

Key Concepts Progressive Curriculum Map

Science

Includes EYFS - Years 1 to 6 - Greater Depth



Knowledge and Skills Map for STEAM

Scientific Enquiry

Key Concepts in Science:

Working Scientifically

- Observing Closely
- Performing Tests
- Identifying and Classifying
- Recording Findings
- Types of Investigations

EYFS



Knowledge and Skills Map for Science

Early Years - Working Scientifically

Observing closely	Performing Tests	Identifying and Classifying	Recording findings
Through provision, focus groups and with adult support, can children... - Discuss what they can see, touch, smell, hear or taste? - Use simple equipment to help them make observations?	Through provision, focus groups and with adult support, can children... - Can they perform a simple test? - Can they describe/explain what they have done?	Through provision, focus groups and with adult support, can children... - Can they identify and classify things they observe? - Can they think of some questions to ask? - Can they answer some scientific questions? - Can they give a simple reason for their answer? - Can they explain what they have found out?	Through provision, focus groups and with adult support, can children... - Can they show their work using pictures, labels and captions? - Can they record their findings using standard units? - Can they record some information in a chart or table, or using ICT?
Early Years Greater Depth			
Can they find out by watching, listening, tasting, smelling and touching?	Can they give reasons for their answers?	- Can they discuss similarities and differences? - Can they explain what they have found out using scientific vocabulary?	Can they compare measurements?

Class 2



Skills Map for Science

Class 2 - Working Scientifically

Observing closely	Performing tests	Identifying and Classifying	Recording findings
- Can they discuss what they can see, touch, smell, hear or taste? - Can they use simple equipment to help them make observations?	- Can they perform a simple test? - Can they describe/explain what they have done?	- Can they identify and classify things they observe? - Can they think of some questions to ask? - Can they answer some scientific questions? - Can they give a simple reason for their answer? - Can they explain what they have found out?	- Can they show their work using pictures, labels and captions? - Can they record their findings using standard units? - Can they record some information in a chart or table, or using ICT?
Class 2 Greater Depth			
Can they find out by watching, listening, tasting, smelling and touching?	Can they give reasons for their answers?	- Can they discuss similarities and differences? - Can they explain what they have found out using scientific vocabulary?	Can they make accurate measurements using non-standard measurements i.e. unified

Knowledge and Skills Map for Science

Class 2 - Plant and Animals, including Humans

Plants	Animals, including humans	
- Can they describe and name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant? - Can they identify and name a range of common plants and trees? - Can they name the trunk, branches and root of a tree? - Can they discuss what they can see, touch, smell, hear or taste?	- Can they identify some of the differences between different animals? - Can they identify living and non-living things? - Can they identify and name a variety of common animals? - Can they describe how an animal is suited to its environment? - Can they explain what they have found out? - Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? - Can they identify and classify things they observe? - Can they give simple reason for their answers? - Can they discuss what they can see, touch, smell, hear or taste?	- Can they name the parts of the human body and link them to their senses? - Can they name the parts of an animal's body? - Can they name a range of domestic animals? - Can they compare the bodies of different animals? - Can they identify and classify things they observe? - Can they give simple reason for their answers? - Can they talk about what they see, touch, smell, hear or taste?
Class 2 Greater Depth		
Can they begin to describe what each part of a plant does? (e.g. roots, stem, leaves, petals, pollen) on a range of plants.	- Can they begin to classify animals according to a number of given criteria? - Can they point out differences between living things and non-living things?	- Can they name some parts of the human body that cannot be seen? - Can they say why certain animals have certain characteristics? - Can they name a range of wild animals?

Knowledge and Skills Map for Science

Class 2- Everyday Materials and Seasonal Changes

Everyday materials (classifying and grouping)	Seasonal Changes
• Can they distinguish between an object and the material from which it is made? • Can they describe materials using their senses, using specific scientific words? • Can they explain what material objects are made from? • Can they explain why a material might be useful for a specific job? • Can they name some different everyday materials? e.g. wood, plastic, metal, water and rock • Can they sort materials into groups by a given criteria? • Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching? • Can they perform a simple test? • Can they tell other people about what they have done? • Can they talk about what they see, touch, smell, hear or taste? • Can they use simple equipment to help them make observations? • Can they identify and classify things they observe? 2323	• Can they observe changes across the four seasons? • Can they name the four seasons in order? • Can they observe and describe weather associated with the seasons? • Can they observe and describe how day length varies? • Can they talk about what they: see, touch, smell, hear or taste? Can they use simple equipment to help them make observations?
Year 1 Greater Depth	
• Can they describe things that are similar and different between materials? • Can they explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate? • Can they explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate?	• Can they observe features in the environment and explain that these are related to a specific season? • Can they observe and talk about changes in the weather? • Can they talk about weather variation in different parts of the world?

Knowledge and Skills Map for Science

Class 2 - Working Scientifically

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 criterion, 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, different and patterns. - Grouping and classifying. - Carrying out comparative tests. - Finding things out using secondary sources of information.
Class 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?	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?

Knowledge and Skills Map for Science

Class 2 - Materials

Classifying and grouping 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?

Changing materials

- 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?

Class 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?

Knowledge and Skills Map for Science

Class 2 - Living things and their Habitats, Animals including Humans and Plants

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 habitats? • Finding things out using secondary sources of information. • Can they see, touch, smell, hear to 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. eg, 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? • 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?
Class 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?

Class 3



Class 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 measurement 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
Class 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, 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?	

Knowledge and Skills Map for Science

Class 3 - Plants and Animals, including Humans

Animals, including humans (Autumn Year B)	Plants (Spring Year B)
• Can they explain the importance of a nutritionally balanced diet? • Can they describe how nutrients, water and oxygen are transported within animals and humans? • 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?	• 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 or 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?
Class 3 Greater Depth	
• Can they explain how the muscular and skeletal systems work together to create movement? • Can they classify living things and non-living things by a number of characteristics that they have thought of? • Can they explain how people, weather and the environment can affect living things? • Can they explain how certain living things depend on one another to survive?	• Can they classify a range of common plants according to many criteria (environment found, size, climate required etc)?

Knowledge and Skills Map for Science

Class 3 - Rocks, Forces and Magnets, Light

Rocks (Autumn Year A)	Forces and magnets (Autumn Year B)	Light (Autumn Year A)
• 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 describe and explain the difference between sedimentary and igneous rocks, considering the way they are formed? • 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 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 simple fair test to make comparisons? • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they record their observations in different ways? <labelled diagrams, charts etc>	• 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 site 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>

Class 3 Greater Depth

- Can they classify igneous and sedimentary rocks?
- Can they begin to relate the properties of rocks with their uses?

- Can they investigate the strengths of different magnets and find fair ways to compare them?

- Can they explain why lights need to be bright or dimmer according to need?
- Can they say what happens to the electricity when more batteries are added?
- Can they explain why their shadow changes when the light source is moved closer or further from the object?



Class 3 - 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 which is the best way for collecting it? - 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 of scientific equipment's 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
Class 3 Greater Depth			
Can they plan and carry out an investigation by controlling variables fairly and accurately?	Can they record ore complex data and results using scientific diagrams, classification keys,	Can they report findings from investigations through written explanations and conclusions?	Can they use a range of variables to investigate?

Can they use test results to make further predictions and set up further comparative tests?	tables, bar charts, line graphs and models?	Can they use a graph or diagram to answer scientific questions?	
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Knowledge and Skills Map for Science

Class 4 - Living Things and their Habitats, Animals, including humans, and States of Matter

Animals, including humans (Spring Year B)	Living Things and their Habitats (Spring Year A)	States of Matter (Summer Year A)
• 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 compare the teeth of herbivores and carnivores? • 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 of scientific equipment's to take accurate measurements or readings?

Class 3 Greater Depth

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| <ul style="list-style-type: none">• Can they classify living things and non-living things by a number of characteristics that they have thought of?• Can they explain how people, weather and the environment can affect living things?• Can they explain how certain living things depend on one another to survive? | <ul style="list-style-type: none">• Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment?• Can they explore the work of pioneers in classification? (e.g. Carl Linnaeus)• Can they name and group a variety of living things based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore) | <ul style="list-style-type: none">• Can they group and classify a variety of materials according to the impact of temperature on them?• Can they explain what happens over time to materials such as puddles on the playground or washing hanging on a line? |
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Knowledge and Skills Map for Science

Class 3 - Sound and Electricity

Sound (Summer Year A)	Electricity (Summer Year B)
• 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?	• 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 recognise 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)?

Class 3 Greater Depth

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| <ul style="list-style-type: none">• 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? | <ul style="list-style-type: none">• 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? |
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Class 4



Class 4 - 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 measurement 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?
Class 4 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?

Knowledge and Skills Map for Science

Class 4- Earth, Space and Forces Year B Summer

Earth and Space	Forces
• Can they identify and explain the movement of the Earth and other planets 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?
Class 4 Greater Depth	
• Can they compare the time of day at different places on the earth? • Can they create shadow clocks? • Can they begin to understand how older civilisations used the sun to create astronomical clocks, e.g. Stonehenge? • Can they explore the work of some scientists (Ptolemy, Alhazen, Copernicus)	• Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction) • Can they design very effective parachutes? • Can they work out how water can cause resistance to floating objects? • Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?

Knowledge and Skills Map for Science

Class 4 - Living Things and their habitats (Year A Autumn) , Properties and changes to materials (Year A Spring)

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| <ul style="list-style-type: none"> • Can they describe the changes as humans develop to old age? • Can they use basic ideas of inheritance, variation and adaptation to describe how living things have changed over time? • Can they use a graph to answer scientific questions? • Can they present a report of their findings through writing, display and presentation? | <ul style="list-style-type: none"> • Can they describe the differences in the life cycles of a mammal, amphibian, 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-known naturalists and animal behaviourists? (David Attenborough and Jane Goodall) • Can they present a report of their findings through writing, display and presentation? | <ul style="list-style-type: none"> • 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 kind 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? |
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Class 4 Greater Depth		
• Can they create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies? • Can they describe the changes experienced in puberty? • Can they draw a timeline to indicate stages in the growth and development of humans?	• Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border? • Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests?	• Can they describe methods for separating mixtures? (filtration, distillation) • Can they work out which materials are most effective for keeping us warm or for keeping something cold? • 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? • Can they explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton)?



Skills Map for Science

Class 4 - Electricity and Light

Electricity (Year A summer)	Light (Year A Autumn)
• 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 buzzer, the on/off position of switches? • Can they use a 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>

Class 4 Greater Depth

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| <ul style="list-style-type: none">• Can they make their own traffic light system or something similar?• Can they explain the danger of short circuits?• Can they explain what a fuse is?• Can they explain how to make changes in a circuit?• Can they explain the impact of a change in a circuit? | <ul style="list-style-type: none">• 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)• Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters. |
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Skills Map for Science

Class 4- Living Things

Evolution and inheritance (Year B Spring)	Living Things & their habitats (Year B Spring)	Animals, including humans (Year A Summer)
• Can they recognise the 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?

Class 4 Greater Depth

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| <ul style="list-style-type: none">• 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? | <ul style="list-style-type: none">• 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 grouping and explain their divisions, such as vertebrates and invertebrates?• Can they find out about the significant of the work of scientists such as Carl Linnaeus, a pioneer of classification? | <ul style="list-style-type: none">• Can they explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies?• Can they compare the organ systems of humans to other animals?• Can they make a diagram of the human body and explain how different parts work and depend on one another?• Can they name and locate the major organs in the human body? |
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