Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

	Questioning and using different types of enquiry	Planning/ setting up scientific enquiries, fair and comparative tests	Observations and measures	Gathering and recording data	Using evidence	Identify similarities, differences or changes related to simple scientific ideas	Concluding	Reporting
Y1	Explore the world around them; ask simple questions. (E.g what something is, how they are similar, how they work, which one is better…) Where appropriate, answer these questions. Answer questions developed with the teacher, often through a scenario (E.G. solving a problem for a character in a book or from real life) Know that they can be answered in different ways.	Carry out tests to classify, comparative tests, pattern seeking enquiries and make observations over time.	Explore the world around them. Observe closely to help with identification, comparison and noticing change.	Take measurements by simple observed comparisons.	Ask people questions. Begin to use simple secondary sources.	With help, sort and group objects, materials and living things using their own criteria Classify using sorting rings.	With help, recognise "biggest and smallest", "best and worst" from their data.	With help, record and communicate findings in a range of ways and begin to use simple scientific language.

Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

Y2	Explore the world around them; ask simple questions. (E.g what something is, how they are similar, how they work, which one is better…) Where appropriate, answer these questions. Answer questions developed with the teacher, often through a scenario (e.g.. solving a problem for a character in a book or from real life) Begin to recognise different ways in which they might answer scientific questions.	Experience different types of scientific enquiry, including practical activities- tests to classify, comparative tests, pattern seeking enquiries adn make observations over time. Carry out simple tests. Be involved in planning how to use resources provided to answer the questions.	Observe closely using simple aids such as magnifying glasses and egg timers. Observe closely to help with identification, comparison and noticing change. Make some simple observations over time (e.g. how plants grow)	Take measurements by comparisons and using non standard units. May begin to use simple whole units (e.g. cm) Record simple data using photos, labelled diagrams and writing. Record measures in prepared tables, pictograms, tally charts and bar charts.	Ask people questions and use simple secondary sources. Use observations and ideas to suggest answers to questions.	Use simple features to compare objects, materials and living things, using own criteria and sometimes others criteria. Use simple secondary sources such as identification sheets to name living things. Classify using sorting rings and prepared tables. With guidance, begin to notice patterns and relationships.	Recognise "biggest and smallest", "best and worst" from their data.	With help, record and communicate findingss in a range of ways and begin to use simple scientific language.

Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

Y3	Ask relevant scientific quesitons. Consider prior knowledge when asking questions. Answer questions posed by the teacher. Become familiar with the 5 different types of scientific enquiry. Identify the type of enquiry they have chosen to answer their question.	Experience different types of scientific enquiry, setting up fair and comparative tests with advice from the teacher. Help to make decisions about what observations to make, how long for and the type of simple equipment that might be used. Select from a small range of practical resources to gather evidence to answer questions raised by themselves or the teacher.	Make systematic and careful observations using standard measures. Use equipment to measure length, time, light, capacity. Learn how to use electronic timers and light meters.	Sometimes decide how to record and present evidence. Record using: photos, pictures, labelled diagrams, writing. Record measures in tables and bar charts. Record identifying and classifying in venn diagrams and simple comparison tables.	Answer their own and others questions based on observations/ measurements they have taken or secondary sources they have used. With support, answers are consistent with the evidence.	With support, interpret their data to generate simple comparative statements based on their evidence. With support, identify naturally occurring patterns and causal relationships.	Draw conclusions based on their evidence and current subject knowledge. Use their evidence to suggest values for different items tested using the same method. Identify ways in which they adapted their method as they progressed. With support, following an enquiry, ask further	Use relevant scientific vocabulary to discuss their ideas Communicate their findings to an audience both orally and in writing using appropriate scientific vocabulary.

Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

Y4	Independently use question stems. Decide for themselves how to gather evidence to answer questions Recognise when secondary sources can be used to answer questions that can't be answered through practical work.	Experience different types of scientific enquiry, setting up fair and comparative tests . Help to make decisions about what observations to make, how long for and the type of simple equipment that might be used Select from a range of practical resources to gather evidence to answer questions raised by themselves or the teacher. Follow their plan to carry out different types of practical enquiry.	Make systematic and careful observations. Use equipment to measure: time, temperature, capacity, sound. Learn how to use thermometers and sound meters.	Sometimes decide how to record and present evidence. Begin to draw their own tables, deciding on how many cells are needed. Record using: photos, pictures, labelled diagrams, writing. Record measures in tables and bar charts. Record identifying and classifying in venn diagrams, simple branching diagrams and keys. With support, present the same data in different ways	Answer their own and others questions based on observations/ measurements they have taken or secondary sources they have used. Answers are consistent with the evidence.	Begin to independently interpret their data to generate simple comparative statements based on their evidence. Identify naturally occurring patterns and causal relationships.	Draw conclusioins based on their evidence and current subject knowledge. Identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. Use their evidence to suggest values for different items tested using the same method. With support, following an enquiry, ask further	Use relevant scientific language to discuss their ideas. Communicate their findings appropriate to different audiences both orally and in writing using appropriate scientific vocabulary.

Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

Y5	Independently ask scientific questions either after an enquiry or from a scientific experience. Choose a type of enquiry to carry out. Begin to justify their choice. Recognise when secondary sourcces should be used to answer questions that cannot be answered through practical work.	Given a wide range of resources, the children decide for themselves how to gather evidence to answer questions. Recognise when and how to set up comparative and fair tests. Recognise variables. With support, control them. Carry out fair tests, deciding what observations or measurements to make over time and for how long.	Select measuring equipment to give the most precise results (e.g. newton meter with the most appropriate scale) With support, decide whether they need to take repeat measures, increase the sample size, adjust the observation period or frequency, or check further secondary sources in order to get accurate data.	Decide how to record and present evidence. Record using: annotated photos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. Record measures in tables, tallly charts, bar charts and line graphs. Record classifications using tables and venn diagrams. With support, present the same data in different ways in order to help with	Answer their own and others questions based on observations/ measures they have made and understanding gained from sec sources.	With support, decide whether evidence from other sources (e.g. other groups, sec sources) refutes or supports their ideas. Talk about how new discoveries change scientific understanding.	Identify causal relationships and patterns in the natural world from their evidence. With support, identify results that do not fit the overall pattern. Explain their findings using their subject knowledge. Evaluate the choice of method used and the control of variables.	Use relevant scientific language to discuss, communicate and (begin to) justify their scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions and causal relationships.

Progression of Working Scientifically Skills

Kindness Enjoyment Achievement

Y6	Independently ask scientific questions and choose a type of enquiry to carry out. Justify their choice. Recognise when secondary sourcces should be used to answer questions that cannot be answered through practical work.	Carry out fair tests, dediding what resources they need and what observations or measures to make over time and for how long. Look for patterns and relationships using a suitable sample- understand that the sample should be appropriate for the topic and that at least 16 pieces of data are needed to see a pattern (e.g. finding a pattern between running and heart rate or length of leg compared to height). Independently recognise and	Select measuring equipment to give the most precise results (e.g. newton meter with the most appropriate scale) Decide whether they need to take repeat measures, increase the sample size, adjust the observation period or frequency, or check further secondary sources in order to get accurate data.	Decide how to record and present evidence. Record using: annotated photos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. Record measures in tables, tallly charts, scatter graphs and line graphs. Record classifications using classification keys and venn diagrams. Independently present the same data in different ways to help with answering the	Answer their own and others questions based on observations/ measurements they have made and understandings they have gleaned from research.	Discuss whether evidence from other groups/ sec sources and their own understanding supports or refutes their answer. Identify how their scientific ideas have changed due to new evidence they have gathered.	Identify causal relationships and pattersn in the natural world from their evidence. Identify results that do n ot fit the overall pattern. Explain findings using their subject knowledge. Identify any limitations that reduce the trust they have in their data. Evaluate the credibility	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results.