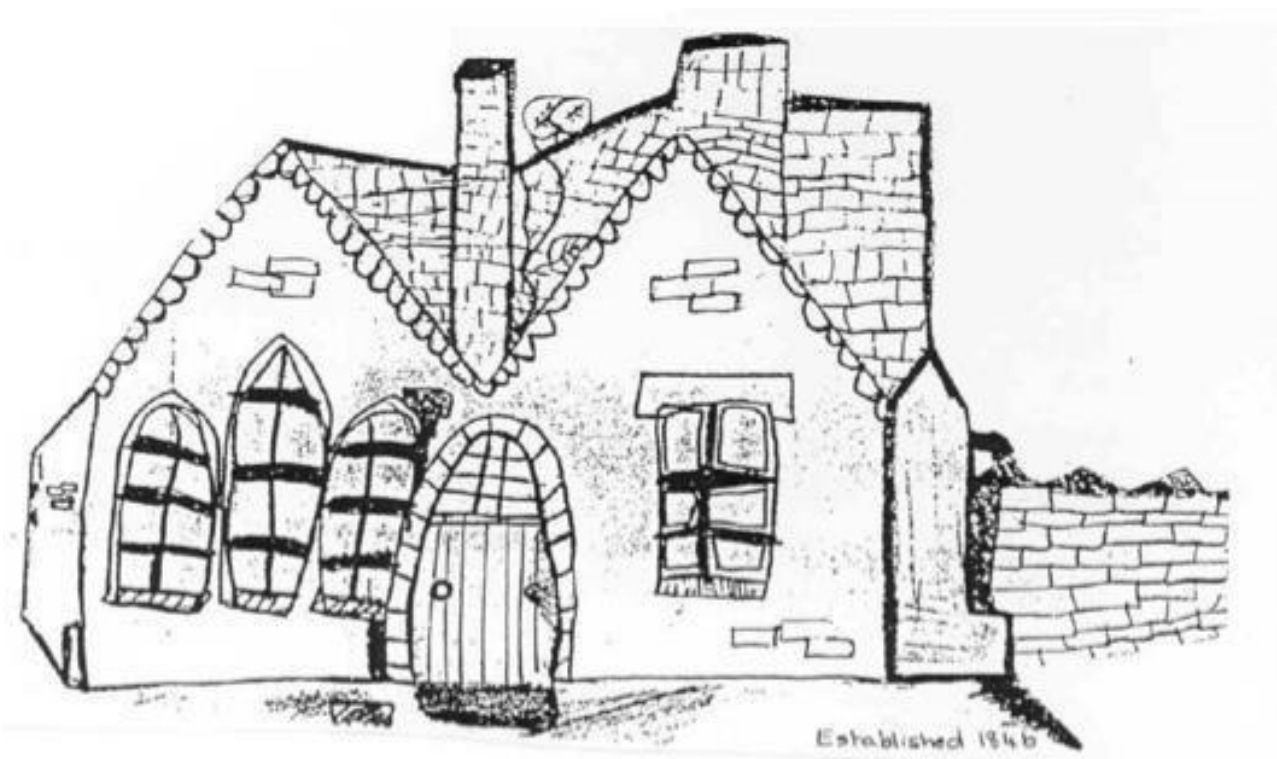




Science Progression and Skills Map



Our curriculum is driven by our Christian Vision and values, the culture and diversity of our local. National and global community.

'Fullness of life for all, through working together with the love of Christ.'

At Quinton Church Primary School, we believe that everyone should have life in all its fullness. Therefore, our aim is for everyone to be part of our **Christian community** where everyone is happy, safe and supported, feels **loved** and demonstrates kindness; understands **justice** and shows fairness to all; and receives high quality education and is empowered to live life to the full (John 10:10).

We are not only inspired by John 10:10, but by Micah 6:8, which shows us how to live life in all its fullness.

'The LORD has told us what is good. What he requires of us is this: to do what is just, to show constant love, and to live in humble fellowship with our God.'

Be kind, be fair, be thankful.

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PROGRESSION of KNOWLEDGE AND SKILLS MAP – Science

Working Scientifically

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ask Questions and Predict	Ask questions about the world around them,	Ask simple questions when prompted.	Ask simple questions.	Ask relevant questions. When prompted.	Ask relevant questions.		
Plan	Discuss how they might test an idea. Say what they think might happen.	Suggest ways of answering a question.	Recognise that questions can be answered in different ways.	Use different types of scientific enquiry to answer questions.	Use different types of scientific enquiries to answer their questions.	Plan different types of scientific enquiries to answer questions. With prompting, recognise and control variables where necessary.	Plan different types of scientific enquiries to answer questions. Recognise and control variables where necessary.
Set up and perform a test		Conduct simple tests, with support.	Perform simple tests.	Set up simple and practical enquiries, comparative and fair tests with some support.	Set up simple and practical enquiries, comparative and fair tests.		
Observe and Measure	Describe what they can see. Make a measurement, e.g., is it bigger or smaller?	Make relevant observations using simple equipment.	Observe closely, using simple equipment.	Make systematic and careful observations, using simple equipment. Use standard units when taking measurements.	Make systematic and careful observations, using a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units, where appropriate.	Select, with prompting and taking appropriate equipment to take readings. Take precise measurements using standard units. Begin to understand the need for repeat readings.	Use a range of scientific equipment to take measurements. Take measurement with increasing accuracy and precision. Take repeat readings when appropriate.

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Record	Draw what happened. Sorting or grouping different items.	Gather and record data. Identify and classify, with guidance.	Gather and record data to help answer questions. Identify and classify,	With modelling and guidance gather, record, classify and present data in a variety of ways to help answer questions. With prompting, use various ways of recording, grouping and displaying evidence and suggest how findings may be tabulated.	Gather, record, classify and present data in a variety of ways to help an answer questions. Record findings using simple scientific language, drawings and labelled diagrams. Record finding using keys, bar charts ad tables.	Take and process repeat readings. Record data and results. Record data and results. Record data using labelled diagrams, keys, tables and charts. Use line graphs to record data.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs.
Conclude		Recognise findings. Use their observations and ideas to suggest answers to simple questions.	Use their observations and ideas to suggest answers to simple questions.	With prompting, suggest conclusions from enquires. Suggest possible improvements or further questions to investigations.	Identify differences, similarities or changes related to simple ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Suggest further comparative or fair tests. Report and present findings from enquires, including conclusions and, with prompting, suggest casual relationships.	Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions and casual relationships.
Report			Record and communicate their findings in a range of ways and begin to sue simple scientific language.	Suggest how findings could be reported.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations.	With support, present findings from enquiries orally and in writing.	Report and present findings from enquiries in oral and written forms such as displays and other presentation. Report and present findings from enquiries, including explanations of, and degree of, trust in result.

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WS Vocabulary		<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe</p>	<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe Also: Observe changes over time Notice patterns Secondary sources Hand lenses Egg timers Identify Classify data</p>	<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe Also: Scientific enquiry changes over time Notice patterns Secondary sources Comparative tests Fair tests</p>	<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe Also: Enquiry types Notice patterns Secondary sources Comparative tests Fair tests Increase Decrease Identify Classify Order Casual relationships Appearance Present results Data loggers Independent variables Dependent variables Controlled variable Accuracy Precision Degree of trust Classification keys Scatter graphs Line graphs Support/ refute</p>	<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe Also: Enquiry types Notice patterns Secondary sources Comparative tests Fair tests Increase Decrease Identify Classify Order Casual relationships Appearance Present results Data loggers Independent variables Dependent variables Controlled variable Accuracy Precision Degree of trust Classification keys Scatter graphs Line graphs Support/ refute</p>	<p>Questions Answers Equipment Gather Measure Record Sort Group Test Explore Observe Compare Describe Similar/ities Different/ces Beaker Pipette Syringe Also: Enquiry types Notice patterns Secondary sources Comparative tests Fair tests Increase Decrease Identify Classify Order Casual relationships Appearance Present results Data loggers Independent variables Dependent variables Controlled variable Accuracy Precision Degree of trust Classification keys Scatter graphs Line graphs Support/ refute Fact/ opinion</p>

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Physics

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Weather and Seasons</p> <p><u>UNDERSTANDING THE WORLD</u></p> <p><u>THE WORLD</u></p> <p>Children will know about similarities and differences in relation to places, objects, materials and living things.</p> <p>They will be able to talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>They will make observations of animals and plants and explain why some things occur and talk about changes.</p>	<p><u>SEASONS - AUTUMN & WINTER</u></p> <p>AUTUMN 2</p> <ul style="list-style-type: none"> • names of the four seasons. • which months are in each of the four seasons. • what we mean by the word 'weather'. • weather patterns, weather symbols and what the weather is like in both autumn and winter. • how we, as humans, might dress differently according to the weather outside. • how daylight hours change across autumn and winter. • the impact of changing weather and seasons on different plants and animals. <p><u>SEASONS - SPRING & SUMMER</u></p> <p>SUMMER 1</p> <ul style="list-style-type: none"> • how the weather changes from winter to spring. • what happens to plants and animals in spring and summer. • what changes can be seen in the weather from spring to summer. • understand how the changing seasons can affect humans. 					

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces and Magnets				<p><u>FORCES & MAGNETS</u> SUMMER 2</p> <ul style="list-style-type: none"> • what forces are in terms of pushes and pulls. • that gravity and friction are forces. • how objects move on different surfaces. • what a magnet is and what different magnets look like. • that a magnet has two poles. • how magnets react to each other. • materials can be magnetic or non-magnetic. • how to investigate whether a material is magnetic. • how magnets are used in real-life scenarios to make some tasks much easier. 		<p><u>FORCES</u> AUTUMN 2</p> <ul style="list-style-type: none"> • the names of a range of different forces – gravity, friction, water resistance, air resistance, upthrust and magnetism. • which forces are pushes and which are pulls. • the difference between contact and non-contact forces. • the difference between balanced and unbalanced forces. • who Isaac Newton was and the role he played in helping us to understand forces. • what ‘matter’ is, the difference between mass and weight and how we measure both. • how friction works in the world around us. • how air resistance works in the world around us. • who Galileo Galilei was and the role he played in helping us to understand air resistance. • how upthrust (or buoyancy) and water resistance act in water. • what ‘density’ is and the relationship between density and whether an object is able to float. • what levers, pulleys and gears are and what they can do to the strength and size of a force. 	

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Lights	<p><u>UNDERSTANDING THE WORLD</u></p> <p><u>THE WORLD</u></p> <p>Children will know about similarities and differences in relation to places, objects, materials and living things.</p> <p>They will be able to talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>They will make observations of animals and plants and explain why some things occur, and talk about changes.</p>			<p><u>LIGHT & SHADOWS</u> <u>SPRING 1 & 2</u></p> <ul style="list-style-type: none"> • there are different sources of light and those sources can be natural or man-made. • who Thomas Edison was and why he is considered significant. • darkness is the absence of light and light allows us to see things. • light is reflected from surfaces. • some objects are opaque, some are transparent, and some are translucent. • shadows are formed when light is blocked by an opaque object. • position, shape and size of a shadow can be varied. • light is dangerous, and we can take steps to protecting our ourselves from the Sun. • the different uses of mirrors. 			<p><u>LIGHT & PERCEPTION</u> <u>AUTUMN 1</u></p> <ul style="list-style-type: none"> • that we see when light is reflected from an object into our eyes. • light travels (or appears to travel) in straight lines. • the parts of the human eye and how the eye works. • reflection is when light bounces off a surface and changes the direction of the ray of light. • the angle of incidence is always equal to the angle of reflection. • how light behaves in water (refraction). • clear white light is made of 7 colours. • the colours we see are known as the visible spectrum. • light waves can be absorbed, transmitted or reflected to create colour, white or black. • how shadows are formed and that they are the same shape as the object that cast them. • what light pollution is and its impact on both humans and animals.
Sound					<p><u>SOUND</u> <u>SUMMER 1</u></p> <ul style="list-style-type: none"> • sound is a form of energy which is produced when something vibrates. • different instruments make sound in different ways. • sound travels in waves. • how sound travels through solids, liquids and gases. • what makes up the inside of our ears. • how we hear and how we can protect our hearing. • volume is the intensity of sound and is determined by the strength of vibrations. • pitch is how high or low a sound is and is controlled by the speed of vibrations. • the distance we are from a sound impacts the volume at which we hear the sound. 		

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity					<p><u>ELECTRICITY</u> SUMMER 2</p> <ul style="list-style-type: none"> • electricity is a form of energy which powers many things we use every day. • an electric current is a flowing charge of electricity • there are renewable and non-renewable methods of producing electricity. • some appliances use electricity and others do not. • it is important to be safe and sensible around electricity. • what a circuit is and which components are needed to construct a circuit. • the difference between a complete and incomplete circuit. • how the brightness of a bulb can change within a circuit. • the function of a simple switch within a circuit. • which materials are conductors and insulators of electricity and how to investigate this property. 		<p><u>ELECTRICITY & CIRCUITS</u> SUMMER 1</p> <ul style="list-style-type: none"> • electricity is a type of energy produced when electrons move around very quickly and create a current. • electricity can be produced by generators which can be powered by renewable and non-renewable sources. • electrical components in a circuit can be represented by symbols. • the symbols for a bulb, cell, battery, buzzer, motor and switch (on and off). • what happens to the components in a circuit if a component is added to the circuit or a component is changed. • the difference between a parallel and a series circuit. • we measure electricity in volts (V).

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space						<p><u>EARTH & SPACE</u> AUTUMN 1</p> <ul style="list-style-type: none"> • what a sun is, what a solar system is, what a galaxy is and how our own solar system fits in to the wider universe. • which planets make up our own solar system. • knowledge of the inner and outer planets of the solar system including order, size, what the planet consists of, atmosphere, temperature, rotation and orbit. • what the relationship is between the Earth and the sun in relation to night and day. • what a time zone is and how the different time zones are arranged across the world. • what the relationship is between the Earth and the sun in relation to seasons. • how daylight hours change across the year in different places across the world. • what a moon is and what the phases of our own moon are. • the heliocentric and geocentric theories of the solar system. • the flat and spherical Earth theories. • the views of various astronomers over time: Aristotle, Ptolemy, Alhazen, Tusi, Copernicus and Galileo. 	

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Chemistry

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials	<p><u>UNDERSTANDING THE WORLD</u></p> <p><u>THE WORLD</u></p> <p>Children will know about similarities and differences in relation to places, objects, materials and living things.</p> <p>They will be able to talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>They will make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p><u>EVERYDAY MATERIALS</u> <u>AUTUMN 1</u></p> <ul style="list-style-type: none"> • what materials are and the names of different materials. • what different materials look like. • which materials different objects are made from. • what some the properties of different materials are and if materials can have other properties. • some properties are easy to see but others need to be Investigated. • how the properties of materials mean they are used to make certain objects. • how to group, sort, and compare objects and materials. 	<p><u>USE OF MATERIALS</u> <u>AUTUMN 2</u></p> <ul style="list-style-type: none"> • the materials different objects are made from. • how materials are used in their local area. • gather and use data to compare the suitability of different materials. • perform simple tests to explore how the shapes of objects made from some materials can be changed. • suggest ways to stop plastic pollution. • understand how new materials have been/are discovered. 	<p><u>ROCKS & FOSSILS</u> <u>AUTUMN 2</u></p> <ul style="list-style-type: none"> • what rocks are and how they can be classified as either sedimentary, igneous or metamorphic. • the properties of different types of rocks – in particular, durability and permeability. • how different rocks can be used and how those uses are based upon their properties. • what fossils are and what they can tell us about the past. • who Mary Anning was. • the process of fossilisation and the different types of fossils. • what soil is, what soil is made from and whether all soils are the same. 	<p><u>STATES OF MATTER</u> <u>AUTUMN 2</u></p> <ul style="list-style-type: none"> • what the three states of matter are and the properties of each one. • the processes of melting and freezing and how these processes affect the properties and state of a substance. • some of the conditions that can affect melting and freezing for example temperature. • what the processes of evaporation and condensation are. • what the water cycle is. • where the processes of evaporation and condensation fit into the water cycle. • the importance of the water cycle for plants and animals. 	<p><u>PROPERTIES & CHANGES OF MATERIALS</u> <u>SPRING 1 & 2</u></p> <ul style="list-style-type: none"> • materials can be grouped based on their properties including hardness, solubility, transparency and conductivity. • what we mean by ‘dissolving’ and whether certain substances dissolve in water to form a solution. • whether the rate at which a substance dissolves can be altered by heat or stirring. • mixtures can be sometimes be separated by sieving, filtering and/or evaporation. • the difference between a reversible and an irreversible change. • examples of reversible and irreversible changes. • the impact of heating and cooling on a range of different materials. • what happens when something burns. • how new materials are usually formed after an irreversible change. • the chemists and scientists who have created new materials that we use in our everyday lives. 	

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Biology

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	<p><u>UNDERSTANDING THE WORLD</u></p> <p><u>THE WORLD</u></p> <p>Children will know about similarities and differences in relation to places, objects, materials and living things.</p> <p>They will be able to talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>They will make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p><u>COMMON PLANTS</u> <u>SUMMER 2</u></p> <ul style="list-style-type: none"> • what a plant is and the basic parts of a plant. • recognise and name common garden plants. • recognise and name common wild plants. • recognise and name different types of trees. • know why plants are important. 	<p><u>BULBS AND GROWTH</u> <u>SUMMER 2</u></p> <ul style="list-style-type: none"> • what seeds are and the different types of seeds. • that plants can grow from seeds but can also grow from bulbs. • what is meant by 'seed dispersal'. • what is meant by 'germination' and that seeds need certain conditions to germinate. • the needs of a plant for survival after the initial germination stage. 	<p><u>PLANTS – NEEDS FOR SURVIVAL</u> <u>SUMMER 1</u></p> <ul style="list-style-type: none"> • what a plant needs to grow. • the impact of fertiliser on a growing plant. • plants have roots to absorb water and nutrients but also to anchor the plant in the ground. • plants have a stem as it is needed to support the plant and transport water from the roots. • plants have leaves because they play an important part in how a plant produces its own food. • that flowering plants produce flowers as an important part of their lifecycle. • the stages in the lifecycle of a flowering plant. 			
Animals including Humans		<p><u>AMAZING ANIMALS</u> <u>SPRING 1 & 2</u></p> <ul style="list-style-type: none"> • recognise and name a variety of common animals including fish, amphibians, reptiles, birds, and mammals. • recognise and name a variety of common animals that are carnivores, herbivores, and omnivores. • know similarities and differences across a variety of common animals (fish, amphibians, reptiles, birds, and mammals, including pets). • recognise and name the basic parts of the human body and say which part of the body is associated with each sense. 	<p><u>ANIMALS – NEEDS FOR SURVIVAL</u> <u>AUTUMN 1</u></p> <ul style="list-style-type: none"> • the things that animals need to survive. • know how animals change as they grow • know why exercise is important to health • what a balanced diet is and apply this knowledge to understanding their own diet • understand what hygiene is and why it is important 	<p><u>SKELETON & MUSCLES</u> <u>AUTUMN 1</u></p> <ul style="list-style-type: none"> • what a human skeleton looks like. • what the function of the human skeleton is in terms of movement, support and protection. • how bones and muscles work together. • the different types of muscle found within our bodies. • how skeletons vary between different animals – endoskeletons, exoskeletons and hydrostatic skeletons. • what nutrition is and how it is obtained through eating different food groups. • how different animals get the nutrition they need. 	<p><u>TEETH & DIGESTION</u> <u>AUTUMN 1</u></p> <ul style="list-style-type: none"> • the names of the different types of human teeth and the function of each type. • the importance of looking after teeth and what can happen if we do not look after our teeth. • how eating and drinking can damage teeth over time. • that not all animals have the same teeth. • the teeth that animals have greatly depend on whether that animal is a carnivore, an omnivore or an herbivore. • the different organs that make up the digestive system. • how the digestive system functions as a whole system. 	<p><u>GROWING OLD</u> <u>SUMMER 2</u></p> <ul style="list-style-type: none"> • humans grow and change throughout the human lifecycle. • how to place the stages of the human lifecycle on a timeline. • the stages of development in babies and children. • an introduction to what puberty is. • how humans change from adulthood to old age. • the changes experienced in old age. 	<p><u>CIRCULATION & LIFESTYLE</u> <u>SUMMER 2</u></p> <ul style="list-style-type: none"> • the circulatory system consists of the heart, the lungs and the systemic system. • the role the heart play in the circulatory system. • the names of the different parts of the human heart • human blood consists of plasma, white blood cells and platelets and red blood cells. • the role the lungs play in the circulatory system. • how heart rate differs before and after exercise. • how nutrients are moved around the body by the circulatory system after they are broken down by the digestive system. • how diet, exercise and lifestyle impact the heat and the body. • what drugs are (legal and illegal) and the impact of different drugs on the human body.

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Living Things and their Habitats</p>			<p>HABITATS SPRING 1 & 2</p> <ul style="list-style-type: none"> • recognise and classify objects and organisms as: alive, dead, or never alive. • explore how we know if an object or organism is alive – using the life processes. • know some of the different habitats plants are found in. • investigate and name the minibeasts found in a range of different microhabitats. • which animals are found in different world habitats with a focus on the Arctic and the Sahara. • understand simple food chains using the vocabulary carnivore, herbivore, omnivore, predator and prey. • understand that habitats can change over time. <p>CONSERVATION SUMMER 1</p> <ul style="list-style-type: none"> • why we need to protect our planet. • what we mean by the word ‘environment’. • why trees are so important for the environment • how habitats can be negatively impacted. • how their local environment is being impacted. • the different ways in which we can save or conserve water and electricity. • how their actions at home could support the protection of the environment. 		<p>CLASSIFICATION & ENVIRONMENT SPRING 1 & 2</p> <ul style="list-style-type: none"> • a habitat is the natural home of an organism. • all living organisms display the seven characteristics of life. • organisms within a habitat or ecosystem are interdependent. • the relationships between organisms can be represented by food chains and food webs • the difference between a vertebrate and an invertebrate. • vertebrates can be classified into five different groups. • invertebrates can be classified into seven different groups. • characteristics of animals supports us with classification. • we can use a key to identify and classify animals. • plants can be classified as flowering or non-flowering. • non-flowering plants can be classified into three groups. • who Libbie Hyman was and why she is considered significant. • that environments can change due to natural causes and through the actions of humans and that these changes can be both positive and negative. • the organisms and habitats found within their own local environment and how these are changing. 	<p>LIFE CYCLES SUMMER 1</p> <ul style="list-style-type: none"> • the difference between sexual and asexual reproduction. • the process of pollination and the role it plays in the lifecycle of a flowering plant. • how plants reproduce both sexually and asexually. • how different animals produce offspring. • how lifecycles differ between animals. • how and why gestation periods differ between animals. • what a naturalist is and why both Jane Goodall and David Attenborough are considered significant. 	<p>CLASSIFICATION OF SPECIES AUTUMN 2</p> <ul style="list-style-type: none"> • who Carl Linnaeus was and how his work influenced the classification of living things. • how to use the Linnaean System of classification. • the six kingdoms used in classification are: kingdom archaea, Kingdom Bacteria, Kingdom Protista, Kingdom Fungi, Kingdom Plantae and Kingdom Animalia. • how to classify vertebrates and invertebrates. • how to classify plants – beginning with vascular and non-vascular. • what microorganisms are and how they can be classified. • the positive and negative impacts of microorganisms. • how habitats are important for the conservation of species.

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evolution and Inheritance							<p><u>EVOLUTION & INHERITANCE</u> SPRING 1& 2</p> <ul style="list-style-type: none"> • why the information fossils give us is so important. • who Mary Anning was and why her findings are significant. • living things have adapted or changed over time to be able to survive in their environments. • why animals need to adapt to their environments. • natural selection is when living things are better adapted to their environments and have a greater chance of survival. • evolution takes a very long time and animals do not simply chose to evolve. • who Charles Darwin and Alfred Wallace were and why they are considered significant. • why living things produce offspring of the same kind. • why offspring vary and are not identical to their parents.

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