2021

Curriculum Skills and Progression Map Science

Old Catton C of E Junior School's Distinctiveness Statement

At Old Catton C of E Junior School, we instil in our pupils our Christian Distinctiveness, the importance of religious literacy and our school's Key Values: Love, Hope and Joy. Our rich and varied Science curriculum encourages pupils to explore, challenge and wonder at the world around them. Our Science curriculum teaches children to love the natural world for all of its diversity and ask questions about how and why. We teach children to have hope that the advances of science improves the world around us and have joy for all that this world has to offer. Through gaining an understanding of the science behind our natural world, pupils gain a deepening appreciation of differences, in both animals and humans which further instils the message behind our School's Bible story of The Lost Sheep, that no one person or animal be left behind.

Nebula
where stars are born

The Nebula Federation

Old Catton Junior School

SCIENCE - WORKING SCIENTIFICALLY: STATUTORY REQUIREMENTS			
	KEY STAGE ONE	**LOWER KEY STAGE TWO**	**UPPER KEY STAGE TWO**
QUESTIONING	Asking simple questions, recognising they can be answered in different ways	Asking relevant questions, using range of scientific enquiries to answer them. Using straightforward scientific evidence to answer questions or support findings.	Planning range of scientific enquiries to answer questions, recognising and controlling variables where necessary.
OBSERVING	Observing closely using simple equipment	Making systematic, careful observations, taking accurate measurements. Using a range of equipment, including thermometers and data loggers	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
EXPERIMENTING	Performing simple tests	Setting up simple practical enquiries, comparative and fair tests	Using test results to make predictions to set up further comparative and fair tests.
CLASSIFYING	Identifying and classifying	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
APPLYING	Using observations and ideas to suggest answers to questions	Using results to draw simple conclusions, make prediction, suggest improvements raise further questions. Identifying differences, similarities or changes related to scientific ideas processes	Identifying scientific evidence that has been used to support or refute ideas or arguments.
RECORDING	Gathering and recording data to help in answering questions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, oral and written explanations, displays or presentations of results and conclusions	Reporting and presenting 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.

Skills Map - Science		
Year 2 – Living things and their Habitats, Animals including Humans and Plants (*for reference*)		
Living things and their Habitats	**Animals, including Humans**	**Plants**
• Can they match certain living things to the habitats they are found in? • Can they explain the differences between living and non-living things? • Can they describe some of the life processes common to plants and animals, including humans? • Can they describe how a habitat provides for the basic needs of things living there? • Can they describe how some animals get their food using basic food chains? • Can they describe how plants and animals are suited to their habitat? • Finding things out using secondary sources of information. • Can they use - see, touch, smell, hear or taste - to help them answer questions? • Can they organise things into groups?	• Can they describe what animals need to survive? Can they explain that animals grow and reproduce? • Can they explain why animals have offspring which grow into adults? • Can they describe the life cycle of some living things? (e.g. egg, chick, chicken) • Can they explain the basic needs of animals, including humans for survival? (water, food, air) • Can they describe why exercise, balanced diet and hygiene are important for humans? Can they suggest how to find things out? • Can they use prompts to find things out? • Finding things out using secondary sources of information	• Can they describe what plants need to survive? • Can they observe and describe how seeds and bulbs grow into mature plants? • Can they investigate and describe the impact of removing light, soil or water from a growing or germinating plant. • Observing changes over time. • Can they suggest how to find things out? • Can they use prompts to find things out?
Year 2 Greater Depth		
• Can they name some characteristics of an animal that help it to live in a particular habitat? • Can they describe what animals need to survive and link this to their habitats?	• Can they explain that animals reproduce in different ways?	• Can they describe what plants need to survive and link it to where they are found? • Can they explain that plants grow and reproduce in different ways?

Skills Map - Science	
Year 2 – Materials (*for reference*)	
Classifying and grouping materials	**Changing materials**
• Can they describe the simple physical properties of a variety of everyday materials? • Can they compare and group together a variety of materials based on their simple physical properties? • Can they use - see, touch, smell, hear or taste - to help them answer questions? • Can they use some scientific words to describe what they have seen and measured?	• Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) • Can they find out about people who developed useful new materials? (John Dunlop, Charles Macintosh, John McAdam) • Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses? • Can they organise things into groups? • Can they find simple patterns (or associations)? • Can they say whether things happened as they expected?
Year 2 Greater Depth	
• Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc.? • Can they sort materials into groups and say why they have sorted them in that way? • Can they say which materials are natural and which are man-made?	• Can they explain how materials are changed by heating and cooling? • Can they explain how materials are changed by bending, twisting and stretching? • Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted?

Skills Map - Science Year 2 – Working Scientifically (*for reference*)				
Observing closely	**Performing Tests**	**Identifying and Classifying**	**Recording findings**	**Types of investigations**
• Can they use - see, touch, smell, hear or taste to help them answer questions? • Can they use some scientific words to describe what they have seen and measured? • Can they compare several things?	• Can they carry out a simple fair test? • Can they explain why it might not be fair to compare two things? • Can they say whether things happened as they expected? • Can they suggest how to find things out? • Can they use prompts to find things out?	• Can they organise things into groups? • Can they find simple patterns (or associations)? • Can they identify animals and plants by a specific criteria, e.g. lay eggs or not; have feathers or not?	• Can they use text, diagrams, pictures, charts, tables to record their observations? • Can they measure using simple equipment?	• Children should have the opportunity to investigate: • Observing changes over time • Noticing similarities, differences and patterns. • Grouping and classifying. • Carrying our comparative tests. • Finding things out using secondary sources of information.
Year 2 Greater Depth				
• Can they suggest ways of finding out through listening, hearing, smelling, touching and tasting?	• Can they say whether things happened as they expected and if not why not?	• Can they suggest more than one way of grouping animals and plants and explain their reasons?	• Can they use information from books and online information to find things out?	• Can they begin to independently consider controlling variables to create a fair test?

At Old Catton Junior School, we currently work on a two-year rolling programme. This means that pupils will at times be accessing elements of the curriculum outside of their current year group (for example: a pupil in Year 3 may be completing a Year 4 unit in Science). To ensure that there is clear progression of skills from Year 3 to Year 6, the Science work completed in each year group will reflect the skills required for each year as found in 'Working Scientifically'.

<table>
<tr><th colspan="2">Skills Map - Science</th></tr>
<tr><th colspan="2">Year 3 – Plants and Animals, including Humans</th></tr>
<tr><th>Animals, including Humans</th><th>Plants</th></tr>
<tr><th>Year 1, Autumn 1 – Health and Movement</th><th>Year 1, Summer 2 – How Plants Grow</th></tr>
<tr><td>Can they explain the importance of a nutritionally balanced diet?
Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat?
Can they describe and explain the skeletal system of a human?
Can they describe and explain the muscular system of a human?
Can they describe what they have found using scientific language?
Can they describe what they have found out using secondary sources?</td><td>Can they identify and describe the functions of different parts of flowering plants? (roots, stem/trunk, leaves and flowers)? Range of plants.
Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)?
Can they investigate the way in which water is transported within plants?
Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?
Can they record their observations in different ways? (Labelled diagrams, charts etc.) Use secondary sources
Can they plan and set up a fair test and explain why it was fair?
Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
Can they set up a simple test to make comparisons?</td></tr>
<tr><th colspan="2">Year 3 Greater Depth</th></tr>
<tr><td>Can they explain how the muscular and skeletal systems work together to create movement?
Can they classify living things by a number of characteristics that they have thought of?</td><td>Can they describe one of the ways in which flowering plants reproduce?
Can they identify how seeds are dispersed based on their appearance?
Higher Order Questions</td></tr>
</table>

• Can they explain how certain living things depend on one another to survive? Higher Order Questions What would happen if we didn't have a skeleton? What would happen if you only ate junk food for: a day, a week, a month, a year?	Design a seed to disperse in the desert. Explain your reasoning. What is the most important thing a plant needs in order to survive? Why? What is the most important part of a plant? Why?

Skills Map - Science		
Year 3 – Rocks, Forces and Magnets, Light		
Rocks	**Forces and Magnets**	**Light**
Year 1, Summer 1 – Rocks, Fossils and Soils	**Year 1, Autumn 2 – Forces and Magnets**	**Year 1, Spring 1 – Light and Shadow**
• Can they compare and group together different rocks on the basis of their appearance and simple physical properties? • Can they describe and explain how different rocks can be useful to us? • Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? • Can they recognise that soils are made from rocks and organic matter? • Can they describe what they have found using scientific language? • Can they classify objects in different ways? • Can they describe what they have found using scientific language? • Can they use different ideas and suggest how to find something out?	• Can they compare how things move on different surfaces? • Can they observe that magnetic forces can be transmitted without direct contact? • Can they observe how some magnets attract or repel each other? • Can they identify and classify which everyday materials are attracted to magnets and which are not? • Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance? • Can they describe magnets have having two poles (N & S) and predict whether two magnets will attract or repel each other depending on which poles are facing? • Can they make and record a prediction before testing? • Can they take accurate measurements using different equipment and units of measure? • Can they set up a simple fair test to make comparisons? • Can they explain what they have found out and use their measurements to say	• Can they recognise that they need light in order to see things? • Can they recognise that dark is the absence of light? • Can they notice that light is reflected from surfaces? • Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes? • Can they recognise that shadows are formed when the light from a light source is blocked by a solid object? • Can they find patterns in the way that the size of shadows change? • Can they explain the difference between transparent, translucent and opaque? • Can they set up a simple fair test to make comparisons? • Can they describe what they have found using scientific language? • Can they record their observations in different ways? - labelled diagrams, charts etc.

	whether it helps to answer their question? • Can they record their observations in different ways? - labelled diagrams, charts etc.?	
Year 3 Greater Depth		
• Can they begin to relate the properties of rocks with their uses? • Can they understand, and explain, that there are different layers of soil? Higher Order Questions You need to make an arrowhead for an upcoming battle. Which of these will you choose to use? Chalk, Marble or Flint. An animal dies near a volcano, what happens next?	• Can they understand that some metals are not magnetic? Higher Order Questions If you could choose any surface in the world, which would you choose to make a football roll the furthest and why? Coke cans are made from aluminium, this is not magnetic. Is it important that some materials are not magnetic? Why?	• Can they explain why lights need to be bright or dimmer according to need? • Can they begin to understand **how** light helps us to see? • Can they explain why their shadow changes when the light source is moved closer or further from the object? Higher Order Questions Mary says, "the sun moves across the sky during the day." Her friend Raj disagrees. Who is correct? Why? An example of a transparent item is glass. How are we able to see it?

Skills Map - Science			
Year 3 – Working Scientifically			
Planning	**Obtaining and presenting evidence**	**Considering evidence and evaluating**	**Types of investigations**
• Can they use different ideas and suggest how to find something out? • Can they make and record a prediction before testing? • Can they plan a fair test and explain why it was fair? • Can they set up a simple fair test to make comparisons? • Can they explain why they need to collect information to answer a question?	• Can they take accurate measurements using different equipment and units of measure? • Can they record their observations in different ways? - labelled diagrams, charts etc. • Can they describe what they have found using scientific language?	• Can they explain what they have found out and use their measurements to say whether it helps to answer their question?	• Children should have the opportunity to investigate • Observing changes over different periods of time • Noticing patterns • Grouping and classifying • Carrying out comparative and fair tests • Finding things out using secondary resources
Year 3 Greater Depth			
• Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?	• Can they explain their findings in different ways (display, presentation, and writing)? • Can they use their findings to draw a simple conclusion? • Can they suggest improvements and predictions for further tests?	• Can they suggest how to improve their work if they did it again?	

Skills Map - Science		
Year 4 – Living Things and their Habitats, Animals including Humans and States of Matter		
Animals including Humans	**Living Things and their Habitats**	**States of Matter**
Year 2, Summer 1 – Eating and Digestion	**Year 2, Summer 2 – Living in Environments**	**Year 2, Autumn 1 – States of Matter**
• Can they identify, name and describe the functions of the basic parts of the digestive system in humans? • Can they identify the simple function of different types of teeth in humans? • Can they identify and classify herbivores, carnivores and omnivores? • Can they identify, construct and interpret a variety of food chains, identifying producers, predators and prey? • Can they identify differences, similarities or changes related to simple scientific ideas or processes?	• Can they recognise that living things can be grouped in a variety of ways? • Can they classify and identify into broad groups? • Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) • Do they recognise that environments can change and this can sometimes pose a danger to living things? • Can they explain how environmental changes have an impact on living things? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs? • Can they explain their findings in different ways (display, presentation, writing)?	• Can they compare and group materials together, according to whether they are solids, liquids or gases? • Can they explain what happens to materials when they are heated or cooled? • Can they measure or research the temperature at which different materials change state in degrees Celsius? • Can they describe how materials change state at different temperatures? • Can they use measurements to explain changes to the state of water? • Can they explain everyday phenomena including the water cycle? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs? • Can they evaluate and communicate their methods and findings? • Can they use a range scientific equipment to take accurate measurements or readings?
Year 4 Greater Depth		
• Can they suggest reasons why different animals have different types of teeth?	• Can they give reasons for how they have classified animals and plants, using their	• Can they group and classify a variety of materials according to the impact of temperature on them?

• Can they explain how certain living things depend on one another to survive? Higher Order Questions Create a food chain for a T-Rex. Create a food chain for a Triceratops. Jasminda suggests that humans are carnivores. Is she right? Discuss.	characteristics and how they are suited to their environment? • Can they name and group a variety of living things based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore). Higher Order Questions What happens if all the glaciers melt? What will happen if the deserts of the world start to spread further? Scientists have discovered a new creature called an Umbongodrongo. Design an ideal habitat for it to live. It is a meat eater and dislikes the cold. Explain your choices.	• Can they explain what happens over time to materials such as puddles on the playground or washing hanging on a line? Higher Order Questions Yesterday there was a huge storm which left massive puddles on the playground! You venture outside today and discover they have disappeared. Why? Is most of the water in the world liquid? Explain your reasoning. Is water always liquid? Explain.

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<tr><th colspan="2">Year 4 – Sound and Electricity</th></tr>
<tr><th>Sound</th><th>Electricity</th></tr>
<tr><th>Year 2, Autumn 2 – Changing Sound</th><th>Year 2, Spring 1 – Circuits and Conductors</th></tr>
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Can they describe a range of sounds and explain how they are made?
Can they associate some sounds with something vibrating?
Can they compare sources of sound and explain how the sounds differ?
Can they explain how to change a sound (louder/softer)?
Can they recognise how vibrations from sound travel through a medium to an ear?
Can they describe the relationship between the pitch of the sound and the features of its source/object that produces it?
Can they find patterns between the volume of the sound and the strength of the vibrations that produced it, and the distance of the source?
Can they investigate how different materials can affect the pitch and volume of sounds?
Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated?
Can they decide which information needs to be collected and decide the best way for collecting it?
Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

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Can they identify common appliances that run on electricity?
Can they construct a simple series electric circuit?
Can they identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers?
Can they recogniser symbols to represent simple series circuit diagrams?
Can they identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery?
Can they recognise that a switch opens and closes a circuit?
Can they associate a switch opening with whether or not a lamp lights in a simple series circuit?
Can they recognise some common conductors and insulators?
Can they associate metals with being good conductors?
Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated?
Can they suggest improvements and predictions?
Can they ask their own questions?
Can they explain their findings in different ways (display, presentation, writing)?

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<tr><th colspan="2">Year 4 Greater Depth</th></tr>
</table>

• Can they explain why sound gets fainter or louder according to the distance? • Can they explain how pitch and volume can be changed in a variety of ways? • Can they work out which materials give the best insulation for sound? Higher Order Questions If a tree falls in the woods does it make a sound? Explain. Your brother's taste in music is awful, his favourite song is Baby Shark! You hate it. What materials can you use to drown out this racket?	• Can they explain how a bulb might get lighter? • Can they recognise if all metals are conductors of electricity? • Can they work out which metals can be used to connect across a gap in a circuit? • Can they explain why cautions are necessary for working safely with electricity? Higher Order Questions Is it possible to use too many batteries in a circuit? Explain. Is it possible to use too many bulbs in a circuit? Explain. Rupert is creating a circuit. He is using a pencil to complete it. Will his bulb light up? Why?

Skills Map - Science			
Year 4 – Working Scientifically			
Planning	**Obtaining and presenting evidence**	**Considering evidence and evaluating**	**Types of investigations**
• Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they suggest improvements and predictions? • Can they ask their own questions? • Can they decide which information needs to be collected and decide what the best way to collect it is? • Can they use their findings to draw a simple conclusion?	• Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? • Can they use a range scientific equipment to take accurate measurements or readings? • Can they explain their findings in different ways (display, presentation, writing)? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs?	• Can they find any patterns in their evidence or measurements? • Can they evaluate and communicate their methods and findings? • Can they make a prediction based on something they have found out? • Can they ask further questions based on their data and observations? • Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? • Can they identify differences, similarities or changes related to simple scientific ideas or processes?	Children should have the opportunity to investigate: • Observing changes over different periods of time • Noticing patterns • Grouping and classifying • Carrying out comparative and fair tests • Finding things out using secondary resources.
Year 4 Greater Depth			
• Can they plan and carry out an investigation by controlling variables fairly and accurately? • Can they use test results to make further predictions	• Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?	• Can they report findings from investigations through written explanations and conclusions?	• Can they use a range of variables to investigate?

and set up further comparative tests?		• Can they use a graph or diagram to answer scientific questions?	

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Skills Map - Science		
Year 5 – Living Things and their Habitats, Properties and changes to materials		
Animals including Humans	**Living Things and their Habitats**	**Properties and changes to materials**
Year 2, Summer 2 – Changes and Reproduction	**Year 1, Autumn 1 – Life Cycles**	**Year 2, Spring 1 – Properties and Changes of Materials**
• Can they describe the changes as humans develop to old age? • Can they compare the gestation periods of humans and compare them to other animals? • Can they use a graph to answer scientific questions? • Can they present a report of their findings through writing, display and presentation?	• Can they describe the differences in the life cycles of a mammal, amphibians, an insect and a bird? • Can they identify the reproductive processes of some animals? • Can they describe the life cycles of common plants? • Can they explore the work of well know naturalists and animal behaviourists? (David Attenborough and Jane Goodall) • Can they present a report of their findings through writing, display and presentation?	• Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? • Can they explain how some materials dissolve in liquid to form a solution? • Can they explain what happens when dissolving occurs? • Can they use their knowledge of solids, liquids and gases to decide and describe how mixtures might be separated, including through filtering, sieving, evaporating? • Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? • Can they describe changes using scientific words? (evaporation, condensation) • Can they demonstrate that dissolving, mixing and changes of state are reversible changes? Can they explain that some changes result in the formation of new materials, and that this kid of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda? • Can they use the terms 'reversible' and 'irreversible'?

		• Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, table, scatter graphs, bar and line graphs?
Year 5 Greater Depth		
• Can they describe the changes experienced in puberty? • Can they describe how the needs of humans change at different points in their life cycle? • Can they draw a timeline to indicate stages in the growth and development of humans? Higher Order Questions At what stage in life do the most changes take place? What is puberty's purpose?	• Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border? • Can they give reasons why secondary sources of scientific evidence cannot always be trusted? Higher Order Questions What would be affected if plants didn't reproduce? Think about the effect it would have on animals and us, as humans. What would happen if living things did not die?	• Can they describe methods for separating mixtures? (filtration, distillation) • Can they use their knowledge of materials to suggest ways to classify? (solids, liquids, gases) • Can they explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda? Higher Order Questions What would the world be like if we couldn't heat or cool materials? What would everyday life be like? Scientists keep discovering new elements and materials all the time. Would it be possible/easy to group new ones with other materials? Explain your reasoning.

Skills Map - Science	
Year 5 – Earth, Space and Forces	
Earth and Space	**Forces**
Year 2, Autumn 2 – Earth and Space	**Year 2, Summer 1 – Forces in Action**
• Can they identify and explain the movement of the Earth and other plants relative to the sun in the solar system? • Can they explain how seasons and the associated weather is created? • Can they describe and explain the movement of the Moon relative to the Earth? • Can they describe the sun, earth and moon as approximately spherical bodies? • Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky? • Can they present a report of their findings through writing, display and presentation using appropriate scientific vocabulary? • Can they use evidence from secondary sources to explore their own and other people's ideas?	• Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object? • Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces? • Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? • Can they present a report of their findings through writing, display and presentation using appropriate scientific vocabulary? • Can they use a graph to answer scientific questions? • Can they use test results to make predictions to set up comparative and fair tests?
Year 5 Greater Depth	
• Can they compare the time of day at different places on the earth? • Can they use multiplication to work out ages if living on a different planet? • Can they explain why the moon appears to change shape during the lunar cycle? Higher Order Questions Using what you know so far, would it be possible for there to be life on other planets? How would the Solar System be affected if the Sun, Earth and Moon were not spherical?	• Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction) • Can they design very effective parachutes? Higher Order Questions What would the world be like without air resistance? How have levers and pulleys had an effect on our lives?

Skills Map - Science		
Year 5 – Working Scientifically		
Planning	**Obtaining and presenting evidence**	**Considering evidence and evaluating**
• Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests?	• Can they take measurements using a range of scientific equipment with increasing accuracy and precision? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, table, scatter graphs, bar and line graphs?	• Can they use a graph to answer scientific questions? • Can they present a report of their findings through writing, display and presentation?
Year 5 Greater Depth		
• Can they explore different ways to test an idea, choose the best way and give reasons? • Can they vary one factor whilst keeping the others the same in an experiment? • Can they use information to help make a prediction? • Can they explain, in simple terms, a scientific idea and what evidence supports it?	• Can they decide which units of measurement they need to use? • Can they explain why a measurement needs to be repeated?	• Can they find a pattern from their data and explain what it shows? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this?

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Skills Map - Science		
Year 6 – Living Things		
Evolution and Inheritance	**Living things and their Habitats**	**Animals, including Humans**
Year 1, Spring 1 – Evolution and Inheritance	**Year 1, Summer 1 – Classifying Organisms**	**Year 2, Autumn 1 – Healthy Bodies**
• Can they recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago? • Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? • Can they give reasons why offspring are not identical to each other or to their parents? • Can they explain the process of evolution and describe the evidence for this? • Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? Can they explain, in simple terms, a scientific idea and what evidence supports it?	• Can they describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals? • Can they give reasons for classifying plants and animals based on specific characteristics? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?	• Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? • Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function? • Can they describe the ways in which nutrients and water are transported within animals and plants, including humans? • Can they explain, in simple terms, a scientific idea and the evidence which supports it?

Year 6 Greater Depth		
• Can they research and discuss the work of famous scientists, such as Charles Darwin, Mary Anning and Alfred Wallace? • Can they explain how some living things adapt to survive in extreme conditions? • Can they analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet? Higher Order Questions If Darwin and Linnaeus hadn't developed our understanding of evolution, what do you think we would understand about evolution today? Do you think that science should interfere with evolution? Is your opinion different for animals or plants?	• Can they explain why classification is important? • Can they readily group animals into reptiles, fish, amphibians, birds and mammals? • Can they sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates? • Can they find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification? Higher Order Questions How do you make a distinction genuses? How do you think human interference in nature has an effect on how organisms cope in their natural habitats?	• Can they accurately record their own resting heart rate? • Can they make a diagram of the human body and explain how the circulatory system works? • Can they explain why their pulse rate increases when they exercise? Higher Order Questions Do you think that people had healthier diets in the pasts, or do we have healthier diets today? Explain your reasoning. If we know the harmful effects of tobacco and alcohol, why do some people choose to take them?

Skills Map - Science	
Year 6 – Electricity and Light	
Electricity	**Light**
Year 1, Autumn 2 – Changing Circuits	**Year 1, Summer 2 – Seeing Light**
• Can they identify and name the basic parts of a simple electric series circuit? (cells, wires, bulbs, switches, buzzers) • Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches? • Can they use recognised symbols when representing a simple circuit in a diagram? • Can they explore different ways to test an idea, choose the best way, and give reasons? • Can they identify the key factors when planning a fair test? • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? • Can they use information to make a prediction and give reasons for it? • Can they use test results to make further predictions and set up further comparative tests? • Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this?	• Can they recognise that light appears to travel in straight lines? • Can they use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye? • Can they explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes? • Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? • Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? • Can they draw conclusions from their work? • Can they report findings from investigations through written explanations and conclusions using appropriate scientific language?

Year 6 Greater Depth	
• Can they make their own traffic light system or something similar? • Can they explain the danger of short circuits? • Can they explain how to make changes in a circuit? • Can they explain the impact of changes in a circuit? • Can they explain the effect of changing the voltage of a battery? Higher Order Questions Do you think that an increase in energy will always make a bulb brighter or a motor faster? Explain your answer and include evidence. Do you think that electricity has a negative impact on the world? Why?	• Can they explain how different colours of light can be created? • Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope). Higher Order Questions How would the world be different if there was no natural light? How has artificial light had a positive or negative effect on technology? Explain your answer?

Skills Map - Science			
Year 6 – Working Scientifically			
Planning	**Obtaining and presenting evidence**	**Considering evidence and evaluating**	**Types of investigations**
• Can they explore different ways to test an idea, choose the best way, and give reasons? • Can they identify the key factors when planning a fair test? • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? • Can they use information to make a prediction and give reasons for it? • Can they use test results to make further predictions and set up further comparative tests? • Can they explain, in simple terms, a scientific idea and what evidence supports it?	• Can they explain why they have chosen specific equipment? (including ICT based equipment) • Can they decide which units of measurement they need to use? • Can they make precise measurements? • Can they explain why a measurement needs to be repeated? • Can they record their measurements in different ways? (including bar charts, tables and line graphs) • Can they read and record measurements systematically using a range of scientific equipment with increasing accuracy and precision? • Can they present a report of their findings through writing, display and presentation?	• Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? • Can they draw conclusions from their work? • Can they report findings from investigations through written explanations and conclusions using appropriate scientific language?	Children should have the opportunity to investigate through: • Recognising and controlling variables accurately and fairly, including changes over different periods of time • Noticing patterns, groupings and classifying • Carrying out comparative and fair tests • Finding things out using a wide range of secondary sources.

Year 6 Greater Depth		
• Can they choose the best way to answer a question and use information from different sources to plan an investigation? • Can they make a prediction which links with other scientific knowledge?	Can they plan which equipment they will need and use it effectively? Can they explain qualitative and quantitative data?	• Can they identify scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it? • Can they explain how they could improve their way of working? • Can they 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?

Appendix I

Science Overview

Year 1

	Year 3 and 4	Year 5 and 6
Autumn 1	Health and Movement	Life Cycles
Autumn 2	Forces and Magnets	Changing Circuits
Spring 1	Light and Shadows	Evolution and Inheritance
Spring 2	**SCIENCE FAIR**	**SCIENCE FAIR**
Summer 1	Rocks, Fossils and Soils	Classifying Organisms
Summer 2	How Plants Grow	Seeing Light

Year 2

	Year 3 and 4	Year 5 and 6
Autumn 1	States of Matter	Healthy Bodies
Autumn 2	Changing Sound	Earth and Space
Spring 1	Circuits and Conductors	Properties and Changes of Materials
Spring 2	**SCIENCE FAIR**	**SCIENCE FAIR**
Summer 1	Eating and Digestion	Forces in Actions
Summer 2	Living in Environments	Changes and Reproduction

Appendix II

Writing Opportunities

Year 1: Year 3 and 4

	Writing Opportunities	Year 3 Scientific Skills	Year 4 Scientific Skills
Autumn 1	Health and Movement To identify that a balanced diet is needed in order to stay healthy. **Letter to Head of School about the Importance of Healthy Food**	Explaining why they need to collect information to answer a question. Describing what they have found out using scientific language. Using their findings to draw simple conclusions.	Explaining their findings in different ways. Making a prediction based on something they have found out. Evaluating what they have found out using scientific language. Reporting findings from investigations through written explanations and conclusions.
Autumn 2	Forces and Magnets To compare how things move on different surfaces. **Experiment Write Up**	Planning and setting up a fair test. Making a prediction. Using findings to draw a conclusion. Recording observations using tables and bar graphs. Describing what they have found using scientific language. Using their findings to draw simple conclusions.	Planning and setting up a fair test. Making a prediction. Using findings to draw a conclusion. Recording data using tables and bar graphs. Evaluating their findings using scientific language. Planning and carrying out an investigation by controlling variables fairly and accurately. Using test results to make further predictions. Reporting findings from investigations through written explanations and conclusions.
Spring 1	Light and Shadow To recognise that we need light in order to see. **Argument (For or Against Artificial Lights)**	Describing what they have found out using scientific language. Using their findings to draw simple conclusions.	Explaining their findings in different ways e.g. explanation text or story. Using their findings to draw a simple conclusion.

			Evaluating and communicating their findings. Identifying differences, similarities or changes related to simple scientific ideas or processes. Reporting findings from investigations through written explanations and conclusions.
Spring 2	**SCIENCE FAIR**		
Summer 1	Rocks, Fossils and Soils To explore what fossils are and how they are formed. **Explanation Text (How Fossils are Formed)**	Describing what they have found using scientific language. Explaining their findings in different ways e.g. explanation text or story. Using their findings to draw a simple conclusion.	Explaining their findings in different ways e.g. explanation text or story. Identifying differences, similarities or changes related to simple scientific ideas or processes. Reporting findings from investigations through written explanations and conclusions.
Summer 2	How Plants Grow To explore some of the ways in which flowering plants disperse their seeds. **Information Text (Seed Dispersal)**	Describing what they have found using scientific language. Explaining their findings in different ways e.g. labelled diagram or writing.	Explaining their findings in different ways e.g. explanation text or story. Identifying differences, similarities or changes related to simple scientific ideas or processes. Reporting findings from investigations through written explanations and conclusions.

Year 1: Year 5 and 6

	Writing Opportunities	Year 5 Scientific Skills	Year 6 Scientific Skills
Autumn 1	Life Cycles To find out about the work of naturalists. **Biography (Chosen Naturalist)**	Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and the evidence that supports it.	Explaining, in simple terms, a scientific idea and what evidence supports it. Presenting a report of their findings through writing.

			Linking what they have found out to other science. Finding things out using a wide range of secondary sources. Reporting and presenting findings from enquiries in written forms.
Autumn 2	Changing Circuits To investigate ways in which the brightness of a bulb or the speed of a motor is changed. **Experiment Write Up**	Planning and carrying out a scientific enquiry to answer questions. Making a prediction with reasons. Recording more complex data and results in a range of ways. Presenting a report of their findings through writing. Varying one factor whilst keeping the others the same in an experiment. Explaining, in simple terms, a scientific idea and the evidence that supports it. Finding a pattern from their data and explaining what it shows.	Exploring different ways to test an idea, choose the best way, and give reasons. Identifying the key factors when planning a fair test. Varying one factor whilst keeping the others the same in an experiment. Using information to make a prediction and give reasons for it. Explaining, in simple terms, a scientific idea and what evidence supports it. Recording measurements in different ways. Presenting a report of their findings through writing. Drawing conclusions from their work. Making a prediction which links with other scientific knowledge. Identifying scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it. Reporting and presenting findings from enquiries in written forms.
Spring 1	Evolution and Inheritance	Presenting a report of their findings through writing.	Explaining, in simple terms, a scientific idea and what evidence supports it.

	To understand how humans have evolved over time and how human behaviour can affect change in species over time. **Discussion Text**	Explaining, in simple terms, a scientific idea and the evidence that supports it.	Presenting a report of their findings through writing. Reporting and presenting findings from enquiries in written forms.
Spring 2	**SCIENCE FAIR**		
Summer 1	Classifying Organisms To be able to identify and classify organisms in the local area. **Information Text About the Local Environment**	Taking repeated readings when appropriate. Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and what evidence supports it. Finding a pattern from their data and explaining what it shows.	Recording their measurements in different ways. Presenting a report of their findings through writing. Finding a pattern from their data and explaining what it shows. Linking what they have found out to other science. Drawing conclusions from their work. Reporting findings from investigations through written explanations and conclusions using appropriate scientific language. Noticing patterns, groupings and classifying. Reporting and presenting findings from enquiries in written forms.
Summer 2	Seeing Light To investigate how we see things through light entering our eyes. **Explanation Text**	Recording more complex data and results using scientific diagrams and writing. Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and what evidence supports it.	Explaining, in simple terms, a scientific idea and what evidence supports it. Presenting a report of their findings through writing. Reporting and presenting findings from enquiries in written forms.

Year 2: Year 3 and 4

	Writing Opportunities	Year 3 Scientific Skills	Year 4 Scientific Skills
Autumn 1	States of Matter	Describing what they have found using scientific language.	Explaining their findings in different ways e.g. explanation text or story.

	To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Explanation Text (Water Cycle)**	Explaining their findings in different ways e.g. explanation text or story.	Reporting findings from investigations through written explanations and conclusions.
Autumn 2	Changing Sound To find out that some materials are effective in preventing vibrations from sound sources reaching the ear. **Experiment Write Up (Fancy Something Different – Soundproofing Experiment)**	Planning and setting up a fair test. Making a prediction. Using findings to draw a conclusion. Recording observations using tables and bar graphs. Describing what they have found using scientific language. Using their findings to draw a conclusion.	Planning and setting up a fair test. Making a prediction. Using findings to draw a conclusion. Recording data using tables and bar graphs. Evaluating their findings using scientific language. Planning and carrying out an investigation by controlling variables fairly and accurately. Using test results to make further predictions. Reporting findings from investigations through written explanations and conclusions.
Spring 1	Circuits and Conductors To investigate the differences between mains and battery-powered circuits. **Information Text (Mains and Battery Circuits)**	Describing what they have found using scientific language. Recording their observations in different ways, such as labelled diagrams. Explaining their findings in different ways.	Explaining their findings in different ways e.g. explanation text or story. Identifying differences, similarities or changes related to simple scientific ideas or processes. Reporting findings from investigations through written explanations and conclusions.
Spring 2	**SCIENCE FAIR**		
Summer 1	Eating and Digestion To investigate how the digestive system works. **Poem About the Digestive System**	Describing what they have found using scientific language. Explaining their findings in different ways.	Explaining their findings in different ways e.g. explanation text or story. Reporting findings through different text types.

Summer 2	Living in Environments To explore the human impact on habitats and environments. **Persuasive Argument**	Describing what they have found using scientific language. Explaining why they need to collect information to answer a question. Observing changes over different periods of time. Explaining their findings in different ways e.g. explanation text or story.	Explaining their findings in different ways e.g. explanation text or story. Using their findings to draw a simple conclusion. Evaluating and communicating their findings. Identifying differences, similarities or changes related to simple scientific ideas or processes. Observing changes over different periods of time. Reporting findings from investigations through written explanations and conclusions.

Year 2: Year 5 and 6

	Writing Opportunities	Year 5 Scientific Skills	Year 6 Scientific Skills
Autumn 1	Healthy Bodies To investigate how muscles move the skeleton and how muscle activity requires increased blood flow. **Information Text**	Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and the evidence that supports it.	Explaining, in simple terms, a scientific idea and what evidence supports it. Presenting a report of their findings through writing. Reporting and presenting findings from enquiries in written forms.
Autumn 2	Earth and Space To describe the Sun, Earth and Moon as approximately spherical bodies. **Diary Entry (First Person Recount – Finding Out the Earth is Round)**	Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and the evidence that supports it.	Explaining, in simple terms, a scientific idea and what evidence supports it. Presenting a report of their findings through writing. Reporting and presenting findings from enquiries in written forms.
Spring 1	Properties and Changes of Materials To explain that some changes from new materials and that these changes are not usually reversible.	Planning and carrying out a scientific enquiry to answer questions. Making a prediction with reasons.	Exploring different ways to test an idea, choose the best way, and give reasons.

	Experiment Write Up	Recording more complex data and results in a range of ways. Presenting a report of their findings through writing. Varying one factor whilst keeping the others the same in an experiment. Explaining, in simple terms, a scientific idea and the evidence that supports it. Finding a pattern from their data and explaining what it shows.	Identifying the key factors when planning a fair test. Varying one factor whilst keeping the others the same in an experiment. Using information to make a prediction and give reasons for it. Explaining, in simple terms, a scientific idea and what evidence supports it. Recording measurements in different ways. Presenting a report of their findings through writing. Drawing conclusions from their work. Making a prediction which links with other scientific knowledge. Identifying scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it.
Spring 2	**SCIENCE FAIR**		
Summer 1	Forces in Actions To identify and explain the effects of air resistance. **Explanation Text**	Making a prediction with reasons. Taking measurements using a range of scientific equipment with increasing accuracy and precision. Recording more complex data and results using scientific diagrams etc. Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and the evidence that supports it. Varying one factor whilst keeping the others the same in an experiment.	Exploring different ways to test an idea, choose the best way, and give reasons. Identifying the key factors when planning a fair test. Varying one factor whilst keeping the others the same in an experiment. Using information to make a prediction and give reasons for it. Explaining, in simple terms, a scientific idea and what evidence supports it. Recording measurements in different ways.

		Finding a pattern from their data and explaining what it shows.	Presenting a report of their findings through writing. Drawing conclusions from their work. Making a prediction which links with other scientific knowledge. Identifying scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it.
Summer 2	Changes and Reproduction To recognise the stages of development during childhood and understand the needs of children at those stages. **Chronological Report (How Children Grow)**	Presenting a report of their findings through writing. Explaining, in simple terms, a scientific idea and the evidence that supports it.	Explaining, in simple terms, a scientific idea and what evidence supports it. Presenting a report of their findings through writing. Reporting and presenting findings from enquiries in written forms.

Appendix III	
Key Resources	
Year 3 and 4	
Unit	Equipment Needed
Health and Movement	*No Additional Equipment Needed*
Forces and Magnets	• Variety of magnets including bar magnets • Variety of magnetic and non-magnetic materials to check if they are magnetic • Forcemeters • Variety of surfaces (carpet etc to check how much friction there is) • Ramps and toy cars • Tape measurers
Light and Shadow	• Variety of transparent, translucent and opaque objects • Torches • Variety of small objects to create shadows with • Chalk • Shadow Stick • Mirrors
Rocks, Fossils and Soils	• Soil samples in bags (3 different types of soil) • Graded sieves • Rock samples • Stopwatches • Pipettes
How Plants Grow	• Dried bean seeds • Cotton wool • Clear pots • Food dye • Variety of edible seeds and beans
State of Matter	*No Additional Equipment Needed*
Changing Sound	• Dried rice • Prepared string telephones • Tape measures • Buzzers

	• Materials such as: foam sheets, fabric, newspaper, bubble wrap, tin foil, kitchen roll, cling film, paper towels, cotton wool, etc • Small glass bottles
Circuits and Conductors	• Balloons • Variety of materials to test e.g. a rubber, paperclips, pencil, teaspoon, coin, paper, teabags, pen, etc • Batteries, bulbs, wires, crocodile clips • Buzzers • Variety of materials to construct switches e.g. pins, paper clips, butterfly clips, card, sticky tape, etc
Eating and Digestion	*No Additional Equipment Needed*
Living in Environments	*No Additional Equipment Needed*
Year 5 and 6	
Unit	Equipment Needed
Changing Circuits	• Batteries and bulbs • Different thicknesses of fuse wire • Wires and crocodile clips, buzzers and motors
Life Cycles	*No Additional Equipment Needed*
Classifying Organisms	*No Additional Equipment Needed*
Evolution and Inheritance	*No Additional Equipment Needed*
Seeing Light	• Torches • Variety of opaque, transparent and translucent • Objects • Mirrors
Earth and Space	*No Additional Equipment Needed*
Changes and Reproduction	*No Additional Equipment Needed*
Forces in Action	• Marbles, ball bearings, golf balls • Forcemeters • Variety of surfaces to test • Plastic bags, string/wool, paper clips, rubber bands • Plasticine • Stopwatches • Lollipop sticks, rubber bands • Milk/water bottles with handles

	• String, cord or thin rope
Properties and Changes of Materials	• Water, salt, sugar, poster paint, sand, plaster of Paris, baking powder • Sand, marbles, paperclips, rice, gravel, ground coffee, sugar, water, filter paper, different sizes of sieves Vinegar, bicarbonate of soda, lemon juice, plaster of Paris, effervescent tablets • Batteries, bulbs and wires; magnets; torches; weights • sand, candles, tweezers • A variety of different materials e.g. polystyrene, different woods, plastics, metals etc
Healthy Bodies	*No Additional Equipment Needed*

Appendix IV	
Key Vocabulary	
Year 3 – Plants and Animals, including Humans	
Animals, including Humans	**Plants**
Year 1, Autumn 1 – Health and Movement	**Year 1, Summer 2 – How Plants Grow**
Nutrients	Roots
Starches	Stem
Protein	Flower
Balanced Diet	Leaf
Carbohydrates	Flowering Plants
Fibre	Seed
Digestive System	Moisture
Antioxidants	Absorb
Minerals	Minerals
Carnivores	Soil
Predators	Photosynthesis
Herbivores	Chlorophyll
Prey	Evaporates
Omnivores	Pollen
Organs	Reproduction
Collar Bone	Egg Cell
Ribs	Pollination
Femur	Sepal
Fibula	Petal
Tibia	Stamen
Pelvis	Carpel
Vertebrae	Anther
Shoulder Blade	Filament
Skull	Aquatic Plants
Vertebrates	Nectar
Invertebrates	Style
Muscle	Stigma
Contract	Ovary

Relax Skeletal System Muscular System	Fertilization Germination Seed Dispersal Petals

Year 3 – Rocks, Forces and Magnets, Light		
Rocks	**Forces and Magnets**	**Light**
Year 1, Summer 1 – Rocks, Fossils and Soils	**Year 1, Autumn 2 – Forces and Magnets**	**Year 1, Spring 1 – Light and Shadow**
Rock	Force	Light
Fossil	Magnet	Shadow
Soil	Push	Dark
Mineral	Pull	Emit
Crystal	Forcemeter	Light Sources
Marble	Spring	Reflection
Hard-wearing	Stretch	Day
Slate	Newton Meters	Night
Chalk	Gravity	Axis
Limestone	Weightless	Dawn
Natural	Magnetism	Dusk
Man-made	Magnetic Field	Artificial Light
Criterion	Iron Filings	UV
Characteristics	Magnetic Poles	Opaque
Venn Diagram	Compass	Transparent
Carroll Diagram	Attract	Translucent
Erosion	Repel	
Permeable	Magnetic	
Microorganisms	Non-Magnetic	
Pedologists	Predict	
Fragment	Iron	
Contract	Steel	
Weathering	Copper	
Decaying	Brass	
Organic Layer	Aluminium	

Topsoil Subsoil Regolith Bedrock Sand Silt Compressed Inner Core Outer Core Crust Mantle Iron Igneous Rock Sedimentary Rock Metamorphic Rock Petrified Dissolves Palaeontologist Organisms Prehistoric Erosion Ammonite Trilobite Camarasaurus	Alloys Nickel Cobalt	
Year 4 – Living Things and their Habitats, Animals including Humans and States of Matter		
Animals including Humans	**Living Things and their Habitats**	**States of Matter**
Year 2, Summer 1 – Eating and Digestion	**Year 2, Summer 2 – Living in Environments**	**Year 2, Autumn 1 – States of Matter**
Energy Nutrients Healthy Herbivore Omnivore Carnivore	Habitat Environment Organism Internal Skeleton Outer Skeleton Conditions	Solid Liquid Gas Evaporate Freeze Compare

Food chain	Characteristics	Group
Diet	Classification System	Similarities
Producers	Vertebrate	Differences
Consumer	Invertebrate	Particles
Photosynthesis	Mammal	Properties
Organism	Bird	Air Resistance
Ecosystem	Insect	Compress
Teeth	Reptile	Changing State
Tongue	Fish	Solidify
Liver	Amphibian	Temperature
Gallbladder	Exoskeleton	Thermometer
Large Intestine	Mollusc	Mercury
Small Intestine	Annelids	Molten rock
Oesophagus	Arachnids	Lava
Stomach	Crustaceans	Degrees Celsius
Pancreas	Warm Blooded	Fahrenheit
Anus	Cold Blooded	Gallium
Digestion	Oxygen	Condensation
Digestive System	Deforestation	Water Cycle
Incisors	Eco Friendly	Water Vapour
Canines	Endangered Species	Condensation
Molars	Criterion	Precipitation
Premolars		
Milk Teeth		
Saliva		
Enzymes		
Bloodstream		
Bile		
Fat		
Hydrates		
Absorbs		
Toxins		
Bacteria		

Yeast Faeces		

Year 4 – Sound and Electricity	
Sound	**Electricity**
Year 2, Autumn 2 – Changing Sound	**Year 2, Spring 1 – Circuits and Conductors**
Sound Vibrations Sound Waves Air Particles Materials Soundproofing Orchestra Pitch Volume Length Tightness Thickness	Electricity Circuits Conductors Components Static Electricity Current Electricity Universe Atoms Protons Electrons Power source Battery Wire Bulb Complete Circuit Mains Electricity Appliances Plug Socket Pylon Power Station Caution Portable Replaced Recharged Conductor Insulator Voltage

Year 5 – Living Things and their Habitats, Properties and changes to materials		
Animals including Humans	**Living Things and their Habitats**	**Properties and changes to materials**
Year 2, Summer 2 – Changes and Reproduction	**Year 1, Autumn 1 – Life Cycles**	**Year 2, Spring 1 – Properties and Changes of Materials**
Growth	Life Cycles	Properties
Development	Flower	Materials
Exercise	Petal	Dissolve
Factors	Filament	Solid
Life Cycle	Anther	Liquid
Gestation	Stigma	Gas
Infancy	Style	Solution
Childhood	Ovary	Particles
Adolescence	Carpel	Transparent
Adulthood	Stamen	React
Old Age	Sepals	Float
Fertilised Female Egg Cell	Egg cells	Sink
Womb	Pollen	Soluble
Microscopic	Nectar	Evaporation
Embryo	Fertilised	Reversible
Foetus	Sexually	Filtering
Ultrasound Scan	Reproduce	Filtration
Babies	Pollination	Sieving
Infant	Genetic Information	Insoluble
Puberty	Pollen Tubes	Water Cycle
Sperm Cell	Asexual Reproduction	Effervescent
Reproduce	Sexual Reproduction	Substance
Nutrients	Bulb	Heating
Twins	Tubers	Cooling
Sexual Intercourse	Runner	Temperate
Bladder	Plantlets	Condensation
Penis	Clone	Freezing
Testes	Genetically Identical	Melting
Reproductive Organs	Cuttings	Vapour

Urine	Parent Plant	Ignite
Uterus	Organism	Flammable
Ovary/ies	Internal Fertilisation	Transparent
Bladder	External Fertilisation	Malleable
Vagina	Mating	Brittle
Vulva	Womb	Comparative
Embryo	Nutrients	Translucent
Breastfeed	Offspring	Soluble
Breasts	Sperm	Conductive
Hormones	Embryo	Flexible
Glands	Female Sex Cell	Compressed
Pituitary Gland	Pregnant	Waterproof
Sex Hormones	Hermaphrodites	
Pubic Hair	Colonies	
Armpit	Environment	
Ejaculate	Gestation Periods	
Periods	Mammal	
Hips	Life Expectancy	
Menstruation	Reptile	
Sanitary Pads	Incubate	
Tampons	Metamorphosis	
Wet Dream	Pupa	
Sweat	Breeding	
Deodorant	Naturalists	
Antiperspirant	Oceanographer	
Genitals	Laboratories	
Balanced Diet	Pollution	
Hygiene	Conservation	
Adolescence	Pesticides	
Mature		
Elasticity		
Smoking		
Alcohol		

Year 5 – Earth, Space and Forces	
Earth and Space	**Forces**
Year 2, Autumn 2 – Earth and Space	**Year 2, Summer 1 – Forces in Action**
Sun	Force
Earth	Gravity
Moon	Earth
Spherical	Weight
Space	Gravitational Force
Sphere	Centre of the Earth
Astronauts	Meteorite
Horizon	Crater
Diameter	Diameter
Rotation	Atmosphere
Shadow	Eroded
Axis	Friction
Rotate	Resistance
Time Zones	Forcemeter
Sunrise	Newtons
Sunset	Grams
Orbits	Isaac Newton
Satellite	Water Resistance
Craters	Streamlined
Meteors	Levers
Emits	Pulleys
Reflects	Hinge
Waning Crescent	Fulcrum
Waning Gibbous	Air Resistance
Waxing Crescent	Gears
Waxing Gibbous	Cog Wheels
Half Moon	Transmission
New Moon	Axle
Full Moon	Driver Gear
Calendar	Anticlockwise

Lunar Cycle Solar System Leap Year Planets Asteroid Belt Mercury Venus Mars Jupiter Saturn Uranus Neptune	Torque

Year 6 – Living Things		
Evolution and Inheritance	**Living things and their Habitats**	**Animals, including Humans**
Year 1, Spring 1 – Evolution and Inheritance	**Year 1, Summer 1 – Classifying Organisms**	**Year 2, Autumn 1 – Healthy Bodies**
Evolution	Plant	Balanced Diet
Inheritance	Mammal	Energy
Inherited	Amphibian	Muscle
Offspring	Bird	Exercise
Characteristics	Fish	Heart Rate
Traits	Reptile	Vitamins
Distinctive	Insect	Minerals
Variation	Crustacean	Protein
Resistance	Arachnid	Carbohydrate
Disease	Mollusc	Minerals
Pigment	Organism	Fibre
Crossbreed	Features	Fat
Adapted	Plants	Sugars
Advantageous	Animals	Starches
Invertebrates	Invertebrates	Organs
Disadvantageous	Vertebrates	Immune System
Scarcer	Exoskeleton	Digestive System
Environments	Warm Blooded	Source of Energy

Organism	Offspring	Insulation
Generation	Cold Blooded	Nerve Fibres
Predators	Unsegmented	Iron
Reproduce	Segmented	Calcium
Survival	Echinoderm	Magnesium
Descended	Annelid	Zinc
Classifying	Myriapod	Potassium
Natural Selection	Classification	Circulatory System
Species	Aquatic	Small Intestine
Primates	Carnivore	Absorbs
Prehensile	Herbivore	Blood Stream
Carl Linnaeus	Omnivore	Heart
Charles Darwin	Botanist	Lungs
Haplorhini	Vascular	Oxygen (o2)
Mutations	Non Vascular	Carbon Dioxide (co2)
External Factors	Nutrients	Bronchioles
Fossils	Roots	Arteries
Palaeontologists	Stem	Scurvy
Extinct	Rhizoids	Vitamin C
Mammals	Spores	Mortality Rate
Deforestation	Non Flowering	Clinical Trial
Cross Pollination	Flowering	Vitamin Deficiencies
Selective Breeding	Carl Linnaeus	Rickets
	Classification System	Blood Vessels
	Taxonomy	Veins
	Kingdom	Pulse Rate
	Order	Smooth Muscles
	Genesis	Cardiac Muscles
	Species	Skeletal Muscles
	Binomial Nomenclature	Extensor
	Phylum	Flexor
	Class	Contract
	Microbes	Relax

	Bacteria Fungi Viruses Oxygen Diseases Protists Joseph Lister Sterilise Habitat	Beneficial Harmful Illegal Legal Medicines Prescription Tobacco Cigarettes Nicotine Addictive Drugs Cardiovascular Disease Emphysema Blood Pressure Asthma Alcohol Alcoholism Depression Paracetamol Liver Cocaine Cannabis Ecstasy Pharmacy Superior Vena Cava Pulmonary Veins Right Atrium Right Ventricle Inferior Vena Cava Aorta Left Ventricle Left Atrium Pulmonary Veins

		Pulmonary Artery Pectorals Biceps Rectus Abdominus Quadriceps Obliques Deltoids Trapezius Triceps Gastrocnemius Biceps Femoris Gluteals Latissimus Dorsi

Year 6 – Electricity and Light	
Electricity	**Light**
Year 1, Autumn 2 – Changing Circuits	**Year 1, Summer 2 – Seeing Light**
Electricity Circuits Volt Current Conductor Component Battery Motor Insulator Amperes Wires Bulbs Buzzer Switch Open Switch Closed Switch	Light Shadows Source Reflects Cornea Lens Sclera Optic Nerves Retina Pupil Iris Transparent Opaque Translucent

Series Circuit Parallel Circuit Voltage Dimmer Conventional Symbols	

Appendix V		
Cross Curricular Links		
Year 3 – Plants and Animals, including Humans		
Animals, including Humans	**Plants**	
Year 1, Autumn 1 – Health and Movement	**Year 1, Summer 2 – How Plants Grow**	
ICT – Internet Research Maths – Creating Tally Charts, Pictograms and Bar Graphs English – Writing Opportunities	Maths – Creating Tally Charts, Measuring Height English – Writing Opportunities, Sequencing Art – Drawing Results	
Year 3 – Rocks, Forces and Magnets, Light		
Rocks	**Forces and Magnets**	**Light**
Year 1, Summer 1 – Rocks, Fossils and Soils	**Year 1, Autumn 2 – Forces and Magnets**	**Year 1, Spring 1 – Light and Shadow**
Geography – Local Environment Art – Drawing Results History – Pre-history English – Writing Opportunities Maths – Venn and Carroll Diagrams	ICT – Internet Research Art – Drawing Results Maths – Units of Measure English – Writing Opportunities	Art – Drawing Results Maths – Bar Graphs, Units of Measure English – Writing Opportunities
Year 4 – Living Things and their Habitats, Animals including Humans and States of Matter		
Animals including Humans	**Living Things and their Habitats**	**States of Matter**
Year 2, Summer 1 – Eating and Digestion	**Year 2, Summer 2 – Living in Environments**	**Year 2, Autumn 1 – States of Matter**
Maths – Venn Diagram English – Writing Opportunities	Geography – Local Area Maths – Carroll Diagram English – Writing Opportunities	Art – Drawing Results Maths – Bar Graphs, Units of Measure English – Writing Opportunities
Year 4 – Sound and Electricity		
Sound	**Electricity**	
Year 2, Autumn 2 – Changing Sound	**Year 2, Spring 1 – Circuits and Conductors**	

Music – Pitch, Tone Art – Drawing Results DT - Design English – Writing Opportunities	Art – Drawing Results English – Writing Opportunities

Year 5 – Living Things and their Habitats, Properties and changes to materials		
Animals including Humans	**Living Things and their Habitats**	**Properties and changes to materials**
Year 2, Summer 2 – Changes and Reproduction	**Year 1, Autumn 1 – Life Cycles**	**Year 2, Spring 1 – Properties and Changes of Materials**
RSE/PSHE – Puberty, Drug Maths – Bar Graphs English – Writing Opportunities	Maths – Carroll Diagram ICT – Internet Research English – Writing Opportunities	Maths – Carroll Diagram Art – Drawing Results English – Writing Opportunities

Year 5 – Earth, Space and Forces	
Earth and Space	**Forces**
Year 2, Autumn 2 – Earth and Space	**Year 2, Summer 1 – Forces in Action**
Maths – Shape, Units of Measure History – Scientific Misconceptions, Explorers, Measuring Spheres, Addition, Subtraction, Multiplication, Line Graph English – Writing Opportunities Art – Drawing Results	Maths – Units of Measure, Using a Protractor DT – Making a Parachute, Making Gears Art – Drawing Results History – Ancient Greek Technology English – Writing Opportunities

Year 6 – Living Things		
Evolution and Inheritance	**Living things and their Habitats**	**Animals, including Humans**
Year 1, Spring 1 – Evolution and Inheritance	**Year 1, Summer 1 – Classifying Organisms**	**Year 2, Autumn 1 – Healthy Bodies**

PSHE – Family, Discussion Art – Drawing Organisms Geography – Countries of the World, Climates ICT – Internet research History – Prehistory English – Writing Opportunities	ICT – Internet Research Geography – Local Environment English – Writing Opportunities	History – 18th Century Sailors PE – The Effects of Exercise PSHE – Drug and Alcohol Abuse English – Writing Opportunities

Year 6 – Electricity and Light	
Electricity	**Light**
Year 1, Autumn 2 – Changing Circuits	**Year 1, Summer 2 – Seeing Light**
History – Nikola Tesla PSHE – Mental Health, Bullying English – Writing Opportunities	Art – Shading Maths – Bar Graphs English – Writing Opportunities

Appendix VI
Science Fair
As part of the Key Stage 2 curriculum, all year groups have the statutory requirement to 'work scientifically' within the Science curriculum as well as in other subjects. This statutory requirement gives children the opportunity to plan, carry out and evaluate a range of scientific experiments and while pupils have many chances to do this throughout each academic year, we wanted to trial addressing this part of the curriculum in a creative and interactive way in the form of a 'Science Fair'. Each class decides on their chosen area of Science to explore and also their chosen research topic. Once these have been decided, the class work together to plan and carry out an experiment to answer their chosen research question. During the Science Fair, each class presents their findings from their 6 weeks' worth of research, experiments and evaluations in the form of a Science Fair. We invite families into the school hall to peruse the presentations of every class and to marvel at all of their hard work and scientific enquiries. There is an opportunity during the Science Fair to chat to both staff and pupils from each class about their findings as well as watching some of the practical experiments in action!

Appendix VII
Mad Science
In addition to the Science Curriculum, pupils also have the opportunity to 'work scientifically' in an extra-curricular after-school club called Mad Science. The children take part in an interactive after-school programme, led by instructors, that fosters creative thinking and problem solving. It covers a wide range of science topics and provides children with the opportunity to experience Science in a hands on way.