**Working Scientifically Skills Progression**

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| **EYFS** |
| Show curiosity about objects, events and people. *Playing and exploring.*Questions why things happen. *Speaking 30-50 months.* |
| Engage in open ended activity. *Playing and exploring.* |
| Take a risk, engage in new experiences and learn by trial and error. *Playing and exploring.* |
| Find ways to solve problems / find new ways to do things / test their ideas. *Creating & Thinking Critically.* |
| Develop of ideas of grouping, sequences, cause and effect. *Creating & Thinking Critically.* |
| Know about similarities and differences in relation to places, objects, materials, and living things. *ELG: The World* |
| Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. *The World 30-50 months* |
| Closely observes what animals, people and vehicles do. *The World 8-20 months*Uses senses to explore the world around them. *Playing and exploring.* |
| Make links and notice patterns in their experience. *Creating & Thinking Critically.* |
| Choose the resources they need for their chosen activities *ELG: Self-confidence and self-awareness*Handle tools and equipment effectively *ELG: Moving and handling* |
| Create simple representations of events, people and objects. *Being imaginative: 40-60 months+* |
| Answer how and why questions about their experiences. *ELG: Understanding.*Make observations of animals and plants and explain why some things occur and talk about changes. *ELG: The World* |
| Develop their own narratives and explanations by connecting ideas and events. *ELG: Speaking*Builds up vocabulary that reflects the breadth of their experience. *Understanding 30-50 months.* |

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| **KS1** | **To ask scientific questions** | **To plan and enquiry** | **To observe closely** | **To take measurements** | **To gather/record results** | **To present results** | **To interpret results** | **To draw conclusions** | **To make a prediction** | **To evaluate an enquiry** |
| **Comparative /fair test** | Identify the question to investigate from a scenario or choose a question from a range provided. | Choose equipment to use and decide what to do and what to observe or measure in order to answer the question. | Make observations linked to answering the question. | When appropriate, measure using standard units where all the numbers are marked on the scale. | Record data in simple prepared tables, pictorially or by taking photographs. | Present what they have learnt verbally or using pictures. | Answer their question in simple sentences using their observations or measurements. | Children in KS1 are not expected to draw conclusions. They are expected to make observations which will help them answer questions They do not have the subject knowledge to give reasons for what they observe so cannot draw scientific conclusions. | Children inKS1 are not expected to make scientific predictions as they do not have the subject knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess. | Children inKS1 are not expected to evaluate. However, children should be encouraged to consider their method and adapt this where necessary.  |
| **Identify and classify** | Be able to ask yes/no questions to aid sorting. | Identify the headings for two groups (it is… it is not…) | Be able to compare objects based on obvious, observable features eg, size, shape, colour, texture etc. |  |  | Sort object and living things into two groups using a basic Venn diagram or simple table. | Talk about the number of objects in each group ie. Which has more / less? |
| **Observation over time**  | Ask a question about what might happen in the future based on an observation. | Choose equipment to use and decide what to do and what to observe or measure in order to answer the question. | Make observations linked to answering the question. | When appropriate, measure using standard units where all the numbers are marked on the scale. | Record data in simple, prepared tables, pictorially or by taking photographs. | Present what the learnt verbally or using pictures. | Answer their question in simple sentences using their observations or measurements. |
| **Pattern seeking** | Ask a question that is looking for a pattern based on observations. | Record data in simple, prepared tables or tally charts. | Present what they learnt verbally. |
| **research** | Ask one or two simple questions linked to a topic. |  |  |  |  | Present what they have learnt verbally or using pictures. | Be able to answer their questions using simple sentences. |

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| **LKS2** | **To ask scientific questions** | **To plan and enquiry** | **To observe closely** | **To take measurements** | **To gather/record results** | **To present results** | **To interpret results** | **To draw conclusions** | **To make a prediction** | **To evaluate an enquiry** |
| **Comparative /fair test** | Ask a range of questions linked to a topic. | Decide what to change and what to measure or observe. | Make observations linked to answering the question. | Measure using standard units where not all the numbers are marked on the scale and take repeat readings where necessary. | Prepare own tables to record data. | Present data in bar charts | Refer directly to their evidence when answering their question. | Where appropriate provide oral or written explanations for their findings. | Use results from an investigation to make a prediction about a further result. |  Suggest improvements, eg, the method of taking measurements. Suggest new questions arising from the investigation. |
| **Identify and classify** | Be able to ask a range of yes/no questions to aid sorting. | Be able to put appropriate headings onto intersecting Venn and Carroll diagrams.  | Be able to compare objects based on more sophisticated, observable features. Present observations in labelled diagrams.  |  |  | Sort objects and living things into groups using intersecting Venn and Carroll diagrams. | Spot patterns in the data, particularly two criteria with no examples. Eg. there are no living things with no legs and no wings. | Draw simple conclusions, when appropriate, for patterns. Eg: a flying insect with no legs might always crash land. |  | Suggest improvements eg: a wider range of objects (only looked at British trees). Suggest new questions arising from the investigation. |
| **Observation over time**  | Ask a range of questions linked to a topic. | Decide what to measure or observe. Decide how often to take a measurement. | Make a range of relevant observations. | Measure using standard units where not all the numbers are marked on the scale. Use data loggers to measure over time. | Prepare own tables to record data. | Present data in time graphs. | Refer directly to their evidence when answering their question. | Where appropriate provide oral or written explanations for their findings. | Use results from an investigation to make a prediction about a further result. |  Suggest improvements, eg, the method of taking measurements. Suggest new questions arising from the investigation. |
| **Pattern seeking** | Ask a range of questions linked to a topic. | Decide what to measure or observe. | Make observations linked to answering the question. | Measure using standard units where not al the numbers are marked on the scale. | Prepare own tables to record data. | Use ICT package to present data as a scattergram. | Refer directly to their evidence when answering their question. | Where appropriate provide oral or written explanations for their findings. | Use results from an investigation to make a prediction about a further result. |  Suggest improvements, eg, the method of taking measurements. Suggest new questions arising from the investigation. |
| **research** | Ask a range of questions linked to a topic. | Choose a source from a range provided. |  |  |  | Present what they learnt verbally or using labelled diagrams. | Be able to answer their questions using simple scientific language. |  |  | Suggest limitations eg: the method of taking measurements. Suggest new questions arising from the investigation. |
| **UKS2** | **To ask scientific questions** | **To plan and enquiry** | **To observe closely** | **To take measurements** | **To gather/record results** | **To present results** | **To interpret results** | **To draw conclusions** | **To make a prediction** | **To evaluate an enquiry** |
| **Comparative /fair test** | Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results. | Recognise and control variables where necessary. | Make observations linked to answering the question. | Measure using standard units using equipment that has scales involving decimals. | Prepare own tables to record data, including column for taking repeat readings. | Choose an appropriate form of presentation including line graphs. | Be able to answer their question, describing causal relationships. | Pro ide oral or written explanations for their findings. | Use test results to make predictions for further investigations. |  Explain their degree of trust in their results eg. precision in taking measurements, variables that may not have been controlled and accuracy of results. |
| **Identify and classify** | Be able to ask a range of yes/no questions to aid sorting and decide which ways of sorting will give useful information. | Identify specific clear questions that will help sort without ambiguity.  | to be able to compare not only based on physical properties but also on knowledge gathered through previous enquiry.  |  |  | Create branching data bases (tree diagrams) and keys to enable others to name living things and objects. | Be able to talk about the features that objects and living things share and do not share based on the information in the key etc. | Be able to use data to show that living things and materials that are grouped together have more things in common than with things in other groups. |  | Be able to explain suing evidence that the branching database or classification key will only work for the living things or materials it was created for. |
| **Observation over time**  | Ask a range of questions and identify the type of enquiry that will help to answer the questions. Ask further questions based on results | Recognise and control variables where necessary. | Make observations linked to answering the question. | Measure using standard units using equipment that has scales involving decimals. | Prepare own tables to record data. | Choose an appropriate form of presentation including line graphs. | Be able to answer their question, describing the change over time. | Pro ide oral or written explanations for their findings. | Use test results to make predictions for further investigations. |  Explain their degree of trust in their results eg. precision in taking measurements, variables that may not have been controlled and accuracy of results.  |
| **Pattern seeking** | Prepare own tables to record data. | Choose an appropriate form of presentation including scatter graphs. | Be able to answer their questions identifying patterns. |
| **research** | Ask a range of questions recognising that some can be answered through research and other may not. | Choose suitable sources to use. |  |  |  | Present what they learnt on a range of ways eg different graphic organisers. | Be able to answer their questions using scientific evidence gained from a range of sources. |  |  | Be able to talk about their degree of trust in the sources they used. |