Progression of skills – Working Scientifically

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|  | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5  | Year 6  |
| Researching using secondary sources  | Pupils explore the world around them.  | Gathering specific information from one simplified, specified source. | Gathering specific information from a variety of sources. | Gathering answers to open-ended questions from a variety of sources. |
| Pattern Seeking  | Show awareness of change, while exploring the natural world.  | Beginning to use simple measuring equipment to make approximate measurements. Reading simple numbered scales.Using non-standard units to measure and compare. Beginning to use standard units to measure and compare. | Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. | Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. |
| Observing over time  | Show awareness of change, while exploring the natural world. Use simple descriptions.  | They make careful observations to support identification, comparison and noticing change.Children explore the world around them. | Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. | Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. |
| Identifying, classifying and grouping  | Choose how to classify objects according to their properties.  | Grouping based on visible characteristics. Organising questions to create a simple classification key. | Grouping based on visible characteristics and measurable properties. Populating a pre-prepared branching and number key. Choosing appropriate questions for classification keys. | Grouping in a broader range of contexts. Organising the layout of number and branching keys. Formulating appropriate questions for classification keys. |
| Comparative and Fair Testing  | With support, beginning to recognise similarities and differences between the natural world and contrasting environments.  | Ordering a simple method.Beginning to recognise whether a test is fair. With support, deciding if suggested observations are suitable. | Beginning to select from options which variables will be changed, measured and controlled. Suggesting what observations to make and how long to make them for.Planning a simple method, verbally and in writing. Beginning to write a simple method in numbered steps. Selecting and beginning to decide what simple equipment might be used to aid observations and measurements. | Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Writing a method including detail about how to ensure control variables are kept the same.Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. |
| Communicating findings  | Pupils can talk about that they see, hear and feel. With support, use a prepared table to record findings.  | Using a prepared table to record results including: Numbers, Simple observations, Tally frequency.Representing data using pictograms and block charts.Drawing and labelling simple diagrams. | Representing data using bar charts. Drawing bars with greater accuracy. Reading the value of bars with greater accuracy. Beginning to draw more scientific diagrams by: using some standard symbols, drawing in 2D to produce simple line diagrams, labelling with more scientific vocabulary. | Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. Drawing scientific diagrams by: Using a wider range of standard symbols, drawing with increasing accuracy, labelling with a broader range of scientific vocabulary, annotating diagrams to explain concepts and convey opinions. |
| Analysing and drawing conclusions | Make predictions and use simple language to explain what happened.  | Beginning to recognise when results or observations do not match their predictions.Using their results to answer simple questions. | Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends.  | Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. |
| Evaluating  | Use simple language to describe what happened.  | Beginning to recognise whether a test is fair or not. | Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by reflecting on: Results that do not fit a pattern (anomalies), the quality of results (accurate measurements and maintaining control variables). Beginning to identify new questions that would further the enquiry. | Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by also reflecting on: Accuracy (human error with equipment), Reliability (repeating results), Sources of information (e.g. websites, books). Posing new questions in response to the data, that would extend the enquiry. Deciding what data to collect to further test direct relationships. |
| Posing Questions  | Exploring the world around them and raising their own simple questions. Ask and answer ‘how’ and ‘why’ questions, such as how things happened and how things work. | Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions of how to answer their questions. | Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. | Raising questions throughout the enquiry process. Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification |