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| **Science: Progression of Skills Map** |
|  | **KS1** | **LKS2** | **UKS2** |
| **Working scientifically** | • asking simple questions and recognising that they can be answered in different ways;• observing closely using simple equipment;• performing simple tests;• identifying and classifying;• using their observations and ideas to suggest answers to questions;• gathering and recording data to help in answering questions. | • asking relevant questions and using different types of scientific enquiries to answer them;• setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes; • using straightforward scientific evidence to answer questions or to support their findings. | • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; • using test results to make predictions to set up further comparative and fair tests; • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; • identifying scientific evidence that has been used to support or refute ideas or arguments |
| **Asking questions** | **Asking simple questions and recognising****that they can be answered in different****ways**• While exploring the world, the childrendevelop their ability to ask questions (suchas what something is, how things aresimilar and different, the ways things work,which alternative is better, how thingschange and how they happen). Whereappropriate, they answer these questions.• The children answer questions developedwith the teacher often through a scenario.• The children are involved in planning howto use resources provided to answer thequestions using different types of enquiry,helping them to recognise that there aredifferent ways in which questions can beanswered. | **Asking relevant questions and using****different types of scientific enquiries to****answer them**• The children consider their priorknowledge when asking questions. Theyindependently use a range of questionstems. Where appropriate, they answerthese questions.• The children answer questions posed bythe teacher.• Given a range of resources, the childrendecide for themselves how to gatherevidence to answer the question. Theyrecognise when secondary sources canbe used to answer questions that cannotbe answered through practical work.They identify the type of enquiry that theyhave chosen to answer their question. | **Planning different types of scientific****enquiries to answer questions, including****recognising and controlling variables****where necessary**• Children independently ask scientificquestions. This may be stimulated by ascientific experience or involve askingfurther questions based on their developedunderstanding following an enquiry.• Given a wide range of resources thechildren decide for themselves how togather evidence to answer a scientificquestion. They choose a type of enquiry tocarry out and justify their choice. Theyrecognise how secondary sources can beused to answer questions that cannot beanswered through practical work. |
| **Making observations** | **Observing closely, using simple equipment**• Children explore the world around them.They make careful observations to supportidentification, comparison and noticingchange. They use appropriate senses,aided by equipment such as magnifyingglasses or digital microscopes, to maketheir observations.• They begin to take measurements, initiallyby comparisons, then using non-standardunits. | **Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers**• The children make systematic and careful observations.• They use a range of equipment formeasuring length, time, temperature andcapacity. They use standard units fortheir measurements. | **Taking measurements, using a range of****scientific equipment, with increasing****accuracy and precision, taking repeat****readings when appropriate**• The children select measuring equipmentto give the most precise results e.g. ruler,tape measure or trundle wheel, forcemeter with a suitable scale.• During an enquiry, they make decisionse.g. whether they need to: take repeatreadings (fair testing); increase the samplesize (pattern seeking); adjust theobservation period and frequency(observing over time); or check furthersecondary sources (researching); in orderto get accurate data (closer to the truevalue). |
| **Enquiry planning** | **Performing simple tests**• The children use practical resourcesprovided to gather evidence to answerquestions generated by themselves or theteacher. They carry out: tests to classify;comparative tests; pattern seekingenquiries; and make observations overtime.**Identifying and classifying**• Children use their observations and testingto compare objects, materials and livingthings. They sort and group these things,identifying their own criteria for sorting.• They use simple secondary sources (suchas identification sheets) to name livingthings. They describe the characteristicsthey used to identify a living thing. | **Setting up simple practical enquiries,****comparative and fair tests**• The children select from a range ofpractical resources to gather evidence toanswer questions generated bythemselves or the teacher.• They follow their plan to carry out:observations and tests to classify;comparative and simple fair tests;observations over time; and patternseeking. | **Planning different types of scientific****enquiries to answer questions, including****recognising and controlling variables****where necessary**• The children select from a range ofpractical resources to gather evidence toanswer their questions. They carry out fairtests, recognising and controllingvariables. They decide what observationsor measurements to make over time andfor how long. They look for patterns andrelationships using a suitable sample. |
| **Recording and presenting data** | **Gathering and recording data to help in****answering questions**• 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, tallycharts and block graphs.• They classify using simple prepared tablesand sorting rings. | **Gathering, recording, classifying and****presenting data in a variety of ways to****help in answering questions**• Recording findings using simplescientific language, drawings, labelleddiagrams, keys, bar charts, and tables• The children sometimes decide how torecord and present evidence. Theyrecord their observation e.g. usingphotographs, videos, pictures, labelleddiagrams or writing. They record theirmeasurements e.g. using tables, tallycharts and bar charts (given templates, ifrequired, to which they can addheadings). They record classificationse.g. using tables, Venn diagrams, Carrolldiagrams.• Children are supported to present thesame data in different ways in order tohelp with answering the question. | **Recording data and results of increasing****complexity using scientific diagrams and****labels, classification keys, tables, scatter****graphs, bar and line graphs**• The children decide how to record andpresent evidence. They recordobservations e.g. using annotatedphotographs, videos, labelled diagrams,observational drawings, labelled scientificdiagrams or writing. They recordmeasurements e.g. using tables, tallycharts, bar charts, line graphs and scattergraphs. They record classifications e.g.using tables, Venn diagrams, Carrolldiagrams and classification keys.• Children present the same data in differentways in order to help with answering thequestion. |
| **Using data** | **Using their observations and ideas to****suggest answers to questions**• Children use their experiences of the worldaround them to suggest appropriateanswers to questions. They are supportedto relate these to their evidence e.g.observations they have made,measurements they have taken orinformation they have gained fromsecondary sources. • The children recognise ‘biggest andsmallest’, ‘best and worst’ etc. from theirdata. | **Using straightforward scientific evidence****to answer questions or to support their****findings**• Children answer their own and others’questions based on observations theyhave made, measurements they havetaken or information they have gainedfrom secondary sources. The answersare consistent with the evidence.**Identifying differences, similarities or changes related to simple scientific ideas and processes** • Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They draw conclusions based on their evidence and current subject knowledge. | **Identifying scientific evidence that has been used to support or refute ideas or arguments** • 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. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. • They talk about how their scientific ideas change due to new evidence that they have gathered. • They talk about how new discoveries change scientific understanding.**Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** • In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge. |
| **Evaluating**  |  | **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.**Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. | **Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** • They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data.**Using test results to make predictions to set up further comparative and fair tests** • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. |
| **Communicating findings** |  | **Reporting on findings from enquiries,****including oral and written explanations,****displays or presentations of results and****conclusions**• They communicate their findings to anaudience both orally and in writing, usingappropriate scientific vocabulary. | **Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** • They communicate their findings to an audience using relevant scientific language and illustrations. |