Working Scientifically Curriculum and Knowledge Map

Scientific attitudes

- pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility
- understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
- evaluate risks.

Experimental skills and investigations

- ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
- make predictions using scientific knowledge and understanding
- select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
- use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety
- make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

Analysis and evaluation

- apply mathematical concepts and calculate results
- present observations and data using appropriate methods, including tables and graphs
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
- 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.

KS3

- I can use scientific equipment during field and laboratory work to measure
- I can decide what observations and measurements to make
- I can plan different types of scientific enquiry to answer questions
- I can recognise controlling variables when setting up investigations
- I can use test results to make predictions to inform future comparative and fair tests
- I can set up fair tests
- I can decide how I record my results
- I can use scientific vocabulary
- I can use simple models to describe scientific ideas, identifying evidence to support or refute ideas
- I can report on findings, draw conclusions, explaining any casual relationships

Year 6

I can use scientific equipment during field and laboratory work to measure
I can decide what observations and measurements to make
I can plan different types of scientific enquiry to answer questions
I can recognise controlling variables when setting up investigations
I can use test results to make predictions to inform future comparative and fair tests
I can set up fair tests
I can decide how I record my results
I can use scientific vocabulary
I can use simple models to describe scientific ideas, identifying evidence to support or refute ideas
I can report on findings, draw conclusions, explaining any casual relationships

Year 5

- I can ask good questions for research
- I can use scientific vocabulary
- I can set up simple tests
- I can make careful observations
- I can make accurate measurements using equipment
- I can report on findings, draw conclusions and suggest improvements for future tests, written and oral explanations
- I can gather, record and classify data to answer questions
- I can record data using key vocabulary, diagrams, tables, graphs and charts
- I can identify similarities and differences using key evidence

Year 4

- I can ask good questions for research
- I can use scientific vocabulary
- I can set up simple tests
- I can make careful observations
- I can make accurate measurements using equipment
- I can report on findings, draw conclusions and suggest improvements for future tests, written and oral explanations
- I can gather, record and classify data to answer questions
- I can record data using key vocabulary, diagrams, tables, graphs and charts
- I can identify similarities and differences using key evidence

Year 3

- I can observe closely, using simple equipment
- I can ask simple questions and recognise that they can be answered in different ways
- I can perform simple tests
- I can compare and contrast, sort and group
- I can use scientific vocabulary
- I can identify, classify, categorise
- I can use my observations and ideas to suggest answers to questions
- I can gather and record data to help in answering questions

Year 2

- I can observe closely, using simple equipment
- I can ask simple questions and recognise that they can be answered in different ways
- I can perform simple tests
- I can compare and contrast, sort and group
- I can use scientific vocabulary
- I can identify, classify, categorise
- I can use my observations and ideas to suggest answers to questions
- I can gather and record data to help in answering questions

Year 1

EYFS:

- Make observations, drawing pictures of these observations
- Relate observations to real life experiences and what they have read