Scientific Enquiry Progression of Skills at Tannery Drift First School

Skill	Early Years	Year 1	Year 2	Year 3	Year 4
Asking questions 	**Being curious and starting to ask questions**	**Asking Questions**	**Asking Questions**	**Asking relevant questions**	**Asking relevant questions**
	Development Matters: Age 3&4 • Discuss and explore with adults modelling questioning. **Development Matters: Age 4&5** • While exploring the world adults support children in asking questions. **Early Learning Goal** • Developing the skill of questioning to further their own knowledge.	• While exploring the world, the children ask questions when prompted. Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario.	• While exploring the world, the children develop their ability to ask questions Where appropriate, they answer these questions. • The children answer questions developed with the teacher.	* The children independently ask questions and begin to consider their prior knowledge. They are supported to use a range of question stems. * Where appropriate, they answer these questions.	* The children consider their prior knowledge when asking questions. They independently use a range of question stems. * Where appropriate, they answer these questions.
Performing tests 	**Performing simple tests and using equipment**	**Performing simple tests and using equipment**	**Performing simple tests and using equipment**	**Setting up enquiries and choosing equipment**	**Setting up enquiries and choosing equipment**
	Development Matters: Age 3&4 • Using to senses to explore natural and man-made materials and make environmental observations. Through carefully constructed discussion with adults, children broaden their knowledge. **Development Matters: Age 4&5** • Adults provide open ended lines of questioning enabling children to discuss their senses using learnt vocabulary. • Through carefully selected play resources children develop the skill of critical thinking by mixing and constructing. **Early Learning Goal** • Children combine and explore a variety of resources testing and discussing the outcomes through trial and error.	• The children are shown that there are different ways in which questions can be answered. • The children use practical resources provided to gather evidence to answer questions generated by the teacher. * They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	• 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. • 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.	• Given a limited choice of resources, the children decide for themselves which would be best to gather evidence to answer the question * The children follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	• Select from a range of practical resources, the children decide for themselves how to gather evidence to answer the question. * The children follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.
Fair Testing 		**Saying why a test is unfair**	**Saying why a test is unfair**	**Setting up fair tests (with help)**	**Setting up fair tests (with help)**
	Development Matters: Age 3&4 • Children are exposed to the language, more and fewer than. **Development Matters: Age 4&5** • Children are exposed to the language, equal number.	* Whilst carrying out tests, the children are introduced as to when a test is fair or not fair.	* Whilst carrying out comparative tests, the children can say if a test is fair or unfair and given reasons.	* The children are guided to set up tests where one variable changes but all other variables remain the same.	* The children set up tests where one variable changes but all other variables remain the same. * With support, they identify all the different variables that need

	Early Learning Goal • Children understand how quantities can be distributed equally.			* When prompted, they think about whether the test would still be fair if other variables changed.	to remain the same to make the test fair.

Observing and Measuring 	**Using senses to observe and look closely and noticing changes**	**Observing and measuring**	**Observing and measuring**	**Carefully observing and accurately measuring**	**Carefully observing and accurately measuring**
	Development Matters: Age 3&4 • Children uses their senses to make observations and comparisons. • Children use the vocabulary full and empty to measure. • Children will learn the names and simple features of plants and animals they can see. **Development Matters: Age 4&5** • Children build upon their senses to make detailed observations. • Children use non-standard measures to compare weight, length and capacity. **Early Learning Goal** • Children observe some important processes and changes in the natural world around them, including the seasons and changing states of matter. They measure and compare using non-standard units.	• The 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 to make their observations. • They begin to take measurements, initially by comparisons.	• The 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 to make their observations. • They are guided to take measurements, using comparisons and using non-standard units.	• The children make careful observations. • They use a range of equipment for measuring length and time. They use standard units for their measurements. * The children observe and record change over time	• 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. * The children observe, record and measure change over time.
Using Secondary Sources 	**Learning information from books, videos, the internet, people and photos**	**Using books, videos, the internet, people and photos to find answers**	**Using books, videos, the internet, people and photos to find answers**	**Recognising when to use other sources of information to find answers**	**Recognising when to use other sources of information to find answers**
	Development Matters: Age 3&4 • Adults model to children how to find out information though books, the internet and asking other people. **Development Matters: Age 4&5** • Children use books of their choice to develop their own knowledge and begin to ask questions. **Early Learning Goal** • Children are able to draw on broad vocabulary learnt	* The children are shown videos, relevant websites and photos and answer simple questions based on what they find out.	* The children are shown videos, relevant websites and photos and answer questions based on what they find out.	* The children recognise when secondary sources are required to answer questions that cannot be answered through practical work and are directed to relevant books, websites, photos and people.	* The children recognise when secondary sources are required to answer questions that cannot be answered through practical work, they decide which type of source would be best and are supported to find relevant books, websites, photos and people.

	through the books they share in class. • Children are shown photos, videos and websites linked to their interests.				

Recording Information 	**Making simple records of what I have done and noticed**	**Recording information**	**Recording information**	**Choosing how to record information – tables, tally charts, Venn and Carroll diagrams and bar charts**	**Choosing how to record information – tables, tally charts, Venn and Carroll diagrams and bar charts**
	Development Matters: Age 3&4 • Adults model recording through photographs which are shared and discussed with the children. • Children explore mark making through leaf rubbings and observational drawings. **Development Matters: Age 4&5** • Children are encouraged to add a label to their pictures. • Children uses devices to take photographs of things they notice. • Children add detail to their observational drawings. **Early Learning Goal** • Children write simple phrases and sentences to enhance their observational drawings.	• The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements as a class using prepared tables, pictograms, tally charts and block graphs. • With support, they classify using simple prepared tables and sorting rings.	• 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 prepared tables and sorting rings.	• The children are shown that there are different ways 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 using templates, if required, to which they can add headings. * They record classifications using tables and Venn diagrams	• The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing and sometimes present the same data in different ways in order to help with answering the question. * They record their measurements e.g. using tables, tally charts and bar charts. * They record classifications e.g. using tables, Venn diagrams, Carroll diagrams.
Looking for Patterns 	**Sorting and matching things / Finding things that are similar or different**	**Looking for patterns – sorting and grouping**	**Looking for patterns – sorting and grouping**	**Looking for patterns – identifying and classifying**	**Looking for patterns – identifying and classifying**
	Development Matters: Age 3&4 • Children explore pattern, shape and colour and begin to sort objects using these categories. **Development Matters: Age 4&5** • Children explore pattern, shape and colour by recreating repeating patterns. •Children use comparative language such as bigger, smaller. **Early Learning Goal** •Children look for patterns and comparison between contrasting environments. •Children can notice and comment on numerical patterns.	* The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	* The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	* The children interpret their data to generate simple comparative statements based on their evidence. * They begin to identify naturally occurring patterns and causal relationships.	* The children interpret their data to generate simple comparative statements based on their evidence. * They begin to identify naturally occurring patterns and causal relationships.

	Talking about what I have done and noticed	Explaining results – saying what we found out	Explaining results – saying what we found out	Explaining results – drawing conclusions and using results	Explaining results – drawing conclusions and using results
Explaining Results 	**Development Matters: Age 3&4** • Adults asks questions about the world around us encouraging the children to discuss and answer. **Development Matters: Age 4&5** • Children draw on their own knowledge to answer and explain. **Early Learning Goal** • Children are able explain their knowledge and understanding of scientific processes such as the seasons and changes of states of matter.	• The children are guided to use their experiences of the world around them to suggest answers to questions. * They are supported to relate these to their evidence e.g. observations they have made or information they have gained from secondary sources.	• The 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	* The children are supported answer their own 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. *They make links based on their evidence and current subject knowledge. * They identify how they would do it differently if they repeated the enquiry. • Following a scientific experience, the children ask further relevant questions.	* The 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. * They draw conclusions based on their evidence and current subject knowledge. * They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. * Children use their evidence to suggest values for different items tested using the same method. • Following a scientific experiment, the children ask further questions which can be answered by extending the same enquiry