

ST Federation Science Skills Progression

Informed by National Curriculum, these concepts will repeat and be revisited over each year group so that children's understanding deepens as progress through the school.

These types of **scientific enquiry** should include:

- observing over time;
- pattern seeking;
- identifying, classifying and grouping;
- comparative and fair testing (controlled investigations);
- researching using secondary sources

Communicate scientifically

- Recording - Y1 science wonder books and then HeGS books for Y2-6
- Record in different ways - diagrams, charts, graphs, tables, short written observations & sketches, photographs, video, contribute to a slide presentation on google classroom
- developing their scientific vocabulary and articulating scientific concepts clearly and precisely
- Ask questions - hypothesise

Using equipment and measuring & observing

- Thermometers
- Force metres & scales
- Measuring cylinders
- Length - Rulers - tape measures, trundle wheels, blocks
- Timers
- Microscopes

Significant events and people (refer to knowledge organisers)

- Diverse range of backgrounds - gender, ethnicity

[Oak academy useful reference material](#)

	<p>scientific enquiry</p> <ul style="list-style-type: none"> ● observing over time; ● pattern seeking; ● identifying, classifying and grouping; ● comparative and fair testing (controlled investigations); ● researching using secondary sources 	<p>Communicate scientifically</p> <ul style="list-style-type: none"> ● Recording: ● Record in different ways - diagrams, charts, graphs, tables, short written observations & sketches, photographs, video, contribute to a slide presentation on google classroom ● developing their scientific vocabulary and articulating scientific concepts clearly and precisely ● Ask questions - hypothesise 	<p>Using equipment and measuring</p> <ul style="list-style-type: none"> ● Thermometers ● Force meters & scales ● Measuring cylinders ● Length - Rulers - tape measures, trundle wheels, blocks ● Timers ● Microscopes
EYFS	<p>scientific enquiry</p> <ul style="list-style-type: none"> ● Ask questions about aspects of their familiar world such as the place where they live or the natural world. ● Look closely at similarities, differences, patterns and change. 	<p>Communicate scientifically</p> <ul style="list-style-type: none"> ● Can talk about some of the things they have observed ● Talk about why things happen and how things work. ● Show care and concern for living things and the environment 	<p>Using equipment and measuring</p> <ul style="list-style-type: none"> ● Use equipment with non-standard units ● Use the language of comparison ● Look at things close up using magnifiers

KS1

scientific enquiry

- observe and describe simple events accurately
- observe and compare objects, living things and events
- with help, make their own suggestions about how to collect data to answer questions
- agree with or challenge observations described by peers
- use simple texts, with help, to find information
- use simple equipment provided and make observations related to their task
- say whether what happened is what they expected

Communicate scientifically

- show interest in and curiosity about objects and events, sometimes communicating their engagement verbally
- communicate their findings in simple ways, for example, by talking about their work, through drawings, simple charts, venn diagrams and pictograms
- make contributions to discussions and class charts prepared by the teacher
- describe their observations using scientific vocabulary and record them using simple tables when appropriate
- use annotated drawings and simple sentences to communicate observations

Using equipment and measuring

- take non-standard measurements: for example, using digits, unifix cubes, cups and beakers
- Begin to use simple standard measures appropriate to the task (length, mass)
- Sequence things by comparing their size (length, weight, area)
- Look under the visualiser as a class
- Use mini microscopes

LKS2

scientific enquiry

- recognise why it is important to collect data to answer questions
- give reasons to support ideas or claims, when asked to do so
- use simple texts to find information
- make relevant observations
- provide explanations for observations and for simple patterns in recorded measurements
- carry out a fair test with some help, recognising and explaining why it is fair
- in their own investigative work, they decide on an appropriate approach (for example, using a fair test) to answer a question
- recognise that scientific ideas are based on evidence
- recognise that it is important to test ideas using evidence from observation and measurement
- begin to recognise that people may form opinions without considering evidence

Communicate scientifically

- record their observations in a variety of ways
- communicate in a scientific way what they have found out (use scientific vocabulary or a diagram to explain an idea)
- extract data from bar charts and tables
- record their observations, comparisons and measurements using tables and bar charts
- respond to suggestions about how to find things out, and with help make their own suggestions about how to collect data to answer questions

Using equipment and measuring

- measure quantities, such as length or mass, using a range of simple equipment
- use a wider range of equipment [for example, ruler with small gradations, graduated beaker, balance].
- Use a thermometer
- Use mini microscopes

<p>UKS2</p>	<p>Scientific enquiry</p> <p>Raising questions</p> <ul style="list-style-type: none"> ● frame ideas or questions that can be investigated scientifically and decide how to find answers ● begin to consider likely outcomes while planning investigations <p>Fair test</p> <ul style="list-style-type: none"> ● where appropriate, describe or show in the way they perform their task, how to vary one factor while keeping others the same ● recognise some situations when a fair test cannot be carried out ● identify some factors and variables they cannot control <p>Prediction</p> <ul style="list-style-type: none"> ● identify some evidence that does, and some evidence that does not, support a particular prediction ● where appropriate, they make predictions based on their scientific knowledge and understanding <p>Evidence</p> <ul style="list-style-type: none"> ● begin to appreciate that evidence needs to be related to the idea or question being tested ● begin to identify whether given conclusions are sufficiently supported by evidence ● recognise that different people may interpret evidence in different ways <p>Conclusions</p> <ul style="list-style-type: none"> ● make practical suggestions about how 	<p>Communicate scientifically</p> <ul style="list-style-type: none"> ● record their observations, comparisons and measurements using tables and bar charts ● begin to plot points to form simple graphs and use these graphs to point out and interpret patterns in their data ● extract data from some line graphs ● begin to relate their conclusions to these patterns in data and to scientific knowledge and understanding, and to communicate them with appropriate scientific language ● recognise that a series of measurements or observations should be made in an investigation ● record observations and measurements systematically ● offer simple explanations for any differences they encounter ● use appropriate scientific language and conventions to communicate quantitative and qualitative data ● use the results of investigations to enhance understanding of scientific concepts ● generate further predictions on the basis of conclusions drawn from their investigation 	<p>Using equipment and measuring</p> <ul style="list-style-type: none"> ● select suitable equipment and make a series of observations and measurements that are adequate for the task ● use IT to make some measurements (temperature probe, sound meter) ● Use newton meters ● begin to repeat observations and measurements ● recognise that repeating observations and measurements helps reduce errors and obtain more reliable evidence ● select appropriate apparatus for a range of tasks ● use equipment with greater precision resulting in more accurate data
-------------	---	---	---

	<p>their working methods could be improved.</p> <ul style="list-style-type: none">● draw conclusions that are consistent with the evidence and begin to relate these to scientific knowledge and understanding● recognise data that do, and data that do not, support their conclusion● select information from sources provided for them		
--	---	--	--