Helmingham Science Curriculum Coverage

	Autumn	Spring	Summer
Year A KS1 2024-25	**Topic: Bang! Crash! Boom!** **Enquiry question: What is it like for a plane to travel through a cloud?**	**Topic: Prehistoric** **Enquiry question: What did a Helminghamosaurus look like?**	**Topic: The Great Outdoors** **Enquiry Question: What is the Helmingham habitat?**
	Working Scientifically Years 1 and 2: • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.		
	• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies **Activities for Working Scientifically:** • Collect information about the weather regularly throughout the year – *Enquiry type: Observing changes over time* • Present this information in tables and charts to compare the weather across the seasons. • Collect information, regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans. • Present this information in different ways to compare the seasons. • Gather data about day length regularly throughout the year and present this to compare the seasons – *data logger at Henley* • Demonstrate their knowledge in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork	• Identify and name a variety of common animals including reptiles, birds and mammal • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (reptiles, birds and mammals, including pets) **Activities for Working Scientifically:** • Make first-hand, close observations of animals from each of the groups. • Compare two animals *(dinosaurs)* from the same or different groups – *Enquiry type: Grouping and Classifying* • Classify animals *(dinosaurs)* using a range of features. • Use simple charts etc. to identify unknown animals	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees **Activities for Working Scientifically:** • Make close observations of leaves, seeds, flowers etc. - *increase biodiversity by planting wildflowers, plus seed examples at Henley* • Compare two leaves, seeds, flowers etc. • Classify leaves, seeds, flowers etc. using a range of characteristics. • Identify plants by matching them to named images. • Make observations of how plants change over a period of time – *revisit Autumn and Spring term observations* • When further afield, spot plants that are the same as those in the local area studied

		• Create a drawing of an imaginary animal *(Helminghamosaurus)* labelling its key features • Use secondary resources to find out what animals eat, including talking to experts e.g. pet owners, zookeepers etc. - *see Developing Experts for Career Opportunities resources* Revisit observations of habitats for seasonal change. Plan ahead for growing bulbs/vegetables/wildflowers for the Summer term.	regularly, describing the key features that helped them. • Identify and name a variety of plants and animals in their habitats, including microhabitats **Activities for Working Scientifically:** • Observe animals and plants carefully, drawing and labelling diagrams. • Observe and describe how seeds and bulbs grow into mature plants – *onion in a glass of water* • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Activities for Working Scientifically:** • Make close observations of seeds and bulbs. • Classify seeds and bulbs. • Research and plan when and how to plant a range of seeds and bulbs. • Look after the plants as they grow – weeding, thinning, watering etc. - *allotment space* • Make close observations and measurements of their plants growing from seeds and bulbs. • Make comparisons between plants as they grow – *variety of vegetables in allotment*

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<table>
<tr><td rowspan="3">Year B KS1 2025-26</td><td>Topic: Paddington
Enquiry Question: Is Paddington suited to living in Peru or London?</td><td>Topic: Disease
Enquiry Question: How are we perfectly designed?</td><td>Topic: Robots
Enquiry Question: How can we stop our robots from rusting?</td></tr>
<tr><td colspan="3">Working Scientifically Years 1 and 2:
Asking simple questions and recognising that they can be answered in different ways.
Observing closely, using simple equipment.
Performing simple tests.
Identifying and classifying.
Using their observations and ideas to suggest answers to questions.
Gathering and recording data to help in answering questions.</td></tr>
<tr><td>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
Activities for Working Scientifically:
Classify objects found in the local environment – visit to Henley for pond dipping
Observe animals and plants carefully, drawing and labelling diagrams– visit to Henley for pond dipping
Create simple food chains for a familiar local habitat from first-hand observation and research – visit to Henley for pond dipping
Create simple food chains from information given e.g. in picture books – Enquiry type: Research using secondary sources - animals of Peru rainforest</td><td>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
Activities for Working Scientifically:
Make first-hand close observations of parts of the body e.g. hands, eyes.
Compare two people.
Take measurements of parts of their body.
Compare parts of their own body.
Look for patterns between people e.g. Do people with big hands have big feet? - Enquiry type: Noticing patterns
Classify people according to their features.
Investigate human senses e.g. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match?</td><td>Distinguish between an object and the material from which it is made
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
Describe the simple physical properties of a variety of everyday materials
Compare and group together a variety of everyday materials on the basis of their simple physical properties.
Activities for Working Scientifically:
Classify objects made of one material in different ways e.g. a group of object made of metal.
Classify in different ways one type of object made from a range of materials e.g. a collection of spoons made of different materials.
Test the properties of objects e.g. absorbency of cloths, strength of party hats made of</td></tr>
</table>

		• Explore and compare the differences between things that are living, dead, and things that have never been alive **Activities for Working Scientifically:** • Explore the outside environment regularly to find objects that are living, dead and have never lived. • Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Activities for Working Scientifically:** • Ask people questions and use secondary sources to find out about the life cycles of some animals – Enquiry type: Research using secondary sources • Observe animals growing over a period of time e.g. chicks, caterpillars, a baby. • Ask questions of a parent about how they look after their baby. • Ask pet owners questions about how they look after their pet. • Explore the effect of exercise on their bodies. • Classify food in a range of ways, including using the Eatwell Guide. • Investigate washing hands, using glitter gel. •	different papers, stiffness of paper plates, waterproofness of shelters – *Sustainability link: https://www.stem.org.uk/explorify/activities/flush-it-away Using the technique shown in the film, children could design a comparative test to find out which items are flushable.* • Can choose an appropriate method for testing an object for a particular property – *Enquiry type: Asking questions, Solving problems* • Can use their test evidence to answer the questions about properties e.g. "Which cloth is the most absorbent?" • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching **Activities for Working Scientifically:** • Classify materials. • Make suggestions about alternative materials for a purpose that are both suitable and unsuitable • Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for Elastigirl's costume, test materials for waterproofness to select the most appropriate for a rain hat – *to keep robot from rusting*

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Year C KS1 2026-27	**Topic: Explorers** **Enquiry Question: What skills does a scientist need to discover the 7.5 million undiscovered species on Earth?**	**Topic: Elements** **Enquiry Question: Which elements can we observe?**	**Topic: Space** **Enquiry Question: Where should your alien build their house?**
	Working Scientifically Years 1 and 2 • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.		
	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees • Identify and name a variety of plants and animals in their habitats, including microhabitats **Also see above for Working Scientifically Activities.** • *Enquiry Type: Research using secondary sources: Maria Sibylla Merian https://www.stem.org.uk/explorify/activities/who-is-maria-sibylla-merian, David Attenborough* • *Amazing animal journeys/migration* Begin observations of seasonal changes in Autumn. Plan for forcing bulbs in classroom for Spring term.	• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies. • Observe and describe how seeds and bulbs grow into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Also see above for Working Scientifically Activities.**	• Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **Also see above for Working Scientifically Activities.** • *End of unit assessment: create an alien creature perfectly adapted to its alien environment.* Continue observations of seasonal change.

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Year D KS1 2027-28	**Topic: The Deep** **Enquiry Question: What can you see through the window of a yellow submarine?**	**Topic: It's a Small World** **Enquiry Question: What is the world made from?**	**Topic: Mummies and Tombs** **Enquiry Question: How can we look after our bodies?**
	Working Scientifically Years 1 and 2 • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.		
	• Identify and name a variety of common animals including fish, amphibians and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, and marine mammals) • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. **Also see above for Working Scientifically Activities.** • *Malpelo Island?*	• Distinguish between an object and the material from which it is made • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties. **Also see above for Working Scientifically Activities.**	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Explore and compare the differences between things that are living, dead, and things that have never been alive • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Notice that animals, including humans, have offspring which grow into adults **Also see above for Working Scientifically Activities.** • Label basic parts of the human body on a mummy • Healthy diet for an Ancient Egyptian

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Year A KS2 2024-25	**Topic: Bang! Crash! Boom!** **Enquiry question: How can you hear a plane in the sky when it is so far away?**	**Topic: Prehistoric** **Enquiry question: How did a Helminghamosaurus become a fossil?**	**Topic: The Great Outdoors** **Enquiry Question: Which plants are living in the Helmingham habitat?**
	Working Scientifically Years 3 and 4 • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings. **Working Scientifically Years 5 and 6** • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. • Identifying scientific evidence that has been used to support or refute ideas or arguments.		
	• Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • Investigate the way in which water is transported within plants

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	• Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases. **Working Scientifically Activities:** • Classify sound sources. • Explore making sounds with a range of objects, such as musical instruments and other household objects. • Explore how string telephones or ear gongs work. • Explore altering the pitch or volume of objects, such as the length of a guitar string, amount of water in bottles, size of tuning forks. • Measure sounds over different distances – *use data loggers* • Measure sounds through different insulation materials.	**Working Scientifically Activities:** • Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc • Can classify rocks in a range of different ways, using appropriate vocabulary • Can devise tests to explore the properties of rocks and use data to rank the rocks • Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily – *observe local buildings for weathering* • Identify the different types of teeth in humans and their simple functions • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird **Working Scientifically Activities:** • Can record the teeth in their mouth (make a dental record) • Can explain the role of the different types of teeth • Can explain how the teeth in animal skulls show they are carnivores, herbivores or omnivores • Use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals. • Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth	• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Working Scientifically Activities:** • Observe what happens to plants over time when the leaves or roots are removed. • Observe the effect of putting cut white carnations or celery in coloured water. • Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. • Spot flowers, seeds, berries and fruits outside throughout the year. • Observe flowers carefully to identify the pollen. • Observe flowers being visited by pollinators e.g. bees and butterflies in the summer. • Observe seeds being blown from the trees e.g. sycamore seeds. • Research different types of seed dispersal. • Classify seeds in a range of ways, including by how they are dispersed. • Create a new species of flowering plant. • Recognise that soils are made from rocks and organic matter. **Working Scientifically Activities:** • Can classify rocks in a range of different ways, using appropriate vocabulary • Can devise tests to explore the properties of rocks and use data to rank the rocks

			• Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily • Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc. • Can identify plant/animal matter and rocks in samples of soil • Can devise a test to explore the water retention of soils • Give reasons for classifying plants based on specific characteristics. **Working Scientifically Activities:** • Use first-hand observation to identify characteristics shared by the animals in a group. • Use secondary sources to research the characteristics of animals that belong to a group. • Use information about the characteristics of an unknown animal or plant to assign it to a group.

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<table>
<tr><td>Year B KS2 2025-26</td><td>Topic: Paddington
Enquiry Question: What makes Paddington a very rare sort of bear?</td><td>Topic: Disease
Enquiry Question: How are we perfectly designed?</td><td>Topic: Robots
Enquiry Question: How can you turn your robot off?</td></tr>
<tr><td colspan="4">Working Scientifically Years 3 and 4
• Asking relevant questions and using different types of scientific enquiries to answer them.
• Setting up simple practical enquiries, comparative and fair tests.
• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
• Identifying differences, similarities or changes related to simple scientific ideas and processes.
• Using straightforward scientific evidence to answer questions or to support their findings.

Working Scientifically Years 5 and 6
• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
• Using test results to make predictions to set up further comparative and fair tests.
• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
Identifying scientific evidence that has been used to support or refute ideas or arguments.</td></tr>
<tr><td></td><td>• Recognise that living things can be grouped in a variety of ways

• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

• Recognise that environments can change and that this can sometimes pose dangers to living things.</td><td>• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat

Working Scientifically Activities:
• Classify food in a range of ways.
• Use food labels to explore the nutritional content of a range of food items.
• Use secondary sources to find out the types of food that contain the different nutrients.</td><td>• Identify common appliances that run on electricity

• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

• 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</td></tr>
</table>

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	• **Working Scientifically Activities:** • Observe plants and animals in different habitats throughout the year. • Compare and contrast the living things observed. • Use classification keys to name unknown living things. • Classify living things found in different habitats based on their features. • Create a simple identification key based on observable features. • Use fieldwork to explore human impact on the local environment e.g. litter, tree planting. • Use secondary sources to find out about how environments may naturally change. • Use secondary sources to find out about human impact, both positive and negative, on environments • Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter • 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 • Give reasons for classifying animals based on specific characteristics. • **Working Scientifically Activities:** • Use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important.	• Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks? • Plan a daily diet to contain a good balance of nutrients. Enquiry type: noticing patterns • Explore the nutrients contained in fast food. • Describe the simple functions of the basic parts of the digestive system in humans **Working Scientifically Activities:** • Research the function of the parts of the digestive system. • Create a model of the digestive system using household objects. • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans. • Create a role play model for the circulatory system. • Carry out a range of pulse rate investigations: fair test – effect of different activities on my pulse rate	• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors. • **Working Scientifically Activities:** • Construct a range of circuits. • Explore which materials can be used instead of wires to make a circuit. • Classify the materials that were suitable/not suitable for wires. • Explore how to connect a range of different switches and investigate how they function in different ways. • Choose switches to add to circuits to solve particular problems, such as a pressure switch for a burglar alarm. • Apply their knowledge of conductors and insulators to design and make different types of switch. • Make circuits that can be controlled as part of a DT project. • **N.B.**Children should be given one component at a time to add to circuits. • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

	• Use first-hand observation to identify characteristics shared by the animals in a group. • Use secondary sources to research the characteristics of animals that belong to a group. • Use information about the characteristics of an unknown animal or plant to assign it to a group. • Classify plants and animals, presenting this in a range of ways e.g. Venn diagrams, Carroll diagrams and keys. • Create an imaginary animal which has features from one or more groups. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. **Working Scientifically Activities:** • Investigate patterns asking questions such as: Can people with longer legs run faster? Can people with bigger hands catch a ball better? • Compare, contrast and classify skeletons of different animals. • Use their data to look for patterns (or lack of them) when answering their enquiry question • Can give similarities e.g. they all have joints to help the animal move, and differences between skeletons • Construct and interpret a variety of food chains, identifying producers, predators and prey. **Working Scientifically Activities:** • Use food chains to identify producers, predators and prey within a habitat. • Use secondary sources to identify animals in a habitat and find out what they eat.	pattern seeking – exploring which groups of people may have higher or lower resting pulse rates observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate) pattern seeking – exploring recovery rate for different groups of people. • Research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise by asking an expert or using carefully selected secondary sources.	• Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram **Working Scientifically Activities:** • Explain how a circuit operates to achieve particular operations, such as to control the light from a torch with different brightnesses or make a motor go faster or slower. • Make circuits to solve particular problems, such as a quiet and a loud burglar alarm. • Carry out fair tests exploring changes in circuits. • Make circuits that can be controlled as part of a DT project

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<table>
<tr><th></th><th>Autumn</th><th>Spring</th><th>Summer</th></tr>
<tr><td rowspan="3">Year C KS2 2026-27</td><td>Topic: Explorers
Enquiry Question: How can you travel from pole to pole with least resistance/in 80 days?</td><td>Topic: Elements
Enquiry Question: How could climate change affect the water cycle?</td><td>Topic: Space
Enquiry Question: How has our understanding of space changed over time?</td></tr>
<tr><td colspan="3">Working Scientifically Years 3 and 4
• Asking relevant questions and using different types of scientific enquiries to answer them.
• Setting up simple practical enquiries, comparative and fair tests.
• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
• Identifying differences, similarities or changes related to simple scientific ideas and processes.
• Using straightforward scientific evidence to answer questions or to support their findings.

Working Scientifically Years 5 and 6
• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
• Using test results to make predictions to set up further comparative and fair tests.
• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
• Identifying scientific evidence that has been used to support or refute ideas or arguments.</td></tr>
<tr><td>• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

• Compare how things move on different surfaces</td><td>• Compare and group materials together, according to whether they are solids, liquids or gases

• Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</td><td>• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system

• Describe the movement of the Moon relative to the Earth

• Describe the Sun, Earth and Moon as approximately spherical bodies</td></tr>
</table>

	• Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. **Working Scientifically Activities:** • **Please use Ogden trust resources 'Phizzi Forces':** • Carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc. • Explore what materials are attracted to a magnet. • Classify materials according to whether they are magnetic. • Explore the way that magnets behave in relation to each other. • Use a marked magnet to find the unmarked poles on other types of magnets.	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Working Scientifically Activities:** • Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind. • Classify materials according to whether they are solids, liquids and gases. • Observe a range of materials melting e.g. ice, chocolate, butter. • Investigate how to melt ice more quickly. • Observe the changes when making rocky road cakes or ice-cream. • Investigate the melting point of different materials e.g. ice, margarine, butter and chocolate. • Explore freezing different liquids e.g. tomato ketchup, oil, shampoo. • Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration). • Observe water evaporating and condensing e.g. on cups of icy water and hot water. • et up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers • Use secondary sources to find out about the water cycle.	• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object **Working Scientifically Activities:** • Use secondary sources to help create a model e.g. role play or using balls to show the movement of the Earth around the Sun and the Moon around the Earth. • Use secondary sources to help make a model to show why day and night occur. • Make first-hand observations of how shadows caused by the Sun change through the day. • Make a sundial. • Research time zones. • Consider the views of scientists in the past and evidence used to deduce shapes and movements of the Earth, Moon and planets before space travel.

	• Explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table. • Devise an investigation to test the strength of magnets. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **Working Scientifically Activities:** • Investigate the effect of friction in a range of contexts e.g. trainers, bathmats, mats for a helter-skelter. • Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water and pulling shapes, such as boats, along the surface of water. • Investigate the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats. • Explore how levers, pulleys and gears work. • Make a product that involves a lever, pulley or gear. • Create a timer that uses gravity to move a ball. • Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.		

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<table>
<tr><td rowspan="3">Year D KS2 2027-28</td><td>Topic: The Deep
Enquiry Question: How can we separate plastic from the ocean?</td><td>Topic: It's a Small World
Enquiry Question: Can you recognise the shadows from these famous places around the world?</td><td>Topic: Mummies and Tombs
Enquiry Question: How have humans evolved since the Ancient Egyptians?</td></tr>
<tr><td colspan="3">Working Scientifically Years 3 and 4
• Asking relevant questions and using different types of scientific enquiries to answer them.
• Setting up simple practical enquiries, comparative and fair tests.
• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
• Identifying differences, similarities or changes related to simple scientific ideas and processes.
• Using straightforward scientific evidence to answer questions or to support their findings.

Working Scientifically Years 5 and 6
• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
• Using test results to make predictions to set up further comparative and fair tests.
• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
Identifying scientific evidence that has been used to support or refute ideas or arguments.</td></tr>
<tr><td>• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</td><td>• Recognise that they need light in order to see things and that dark is the absence of light

• Notice that light is reflected from surfaces

• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</td><td>• Describe the life process of reproduction in some plants and animals

Working Scientifically Activities:
• Use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals.
• Can present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game</td></tr>
</table>

Helmingham Science Curriculum Coverage

	• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • 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. **Working Scientifically Activities:** • Investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat. • Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate. • Investigate rates of dissolving by carrying out comparative and fair test. • Separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.	• Recognise that shadows are formed when the light from a light source is blocked by an opaque object • Find patterns in the way that the size of shadows change **Working Scientifically Activities:** • Explore how different objects are more or less visible in different levels of lighting. • Explore how objects with different surfaces (e.g. shiny vs matt) are more or less visible. • Explore how shadows vary as the distance between a light source and an object or surface is changed. • Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground. • Choose suitable materials to make shadow puppets. • Create artwork using shadows. • Recognise that light appears to travel in straight lines • 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 • 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	• Describe the changes as humans develop to old age **Working Scientifically Activities:** • This unit is likely to be taught through direct instruction due to its sensitive nature, although children can carry out a research enquiry by asking an expert e.g. school nurse to provide answers to questions that have been filtered by the teacher. Can present information about the changes occurring during puberty as an information leaflet for other Y5 children or answers to 'problem page questions' • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Working Scientifically Activities:** • Design a new plant or animal to live in a particular habitat.

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	• Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning. • Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? • Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).	• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Working Scientifically Activities:** • Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card. • Explore the uses of the behaviour of light, reflection and shadows, such as in periscope design, rear view mirrors and shadow puppets.	• Use models to demonstrate evolution e.g. 'Darwin's finches' bird beak activity. • Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution. • Make observations of fossils to identify living things that lived on Earth millions of years ago. • Identify features in animals and plants that are passed on to offspring and explore this process by considering the artificial breeding of animals or plants e.g. dogs. • Compare the ideas of Charles Darwin and Alfred Wallace on evolution. • Research the work of Mary Anning and how this provided evidence of evolution.

N.B. Key Stage One objectives are repeated once throughout the 4 year rolling cycle to ensure every child is taught all the Key Stage One objectives before moving into Key Stage Two.