning a Fair Test		Sometimes suggests next steps in a plan Try out different approaches suggested to them Use equipment provided	Suggests next steps or follow steps in a plan With support, identifies questions that can be answered in different ways by practical methods or not answered Share equipment with others and/or use what is provided Review own work and, with support, recognise some of the difficulties encountered.	Sort questions into those that can be answered by trying it out and those that cannot Spot when a plan will lead to unfair results; recognizes hazards Use provided equipment to carry out an experiment	Produce a written plan of what to do include equipment and resources Know that there are different ways of answering scientific questions Using suggestions, choose equipment to help carry out an investigation Recognise hazards and explain their dangers	Produce a written plan of what to do including equipment and resources referring to fair testing and safety With support, knows when to answer a question by using a fair test and when evidence should be collected in other ways Choose equipment to help carry out an investigation Recognises hazards and explain their dangers and ways they can be reduced	With support produce a plan that includes: question; prediction; variables (things to keep the same/ things to change); method; results; analysis; evaluation With support knows when to answer a question by using a fair test and when evidence should be collected in other ways, including secondary sources Choose equipment to help carry out an investigation and use it effectively Identify hazards and explain their dangers and how the hazard can be minimized.	Produce a plan that includes: question; prediction; variables (things to keep the same/ things to change); method; results; analysis; evaluation Identifies an appropriate approach to answer a scientific question Continue to choose equipment to help carry out an investigation and use it effectively Identify hazards and explain their dangers and how the hazard can be minimized.

Observing and measuring	Talk about what they see using a wide vocabulary. Explore how things work	Explore the natural world around them, making observations and drawing pictures of animals and plants. Describe what they see, hear and feel while they are outside Explain how things work and why they might happen	Observe objects, materials and living things and describe what they see. (eg with a magnifying glass) With support, takes some non-standard measurements in a practical task.	Make relevant observations and record these in order to answer questions using simple scientific vocabulary.(eg in a simple diagram) Use non-standard and simple equipment, such as hand lenses or egg timers to take measurements.	Make decisions about what to observe during an investigation. Make decisions about how long to observe for and what standard equipment to use for measuring quantities such as temperature and volume (e.g. cm, m, kg, g, ml, l and OC) Use flow charts to record observations, labelled with vocabulary.	Make systematic and careful observations. Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.	Decide what we observe and why. Choose which equipment is best suited and why. Take measurements using a range of scientific equipment with increasing accuracy and precision. Repeat when necessary	Make a series of relevant observations Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. Decide what measurements to take from observations and how to record the data. Repeat sets of observations or measurements, where appropriate, selecting suitable ranges and intervals, to give sufficient depth of evidence.
Recording and reporting findings		Use drawings to present evidence and with support use prepared simple tables and charts .	Begin to record simple data using prepared tables and charts, including ICT forms. Talk about findings and explain what they have found out.	Gather data, record and talk about their findings, in a range of ways, using simple scientific vocabulary Use simple tally charts and pictograms. Begin to notice simple patterns in results.	Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts.	Create own tables and bar charts and uses a line graph with support. Has increasing accuracy in presenting results Write a simple explanation to describe processes in more detail.	Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models. Creates own charts including those for repeated readings Write an explanation to describe processes in more detail using scientific vocabulary.	Choose the most effective approach to record and report results, linking to mathematical knowledge. Draws charts, graphs and line graphs independently. Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.

Concluding	With support describe a simple observation	Responds to prompts about cause and effect in simple situations	Describe simple observations made and with support make a simple comparison	Describe what happened making comparisons where appropriate.	Make a general statement about simple patterns they notice in a set of results.	Make a statement about simple patterns in results	With support, describe relationships identified, linking both factors and describing whole relationships in comparative terms	Describe relationships identified, linking both factors and describing whole relationship in comparative terms
	Show awareness of changes	With support recognizes some of the difficulties encountered	With support say whether what happened was expected	With support, order results where necessary	With some support, provide explanations for simple patterns in results, referring to everyday experiences when explaining reasoning.	Make further predictions, from results, in simple contexts	With support, make further predictions from results and use these to test out the suggested patterns in the relationship studied.	Make further predictions from results and use these to test out the suggested patterns in the relationship studied
	Notice and comment on patterns		With support recognize cause and effect in simple situations	Say whether what happened was expected. With support, make further predictions from results		Provide an explanation for simple patterns in results		Relate patterns in results to scientific knowledge, where appropriate.
			Look closely at similarities and differences, patterns and change	Use the appropriate vocabulary for the topic area		Use the appropriate vocabulary for discussion		Regularly use the most appropriate scientific vocabulary
			With support recognize some of the difficulties encountered	Recognise cause and effect in most simple situations	Use appropriate vocabulary for the topic area	Recognise, with support, the limitations of their evidence	Identify how much to trust results	Use appropriate scientific vocabulary to ask and answer questions.
			Begin to explain what has been seen and reasons for it	Use appropriate vocabulary for the topic area	Recognise the difficulties encountered	Suggest more than one way that an investigation can be improved.	Suggest reasons why similar enquiries give different results. Consider the need of repeated measurements	Identify how much to trust results
				Respond to suggestions of how to improve an investigation – with prompting	With support suggest how the enquiry might be improved		Suggest ways to improve an investigation supported with reasons why	Suggest reasons why similar enquiries give different results
								Recognise some of the limitations of their evidence
								Make practical suggestions about how working methods could be improved.

Grouping and classifying	Sort a set of objects by two criteria, e.g., big and small	Group items according to their own criteria and give a reason for their decision.	Group objects into simple categories. E.g., manmade and natural. They can verbally explain the differences on the basis of their properties.	Group and classify objects into categories. They should be able to use simple scientific language to explain the differences.	Decide on the criteria to sort objects into. E.g., by colour, texture, type, weight etc.	Begin to group objects with more than one variable using a Venn diagram.	Learn more about different types of classification and to classify, sort and describe how their objects have been sorted.	Use the classification system of Linnaeus to group vertebrates and invertebrates and then sort them further into mammals, amphibians etc. and then explain why they have sorted them into those categories.
	Mark -make to record.	Notice and talk about features and properties, beginning to compare.	Use prepared simple tables and charts, including ICT forms with support.	Use prepared tables and block graphs, including ICT forms.	Explain simply how the objects were sorted.	Start to understand terms such as properties and why an object might belong to more than one group.	Understand that there may be more than one way to group or classify an object and to decide independently or with some support which method to use.	Decide on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables.
		Draw pictures relating to their context.			Use very simple classification keys.	Use a very simple classification key.		
					Gather, record, classify and presents data in a variety of ways to help in answering questions.			