Science enquiry

In the English primary curriculum five types of enquiry are explicitly named in all year groups

- Observing changes over time
- Noticing patterns
- Grouping and classifying things (noticing similarities and differences)
- Comparative and fair testing
- Finding things out using secondary sources of information (researching)
- Modelling is not explicitly mentioned but will be used

These types of enquiry will be used by children from year 1 to year 6 across the different subject areas as appropriate (biology, physics and chemistry).

Early Learning Goal

Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

This may include - plants, seasonal changes, materials, light/dark, sound, forces and earth/space, properties /changes of materials

Y1/2

- I can ask simple scientific questions
- I can use simple equipment and make simple measurements to make observations
- I can carry out simple tests
- I can notice patterns and relationships
- I can identify, compare and classify things
- I can use simple secondary sources to find answers
- I can suggest what I have found out
- I can use simple data to answer questions
- I can record and communicate my answers in a range of ways
- I can use simple scientific language.

Y3 and Y4

- I can ask relevant scientific questions.
- I can use different types of scientific enquiry to answer scientific questions, such as:
    - Observing changes over time
    - Noticing patterns
    - Grouping and classifying things (noticing similarities and differences)
    - I can set up a fair test and explain why it is fair.
    - Finding things out using secondary sources of information (researching)
- I can set up a simple enquiry to explore a scientific question.
- I can make careful and accurate observations, including the use of standard units.
- I can use equipment, including thermometers and data loggers to make measurements.
- I can gather, record, classify and present data in different ways to answer scientific questions.
- I can use diagrams, keys, bar charts and tables; using scientific language.
- I can use findings to report in different ways, including oral and written explanations, presentation.
- I can draw conclusions and suggest improvements.
- I can raise further questions.
- I can make a prediction (for a new value) with a reason.
- I can identify differences, similarities and changes related to an enquiry.

Y5 and Y6

- I can plan different types of scientific enquiry:
    - Observing changes over time
    - Noticing patterns
    - Grouping and classifying things (noticing similarities and differences)
    - I can set up a fair test and explain why it is fair.
    - Finding things out using secondary sources of information (researching)
- I can recognise variables in an enquiry.
- I can control variables in an enquiry.
- I can measure accurately and precisely using a range of equipment.
- I can decide when it is appropriate to take repeat readings.
- I can record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can use the outcome of test results to make predictions and set up a further comparative or fair test.
- I can report findings from enquiries in a range of ways (displays and other presentations).
- I can explain a conclusion from an enquiry.
- I can explain causal relationships in an enquiry.
- I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.
- I can read, spell and pronounce scientific vocabulary accurately

Year 1 and 2 Working Scientifically assessment

- One sheet per pupil in the front of books
- To be completed with the triangle code: lesson completed / partial understanding / understood

Skill	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**End of year Teacher Assessment**
I can ask simple scientific questions								
I can use simple equipment and make simple measurements to make observations								
I can carry out simple tests								
I can notice patterns and relationships								
I can identify, compare and classify things								
I can use simple secondary sources to find answers								
I can suggest what I have found out								
I can use simple data to answer questions								
I can record and communicate my answers in a range of ways								

Year 3 and 4 Working Scientifically assessment

- One sheet per pupil in the front of books
- To be completed with the triangle code: lesson completed / partial understanding / understood

Skill	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**End of year Teacher Assessment**
I can ask relevant scientific questions								
I can plan different types of scientific enquiry: • Observing changes over time								
• Noticing patterns								
• Grouping and classifying things (noticing similarities and differences)								
• I can set up a fair test and explain why it is fair.								
• Finding things out using secondary sources of information (researching)								
I can set up a simple enquiry to explore a scientific question								
I can make careful and accurate observations, including the use of standard units.								
I can use equipment, including thermometers and data loggers to make measurements.								
I can gather, record, classify and present data in different ways to answer scientific questions.								
I can use diagrams, keys, bar charts and tables; using scientific language.								
I can use findings to report in different ways, including oral and written explanations, presentation.								
I can draw conclusions and suggest improvements.								
I can raise further questions.								
I can make a prediction (for a new value) with a reason.								
I can identify differences, similarities and changes related to an enquiry.								

Year 5 and 6 Working Scientifically assessment

- One sheet per pupil in the front of books
- To be completed with the triangle code: lesson completed / partial understanding / understood

Skill	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**End of year Teacher Assessment**
I can plan different types of scientific enquiry: • Observing changes over time								
• Noticing patterns								
• Grouping and classifying things (noticing similarities and differences)								
• I can set up a fair test and explain why it is fair.								
• Finding things out using secondary sources of information (researching)								
I can recognise variables in an enquiry.								
I can control variables in an enquiry.								
I can measure accurately and precisely using a range of equipment.								
I can decide when it is appropriate to take repeat readings.								
I can record data and results using: • scientific diagrams and labels,								
• classification keys,								
• tables,								
• scatter graphs,								
• bar and line graphs.								
I can use the outcome of test results to make predictions and set up a further comparative or fair test.								
I can report findings from enquiries in a range of ways (displays and other presentations).								
I can explain a conclusion from an enquiry.								
I can explain causal relationships in an enquiry.								
I can relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.								

I can read, spell and pronounce scientific vocabulary accurately								