Science – Progression of skills (Working Scientifically) – Mevagissey Primary School

Science: Autumn Spring Summer

Curriculum Intent:

Progression of Enquiry Skills from Key Stage One to Key Stage Two

During Key Stage One and Key Stage Two

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically Planning	Ask simple questions based on exploration of the world around them. Respond to prompts by making some suggestions about how to find an answer.	Ask simple questions and recognise that they can be answered in different ways. Use simple secondary sources to find answers. Talk about similarities and differences	Respond to suggestions of how to answer questions about the world around them and ask effective and relevant questions. Recognise when and how secondary sources should be used. Discuss the most appropriate type of scientific enquiry to use to answer questions. Recognise that questions can be answered in different ways	Raise own relevant questions and use different types of scientific enquiry to answer questions. Recognise when and how secondary sources should be used. Make decisions about the most appropriate type of scientific enquiry to answer questions. Recognise and identify the factors needed to make a test 'fair'. Identify the factors in a simple 'fair' test that we will measure (variables) and keep the same (control).	Explore ideas and raise a range of relevant questions. Recognise which secondary sources are most useful and begin to recognise the difference between fact and opinion. Select and plan the most appropriate type of scientific enquiry for answering a scientific question. Decide which variables to measure change and keep the same. Demonstrate how to change one factor (variable) whilst keeping others the same (control). Identify and use an appropriate unit to measure variables effectively.	Explore ideas and raise a range of different kinds of relevant questions based on accurate scientific principles. Recognise and use the secondary sources that are most useful separating opinion from fact. Select and plan accurately the most appropriate type of scientific enquiry for answering scientific questions. Decide which variables to measure change and keep the same. Demonstrate how to change one factor (variable) whilst keeping others the same (control). Identify and use an appropriate unit to measure variables effectively.
Working Scientifically Observation & Recording	Respond to prompts by making some suggestions about how to make an observation. Use senses and simple equipment to make observations. Talk about what happens and record using words and pictures Begin to record data in simple templates.	Carry out instructions for a simple investigation. Talk about and record what is seen and observed Take accurate measurements using simple equipment, e.g. cm and scales with one interval. Begin to identify and classify data and information. Record data using simple charts, tables and block graphs.	Describe what happens when taking part in simple investigations/fair tests. Begin to make decisions about what to observe, how long to observe for. Read simple scales and take accurate measurements using standard units, e.g. Thermometers, graduated beakers and data loggers.	Recognise when to set up simple practical enquires, comparative and fair tests. Make decisions about what to observe, how long to observe for, and the type of equipment needed. Make systematic and accurate observations and measurements. Use a range of measuring equipment appropriately including thermometers, data loggers etc.	Recognise when and how to set up comparative and fair tests and begin to explain which variables need to be controlled and why. Make decisions about what to observe, what measurements to use and how long to measure them for. Choose appropriate equipment to make measurements, using standard units of measure and simple scales accurately and with precision. Gather, record, classify and present a range of data in different ways.	Recognise when and how to set up comparative and fair tests and clearly explain which variables need to be controlled and why. Make independent and well-founded decisions about what to observe, what measurements to use and how long to measure them for. Choose the most appropriate equipment (with a variety of intervals and units) to make measurements and explain how to use accurately and with precision.

			Talk about criteria for grouping, sorting and classifying, use simple keys. Record data using a range of charts, tables and block graphs and labelled diagrams.	Gather, record, classify and present data in a variety of ways to help answer questions. Use and construct increasingly complex tables, line graphs and keys to record findings.	Record data and results using scientific diagrams and labels, classification keys, tables, and bar and line graphs	Gather, record, classify and present data in a wide range of ways. Use a wide range of methods to record data including line graphs, scientific diagrams, classification keys, scatter, bar and line graphs etc.
Working Scientifically Conclusions	Begin to use simple features to compare objects, materials and living things. Identify what has changed when observing objects, living things or events. Talk in simple terms about what might happen based own experiences.	Talk about describe and sort simple similarities and differences, noting patterns and relationships. Record and communicate findings in a range of ways using simple scientific language. Talk about what has been found out and how it was discovered. Talk in simple scientific terms about what might happen and why? (prediction)	Begin to look for patterns and decide what data to collect to identify them. Talk about data collected from observations and measurements, using drawings, labelled diagrams, notes, simple tables and keys, standard units and simple equipment including data loggers. Begin to draw and express some conclusions, by looking at changes, patterns, similarities and differences in data. Begin to identify new questions arising from data, make new predictions for new values within or beyond the data collected	Look for patterns and decide on the range of data needed to identify them. Collect data from observations and measurements, using notes, simple tables and standard units, using drawings, labelled diagrams, keys, bar charts and tables. Identify changes, patterns, similarities and differences in data in order to draw conclusions. Suggest improvements and identify new questions arising from data, make new predictions for new values within or beyond the data collected. Report on findings from enquires including oral and written explanations	Decide how to record data from a choice of familiar approaches. Use relevant scientific language to communicate findings and justify scientific ideas. Look for different relationships in data and begin to identify evidence that refutes or supports ideas. Make practical suggestions about how working methods could be improved. Use results to identify when further tests and observations might be needed. Make general statements such as: 'the hotter the water, the faster the sugar dissolves'	Decide in detail how to record data accurately from a choice of familiar approaches. Use relevant scientific language and illustrations to discuss, communicate and justify findings and scientific ideas. Look for a range of different relationships in data and begin to identify evidence that refutes or supports ideas. Identify when tests need to be repeated in order to attain reliable results. Use test results to make predictions and set up further comparative and fair tests. Make increasingly measured general statements such as: 'As the temperature increases the mass of the sugar which can be dissolved increases.
Vocabulary	Use some simple scientific language. Begin to use some science words. Use comparative language with support.	Use simple scientific language and some science words. Use comparative language – bigger, faster etc	Begin to use some scientific language to talk and, later, write about what they have found out. Begin to use relevant scientific language. Begin to use comparative and superlative language.	Use some scientific language to talk and, later, write about what they have found out. Use relevant scientific language. Use comparative and superlative language	Begin to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Read, spell and pronounce scientific vocabulary correctly. Begin to use a range of scientific vocabulary, with confidence. Beginning to use conventions such as trend, rogue result, support prediction and -er word generalisation when describing simple processes. Begins to use the correct science vocabulary.	Read, spell and pronounce scientific vocabulary correctly. Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Confidently uses a range of scientific vocabulary. Can use conventions such as trend, rogue result, support prediction and -er word generalisation. Use scientific ideas when describing simple processes. Can use the correct science vocabulary