

## Progression Map for Science at Blockley C of E Primary School, EYFS to Year 6

### Principles for progression: summary

1. Use common techniques across the school.
2. Practise the same skills at different ages over and over again - do the pupils tackle them better each time?
3. Revisit key areas of content.
4. Keep an integrated model of scientific-progression in mind. Aim to improve pupils' enquiry skills, knowledge and concepts, so they develop an ever deeper understanding.
5. Plan teaching activities that challenge and engage pupils, and incorporate opportunities to encounter, practise and hone the aforementioned skills.

### Principles for progression: with detail

1. Use common techniques across the school.
  - Eliciting what is known at the start and end of a unit of work.
  - Paired, small group and whole class work and discussions with pupils explaining and justifying.
  - Regular low stakes testing of key subject knowledge within unit; e.g. Qs & As, whiteboard responses, multiple choice.
  - Use of tier 2 vocabulary relevant to science (see key vocab appendix).
  - Use of identified tier 3 vocabulary as relevant to the unit of study.
  - Practising of skills as in point 2.
  - Revisiting areas of content as in point 3.
2. Practise the same skills at different ages over and over again - do the pupils tackle them better each time?
  - Connecting new area of learning to previously taught units of work.
  - Plan scientific investigations.
  - Make predictions.
  - Use good quality equipment to complete investigations.
  - Record and report findings – make links with mathematical learning where relevant.
  - Impact of the significant scientific findings on our lives today – make links with other areas of the curriculum where appropriate.
  - Compare and contrast
  - Asking questions – pupils ask increasingly more relevant and perceptive questions related to the unit of study.
  - understand the methods of scientific enquiry, including .....
3. Revisit key areas of content
  - Refer back to previous learning
  - Make explicit connections with previously taught areas of science
  - Key vocabulary
4. Keep an integrated model of scientific progression in mind. Aim to improve pupils' enquiry skills, knowledge and concepts, so they develop an ever deeper understanding of scientific concepts.
  - Children increasingly know which scientific resources will best suit their needs.
  - Children gain increasing independence when planning and carrying out scientific investigations.
  - Subject knowledge has been gained and increased, misconceptions are addressed and are fewer from the beginning to the end of a unit/ year/key stage (as appropriate).

- Pupils questioning ability to ask perceptive questions, think critically, weigh evidence, sift arguments, and develop perspective and judgements are increasingly challenged by the resources provided, questions asked, tasks set.
- Pupils make connections:
  - within a unit of study
  - across units of study, analysing trends including;
    - broad connections
    - specific connections
- Pupils gain scientific perspective by placing their growing knowledge into different contexts, understanding the connections between local, regional and national events. Links with current events will be drawn where possible (Covid 19 – links with historical events and scientific advancement).
- 5. Plan teaching activities that challenge and engage pupils, and incorporate opportunities to encounter, practise and hone the aforementioned skills

Children will be taught to ...	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1. Ask questions and plan enquiries	<ul style="list-style-type: none"> <li>• Children make observations and ask questions based on what they see.</li> <li>• Children make decisions about what to play with/how to play.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask simple questions about the world around us.</li> <li>• Begin to recognise that they can be answered in different ways.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask simple questions about the world around us.</li> <li>• Recognise that they can be answered in different ways.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask some relevant questions and use different types of scientific enquiries to answer them.</li> <li>• Begin to explore everyday phenomena and the relationships between living things and familiar environments.</li> <li>• Begin to develop their ideas about functions, relationships and interactions.</li> <li>• Begin to raise their own questions about the world around them. Begin to make some decisions about which types of enquiry will be the best way of answering questions</li> </ul>	<ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them.</li> <li>• Explore everyday phenomena and the relationships between living things and familiar environments.</li> <li>• Begin to develop their ideas about functions, relationships and interactions.</li> <li>• Raise their own questions about the world around them.</li> <li>• Make some decisions about which types of enquiry will be the best way of answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>• Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>• Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically.</li> <li>• Begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates.</li> <li>• Begin to recognise that scientific ideas change and develop over time.</li> <li>• Begin to select the most appropriate ways to answer science questions using different types of scientific enquiry</li> </ul>	<ul style="list-style-type: none"> <li>• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>• Explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically.</li> <li>• Begin to recognise more abstract ideas and begin to recognise how these ideas help them to understand how the world operates.</li> <li>• Begin to recognise scientific ideas change and develop over time.</li> <li>• Select the most appropriate ways to answer science questions using different types of scientific enquiry.</li> </ul>
2. Observe, take measurements and make links	<ul style="list-style-type: none"> <li>• make observations explain why some things occur.</li> <li>• Talk about changes.</li> <li>• Use simple measurement tools such as blocks.</li> <li>• Identify similarities and differences between themselves and others and between things they can see.</li> </ul>	<ul style="list-style-type: none"> <li>• Use simple observations and ideas to suggest answers to questions.</li> <li>• Observe simple changes over time and, with guidance, begin to notice patterns and relationships.</li> <li>• Know what to look for and measure.</li> <li>• Know how to use simple equipment safely.</li> <li>• Use simple measurements and equipment with support (eg hand lenses and egg timers)</li> <li>• Begin to progress from non-standard units, reading cm, m, l, °C</li> </ul>	<ul style="list-style-type: none"> <li>• Observe closely, using simple equipment. Use observations and ideas to suggest answers to questions.</li> <li>• Observe changes over time and, with guidance, begin to notice patterns and relationships.</li> <li>• Say what I am looking for and what I am measuring.</li> <li>• Know how to use simple equipment safely.</li> <li>• Use simple measurements and equipment with increasing independence (eg hand lenses and egg timers)</li> <li>• Begin to progress from non-standard units, reading mm, cm, m, ml, l, °C</li> </ul>	<ul style="list-style-type: none"> <li>• Begin to make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</li> <li>• Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.</li> <li>• Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</li> <li>• Learn to use some new equipment appropriately (eg data loggers and magnets).</li> <li>• Begin to see a pattern results.</li> <li>• Begin to choose from a selection of equipment.</li> <li>• Begin to observe and measure accurately using standard units including time in minutes and seconds.</li> </ul>	<ul style="list-style-type: none"> <li>• Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</li> <li>• Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.</li> <li>• Make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</li> <li>• Learn to use new equipment appropriately (eg data loggers).</li> <li>• Identify patterns in results.</li> <li>• Choose from a selection of equipment.</li> <li>• Observe and measure accurately using standard units including time in minutes and seconds.</li> </ul>	<ul style="list-style-type: none"> <li>• Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.</li> <li>• Begin to identify patterns that might be found in the natural environment.</li> <li>• Begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them.</li> <li>• Choose the most appropriate equipment and explain how to use it accurately.</li> <li>• Begin to interpret data and find patterns.</li> <li>• Select equipment independently.</li> <li>• Make a set of observations and say what the interval and range are.</li> <li>• Begin to take accurate and precise measurements – g, kg, mm, cm, mins, seconds, cm<sup>2</sup>V, km/h, m/sec Graphs – pie, line</li> </ul>	<ul style="list-style-type: none"> <li>• Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.</li> <li>• Identify patterns that might be found in the natural environment.</li> <li>• Make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them.</li> <li>• Choose the most appropriate equipment and explain how to use it accurately.</li> <li>• Interpret data and find patterns.</li> <li>• Select equipment independently.</li> <li>• Make a set of observations and say what the interval and range are.</li> <li>• Use accurate and precise measurements – N, g, kg, mm, cm, mins, seconds, cm<sup>2</sup>V, km/h, m/sec Graphs – pie, line, bar</li> </ul>

3. Investigating	<ul style="list-style-type: none"> <li>Talk about why things happen and how things work.</li> <li>Play with toys with a variety of mechanisms including levers, wheels, springs, winders.</li> </ul>	<ul style="list-style-type: none"> <li>Perform simple tests with support.</li> <li>To begin to discuss my ideas about how to find things out.</li> <li>To begin to say what happened in my investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Perform simple tests.</li> <li>To discuss my ideas about how to find things out.</li> <li>To say what happened in my investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Set up some simple practical enquiries, comparisons and fair tests.</li> <li>Begin to recognise when a simple fair test is necessary and help to decide how to set it up.</li> <li>Begin to think of more than one variable factor</li> </ul>	<ul style="list-style-type: none"> <li>Set up simple practical enquiries, comparative and fair tests.</li> <li>Recognise when a simple fair test is necessary and help to decide how to set it up.</li> <li>Can think of more than one variable factor.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use test results to make predictions to set up further comparative and fair tests.</li> <li>Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.</li> <li>Begin to suggest improvements to my method and give reasons.</li> <li>Begin to decide when it is appropriate to do a fair test.</li> </ul>	<ul style="list-style-type: none"> <li>Use test results to make predictions to set up further comparative and fair tests.</li> <li>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. Suggest improvements to my method and give reasons. Decide when it is appropriate to do a fair test.</li> </ul>
4. Recording and reporting	<ul style="list-style-type: none"> <li>Make marks that they can interpret and explain.</li> <li>Talk about what they can see.</li> <li>Talk about why things happen and how things work.</li> </ul>	<ul style="list-style-type: none"> <li>Gather and record data with some adult support, to help in answering questions.</li> <li>Begin to record simple data.</li> <li>Begin to record and communicate their findings in a range of ways.</li> <li>Can show my results in a simple table that my teacher has provided</li> </ul>	<ul style="list-style-type: none"> <li>Gather and record data to help in answering questions.</li> <li>Record simple data.</li> <li>Record and communicate their findings in a range of ways.</li> <li>Can show my results in a table that my teacher has provided.</li> </ul>	<ul style="list-style-type: none"> <li>Gather, record, and begin to classify and present data in a variety of ways to help in answering questions.</li> <li>Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</li> <li>Begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Begin to use notes, simple tables and standard units and help to decide how to record and analyse their data.</li> <li>Begin to record results in tables and bar charts.</li> </ul>	<ul style="list-style-type: none"> <li>Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Use notes, simple tables and standard units and help to decide how to record and analyse their data.</li> <li>Can record results in tables and bar charts.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs.</li> <li>Begin to report and present findings from enquiries.</li> <li>Begin to decide how to record data from a choice of familiar approaches.</li> <li>Begin to choose how best to present data.</li> </ul>	<ul style="list-style-type: none"> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs.</li> <li>Report and present findings from enquiries</li> <li>Decide how to record data from a choice of familiar approaches.</li> <li>Can choose how best to present data.</li> </ul>
5. Identifying, grouping and classifying	<ul style="list-style-type: none"> <li>Talk about similarities and differences in relation to places, objects, materials and living things.</li> <li>Begin to sort objects given simple criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Identify and classify with some support.</li> <li>Begin to observe and identify, compare and describe.</li> <li>Begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</li> </ul>	<ul style="list-style-type: none"> <li>Identify and classify.</li> <li>Observe and identify, compare and describe.</li> <li>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to identify differences, similarities or changes related to simple scientific ideas and processes.</li> <li>Begin to talk about criteria for grouping, sorting and classifying and use simple keys.</li> <li>Begin to compare and group according to behaviour or properties, based on testing. use simple keys.</li> </ul>	<ul style="list-style-type: none"> <li>Identify differences, similarities or changes related to simple scientific ideas and processes.</li> <li>Talk about criteria for grouping, sorting and classifying and use simple keys.</li> <li>Compare and group according to behaviour or properties, based on testing.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use and develop keys and other information records to identify, classify and describe living things and materials.</li> </ul>	<ul style="list-style-type: none"> <li>Use and develop keys and other information records to identify, classify and describe living things and materials.</li> </ul>
6. Evidence and research	<ul style="list-style-type: none"> <li>Make Comments and ask questions about aspects of the familiar world</li> </ul>	<ul style="list-style-type: none"> <li>With help, begin to use simple secondary sources to find answers.</li> <li>Begin to find information to help me from books and computers with help.</li> </ul>	<ul style="list-style-type: none"> <li>Use simple secondary sources to find answers. With help, find information from books and computers.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to recognise which secondary sources will be most useful to research their ideas.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise which secondary sources will be most useful to research their ideas.</li> </ul>
7. Making conclusions	<ul style="list-style-type: none"> <li>Explain why some things occur.</li> <li>Talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to talk about what they have found out and how.</li> <li>Begin to say what happened in an investigation.</li> <li>Begin to say whether results were expected or not.</li> <li>Begin to say what I would change about my investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Talk about what they have found out and how.</li> <li>Say what happened in an investigation.</li> <li>Say whether results were expected or not.</li> <li>Say what I would change about my investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.</li> <li>Begin to use straightforward scientific evidence to answer questions or to support findings.</li> <li>With help, begin to look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</li> <li>With support, begin to identify new questions arising from the data, make new predictions and find ways of improving what they have already done.</li> <li>Begin to identify patterns in results.</li> <li>Begin to say what I found out, linking cause and effect.</li> <li>Begin to say how an investigation could be improved.</li> <li>Begin to answer questions using results.</li> </ul>	<ul style="list-style-type: none"> <li>Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.</li> <li>Use straightforward scientific evidence to answer questions or to support findings.</li> <li>With help, look for changes, patterns, similarities and differences in data in order to draw simple conclusions and answer questions.</li> <li>With support, identify new questions arising from the data, make new predictions and find ways of improving what has been done.</li> <li>Identify patterns in results.</li> <li>Explain what has been found out, linking cause and effect.</li> <li>Say how improvements could be made.</li> <li>Answer questions using results.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</li> <li>Begin to identify scientific evidence that has been used to support or refute ideas or arguments.</li> <li>Begin to draw conclusions based on data and observations, use evidence to justify ideas, use scientific knowledge and understanding to explain findings.</li> <li>Begin to use test results to make predictions to set up further comparatives and fair tests</li> <li>Begin to look for different causal relationships in their data and identify evidence that refutes or supports ideas.</li> <li>Use results to identify when further tests and observations are needed.</li> <li>Begin to separate opinion from fact.</li> <li>Begin to draw conclusions and identify scientific evidence.</li> <li>Use simple models.</li> <li>Know which evidence proves a scientific point.</li> </ul>	<ul style="list-style-type: none"> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments.</li> <li>Draw conclusions based on data and observations, use evidence to justify ideas, use scientific knowledge and understanding to explain findings.</li> <li>Use test results to make predictions to set up further comparatives and fair tests.</li> <li>Look for different causal relationships in data and identify evidence that refutes or supports ideas.</li> <li>Use results to identify when further tests and observations are needed.</li> <li>Separate opinion from fact.</li> <li>Draw conclusions and identify scientific evidence.</li> <li>Use simple models.</li> <li>Know which evidence proves a scientific point.</li> </ul>

						<ul style="list-style-type: none"> <li>Begin to use test results to make predictions to set up further comparative and fair tests.</li> </ul>	<ul style="list-style-type: none"> <li>Use test results to make predictions to set up further comparative and fair tests.</li> </ul>
8. Vocabulary (see below)	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Use some simple scientific language</li> <li>Use comparative language with support.</li> </ul>	<ul style="list-style-type: none"> <li>Use simple scientific language.</li> <li>Use comparative language – bigger, faster etc</li> </ul>	<ul style="list-style-type: none"> <li>Begin to use some scientific language to talk and, later, write about what they have found out.</li> <li>Begin to use comparative and superlative language.</li> </ul>	<ul style="list-style-type: none"> <li>Use some scientific language to talk and, later, write about what they have found out.</li> <li>Use comparative and superlative language.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to read, spell and pronounce scientific vocabulary correctly.</li> <li>Begin to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.</li> <li>Begin to confidently use a range of scientific vocabulary.</li> <li>Begin to use conventions such as trend and rogue result.</li> </ul>	<ul style="list-style-type: none"> <li>Read, spell and pronounce scientific vocabulary correctly.</li> <li>Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas.</li> <li>Use conventions such as trend and rogue result.</li> <li>Confidently use a range of scientific vocabulary. Use scientific language when describing simple processes.</li> </ul>

### Science Curriculum Key Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Animals including humans</b> Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak	<b>Animals including humans</b> Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene	<b>Animals including humans</b> Movement, Muscles, Bones, Skull, Nutrition, Skeletons,	<b>Animals including humans</b> Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	<b>Animals including humans</b> Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	<b>Animals including humans</b> Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration
<b>Plants</b> Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem	<b>Plants</b> Seeds, Bulbs, Water, Light, Temperature, Growth	<b>Plants</b> Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower	<b>Living things and their habitats</b> Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	<b>Living things and their habitats</b> Mammal, Reproduction, Insect, Amphibian, Bird, Offspring	<b>Living things and their habitats</b> Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects
<b>Everyday Materials</b> Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth	<b>Living things and their habitats</b> Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	<b>Rocks</b> Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	<b>States of Matter</b> Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	<b>Properties and changes of materials</b> Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing	<b>Evolution and Inheritance</b> Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics
<b>Seasonal Changes</b> Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	<b>Everyday materials and their uses</b> Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent, Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil	<b>Light</b> Light, Shadows, Mirror, Reflective, Dark, Reflection	<b>Sound</b> Volume, Vibration, Wave, Pitch, Tone, Speaker	<b>Earth and Space</b> Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation	<b>Light</b> Refraction, Reflection, Light, Spectrum, Rainbow, Colour.
		<b>Forces and magnets</b> Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	<b>Electricity</b> Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators	<b>Forces</b> Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	<b>Electricity</b> Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell