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Working Scientifically skills















| | Science skill | | Science skill |
|---|---------------------------------|---|----------------------------------|
|  | Asking scientific questions |  | Presenting results |
|  | Planning an enquiry |  | Interpreting results |
|  | Observing closely |  | Drawing conclusions (KS2 only) |
|  | Taking measurements |  | Making predictions (KS2 only) |
|  | Gathering and recording results |  | Evaluating an enquiry (KS2 only) |

| Nursery | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|--|--|---|--|--|---|---|
| Asking Questions | | | | | | | |
| Acknowledge questions about the world around them  | Begin to ask questions about the world around them  | Begin to ask simple scientific questions  | Ask simple scientific questions  | Ask scientific questions in response to simple scientific experiences  | Ask scientific questions in response to a range of scientific experiences  | Ask relevant scientific questions in response to a range of scientific experiences  | Ask relevant scientific questions in response to a wide range of scientific experiences  |
| | | Begin to recognise ways to answer scientific questions  | Recognise ways to answer scientific questions  | With support, select from appropriate types of scientific enquiry to answer scientific questions  | Select from appropriate types of scientific enquiry to answer scientific questions  | After discussion, decide the most appropriate type of scientific enquiry to answer scientific questions  | Decide the most appropriate type of scientific enquiry to answer scientific questions  |
| Fair and Comparative Tests | | | | | | | |
| | | Begin to carry out simple practical tests, using simple equipment  | Carry out simple practical tests, using simple equipment  | Begin to help plan, set up and carry out simple comparative and fair tests  | Help plan, set up and carry out simple comparative and fair tests  | Begin to plan, set up and carry out comparative and fair tests to answer questions  | Plan, set up and carry out comparative and fair tests to answer questions  |
| | | Experience different types of scientific enquiries, including practical activities  | Experience different types of scientific enquiries, including practical activities  | Begin to recognise when a fair test is necessary  | Recognise when a fair test is necessary  | With support, recognise and control variables where necessary to ensure a fair test  | Recognise and control variables where necessary to ensure a fair test  |

















Observing and Measuring Changes

























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| <p>Draw pictures of some things around them</p>  | <p>Observe and draw pictures of things around them</p>  | <p>With guidance, observe the natural and humanly constructed world around them</p>  | <p>Observe the natural and humanly constructed world around them</p>  | | | | |
| | | <p>Make simple observations using simple equipment</p>  | <p>Make relevant observations using simple equipment</p>  | <p>Make careful observations using a small range of equipment</p>  | <p>Make systematic and careful observations using a small range of equipment</p>  | <p>Make systematic and focused observations using a range of equipment</p>  | <p>Make systematic and focused observations accurately using a range of equipment</p>  |
| | | <p>With support, take measurements using comparisons and some standard units</p>  | <p>Begin to take measurements using comparisons and some standard units</p>  | <p>Take measurements using standard units using a small range of equipment</p>  | <p>Take accurate measurements using standard units using a range of equipment</p>  | <p>With support, choose the most appropriate equipment and take accurate measurements</p>  | <p>Choose the most appropriate equipment and take accurate measurements</p>  |
| | | | | | | <p>With support, take repeat readings where appropriate</p>  | <p>Take repeat readings where appropriate</p>  |







Identifying and Classifying

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| | | Begin to use simple features to compare objects, materials and living things  | Use simple features to compare objects, materials and living things  | Begin to talk about criteria for grouping, sorting and classifying things  | Talk about criteria for grouping, sorting and classifying things  | Begin to use and develop keys to identify, classify and describe living things and materials  | Use and develop keys to identify, classify and describe living things and materials  |
| | | Begin to sort and classify objects into simple groups with support  | Sort and classify objects into simple groups with some help  | With support, group and classify living things and materials  | Group and classify living things and materials after discussion  | After discussion group, classify and describe living things and materials  | Independently group, classify and describe living things and materials  |

Drawing Conclusions, Noticing Patterns and Presenting Findings

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| | | | | Begin to make predictions after guided discussions  | Make predictions after guided discussions  | After sharing ideas, independently make own predictions  | Independently make predictions  |
| | | Begin to notice patterns and relationships with support  | Begin to notice patterns and relationships  | Begin to identify similarities and differences, patterns and changes  | Identify similarities, differences, patterns and changes  | Identify patterns and with support identify casual relationships  | Identify patterns and casual relationships  |
| | | Begin to take part in a discussion of simple conclusions  | Take part in a discussion of simple conclusions  | With support, draw simple conclusions  | Draw simple conclusions  | After discussion, draw conclusions based on their data and observations  | Draw conclusions based on their data and observations  |

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| | | With support, identify and discuss differences between their results  | Identify and discuss differences between their results  | Begin to suggest improvements to investigations  | Suggest improvements to investigations  | After discussion, discuss the degree of trust they can have in a set of results  | Discuss the degree of trust they can have in a set of results  |
| Take part in conversations with adults  | With support, talk to an adult about what they have found out  | With support, talk about their findings  | Talk about their findings  | First talk about, and then with support, write about what they have found out  | First talk about, and then go on to write about, what they have found out  | After discussion, report and present their conclusions to other in oral and written forms  | Independently report and present their conclusions to others in oral and written forms  |
| | | Record findings using simple sorting diagrams and simple tables  | Record findings using simple sorting diagrams, pictograms, tally charts and simple tables  | With support, record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables  | After modelling, record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables  | With some support, record findings using scientific diagrams and labels, classifications keys, tables, scatter graphs, bar graphs and line graphs  | Record findings using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs  |
| Using Scientific Evidence and Secondary Sources of Information | | | | | | | |
| | | | | Begin to recognise when and how secondary sources help answer questions  | Recognise when and how secondary sources help answer questions  | Recognise where secondary sources will be most useful  | Recognise where secondary sources will be most useful and begin to separate opinion from fact  |

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| | | | | With support, make links between their own results and other scientific evidence  | Make links between their own results and other scientific evidence  | After discussion, use primary and secondary sources as evidence to justify ideas  | Use primary and secondary sources as evidence to justify ideas  |
| | | | | | | Begin to talk about how scientific ideas have developed over time  | Talk about how scientific ideas have developed over time  |

Scientific Vocabulary

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|---|--|--|--|---|--|--|--|
| Why, animal, food, plant, flower, tree, weather | Science, experiment, fair, find out, change, alive, smell, touch, taste, see, hear, seed, seasons, | Question, answer, observe, equipment, measure, group, sort | Fair test, identify, classify, diagram, label, chart, map, compare, contrast, describe | Research, careful observation, comparative test, fair test, predict, secondary source, drawings, labelled diagrams, keys, bar charts and tables | Scientific enquiry, systematic observation | Control variables, primary source, classifications keys, tables, scatter graphs, bar graphs and line graphs, scientific ideas, conclusion, repeat readings | Degree of trust, casual relationships, fact, opinion |
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The Impact of Science: End Points

| Nursery | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| <p>A Nursery child working at the expect standard is beginning to acknowledge questions about the world around them, they draw pictures of things in their surroundings and they take part in conversations with adults and peers.</p> | <p>A Reception child working at the expected standard is beginning to ask questions and observe the world around them. They draw recognisable pictures of their surroundings and they can talk to an adult about simple things that they know or have recently found out.</p> | <p>A Year 1 child working at the expected standard is beginning to ask simple scientific questions and think of ways to answer them. They are beginning to carry out simple practical tests and use some simple measurements. They are beginning to sort and classify objects into simple groups. They take part in discussions about simple conclusions and can record their findings using simple diagrams and tables.</p> | <p>A Year 2 child working at the expected standard can ask simple scientific questions and answer them. They can carry out simple tests and take measurements. They can compare, objects, materials and living things. They are beginning to notice patterns and relationships and can discuss their ideas with adults and peers. Children are now identifying differences in their results and they can record their findings in simple sorting diagrams, pictograms, tally charts and simple tables.</p> | <p>A Year 3 child working at the expected standard can ask simple scientific questions in response to scientific experiences. They are now helping plan, set up and carry out tests and can recognise when a fair test is necessary. Children can make careful observations, they are beginning to group, sort and classify things. They can talk about and write about their findings and have a simple understanding of secondary sources.</p> | <p>A Year 4 child working at the expected standard can ask scientific questions in response to a range of scientific experiences. They help plan, set up and carry out tests and recognise when a fair test is necessary. They make systematic and careful observations, after discussion they can group and classify living things and materials. They identify similarities and differences, patterns and changes and can talk about write about their findings. They recognise when and how secondary sources help find answers.</p> | <p>A Year 5 child working at the expect standard can ask relevant scientific questions in response to a range of scientific experiences. They are beginning to plan, set up and carry out comparative and fair tests to answer questions. They are also beginning to use and develop keys to identify, classify and describe living things and materials. They identify patterns and with support identify casual relationships. After discussion, they draw conclusions based on their data and observations and can present these ideas. They recongise where secondary</p> | <p>A Year 6 child working at the expected standard can ask relevant scientific questions in response to a wide range of scientific experiences. They can plan, set up and carry out comparative and fair tests to answer questions. They can use and develop keys to identify, classify and describe living things and materials. They identify patterns and can identify casual relationships. They draw conclusions based on their data and observations and can present their ideas. They recongise where secondary sources are most useful, can separate fact from</p> |

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| | | | | | | sources are most useful and are beginning to talk about how science has changed over time. | opinion and can talk about how science has changed over time. |
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