**Shortlanesend**

**Working Scientifically Progression Overview – Science**

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| **Working Scientifically Skills:** | **Asking Questions** | **Planning and setting up different types of enquiries** | **Performing tests****(Enquiries)** | **Using equipment** | **Observing and measuring** | **Identifying and classifying****(Enquiries)**  | **Gathering and recording data** | **Reporting, presenting and communicating****data/findings** |
| **EYFS** | **Playing & Exploring:** Show curiosity about objects, events and people Questions why things happen  | **Playing & Exploring:** Take a risk, engage in new experiences and learn by trial and error.**The World** Comments and asks questions about aspects of their familiar world such as the place wherethey live or the natural world**Creating & Thinking Critically**: Make links and notice patterns in their experience | **Playing & Exploring:** Engaging in open-ended activity.**Creating & Thinking****Critically:** Find ways to solve problems / find new ways to do things / test their ideas | **ELG-Self Confidence & Self Awareness:** Choose the resources they need for their chosen activities.**ELG-Moving & Handling:** Handle equipment and tools effectively. | **The World** losely observes what animals, people and vehicles do.**Playing & Exploring:** Use senses to explore the world around them | **Creating & Thinking****Critically:** Develop ideas of grouping, sequences, cause and effect.**ELG-The World:** Know about similarities and differences in relation to places, objects, materials and living things | **Being Imaginative-** Create simple representations of events, people and objects.**ELG-Speaking:** Develop their own narratives and explanations by connecting ideas or events.**Understanding**Builds up vocabulary that reflects the breadth of their experience. | **ELG- Understanding**:Answer how and why questions about their experiences.**ELG-The World:** Make observations of animals and plants and explain why some things occur, and talk aboutchanges |
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| **KS1** | Explore the world around them and raise their own simple questions.  | Begin to recognise different ways in which they might answer scientific questions. Ask people questions and use simple secondary sources to find answersWith guidance, they should begin to notice patterns and relationships. | Experience different types of science enquiries, including practical activities.Carry out simple tests.  | Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data.  | Observe closely using simple equipment.With help, observe changes over time. | Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying). | Record simple data. With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language. | Use their observations and ideas to suggest answers to questions.Talk about what they have found out and how they found it out. |
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| **LKS2** | Raise their own relevant questions about the world around them. | Start to make their own decisions about the most appropriatetype of scientific enquiry they might use to answer questions.Recognise when and how secondary sources might help them to answer questions that cannot be answered through practicalinvestigations.Begin to look for naturally occurring patterns and relationshipsand decide what data to collect to identify them. | Should be given a range of scientific experiences including different types of science enquiries to answer questions.Set up simple practical enquiries, comparative and fair tests.Recognise when a simple fair test is necessary and help to decidehow to set it up. | Take accurate measurements using standard units learn how to use a range of (new) equipment, such as data logger and thermometers appropriately. | Make systematic and careful observations.Help to make decisions about what observations to make, how long to make them for and the type of simple equipment thatmight be used. | Talk about criteria for grouping, sorting and classifying; and use simple keys. | Collect and record data from their own observations and measurementsin a variety of ways: notes, bar charts and tables,standard units, drawings, labelled diagrams, keys and help tomake decisions about how to analyse this data. Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriatefor different audiences, including oral and written explanations,displays or presentations of results and conclusions. | With help, pupils should look for changes,patterns, similaritiesand differences in their data in order to draw simple conclusionsand answer questions.With support, they should identify new questions arising fromthe data, making predictions for new values within or beyondthe data they have collected and finding ways of improving whatthey have already done. |
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| **UKS2** | Use their science experiences to explore ideas and raise different kinds of questions. | Select and plan the most appropriate type of scientific enquiryto use and answer scientific questions.Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.Look for different causal relationships in their data and identifyevidence that refutes or supports their ideas. | Talk about how scientific ideas have developed over time. Recognise when and how to set up comparative and fair testsand explain which variables need to be controlled and why. | Choose the most appropriate equipment to make measurementswith increasing precision and explain how to use it accurately.Take repeat measurements where appropriate. | Make their own decisions about what observations to make, what measurements to use and how long to make them for. | Use and develop keys and other information records to identify,classify and describe living things and materials, and identifypatterns that might be found in the natural environment. | Decide how to record data and results of increasing complexityfrom a choice of familiar approaches: scientific diagrams andlabels, classification keys, tables, scatter graphs, bar and linegraphs.Use relevant scientific language and illustrations to discuss,communicate and justify their scientific ideas,use oral and written forms such as displays and other presentationsto report conclusions, causal relationships and explanationsof degree of trust in results. | Identify scientific evidence that has been used to support orrefute ideas or arguments.Use their results to make predictions and identify when furtherobservations, comparative and fair tests might be needed. |
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| **KS3** | Ask questions and develop a line of enquiry based on observations of the real world, alongsidePrior knowledge and experience. | Select, plan and carry out the most appropriate types of scientific enquiries to test predictions,including identifying independent, dependent and control variables, where appropriate. Make predictions using scientific knowledge and understanding.Interpret observations and data, Identifypatterns and using observations, measurements.and data to draw conclusions | Understand that scientific methods and theories develop as earlier explanations are modifiedto take account of new evidence and ideas, together with the importance of publishing resultsand peer review. | Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety.Evaluate the reliability of methods and suggest possible improvements.Evaluate risks.Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility.Apply sampling techniques.  | Understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry)chemical nomenclature. |  | Make and record observations and measurements using a range of methods for differentInvestigations.Present observations and data using appropriate methods, including tables and graphs | Apply mathematical concepts and calculate results.Use and derive simple equations and carry out appropriate calculations.Undertake basic data analysis including simple statistical techniques.Present reasoned explanations, including explaining data in relation to predictions and hypotheses.Evaluate data, showing awareness of potential sources of random and systematic error.Identify further questions arising from their results. |