Science- Mexborough St John the Baptist C of E Primary School- **Long Term Rationale**

Year Group	**F1**				
Rationale	In F1 children begin to ask simple questions and explore the direct world around them. They will begin to explore the idea that plants are living and the they grow and change and that they do this in similar ways. This is linked with familiar stories to encourage understanding and relate to their own knowledge and experience. In F2, they will use this exploration to grow their own plants and care for them based on their basic needs. They will begin to discuss the parts of the body and how they are used such as their eyes, ears, nose and mouth and make links with the ideas of the 5 senses, which allow them to explore the world around them. In F2, this will be explored further when the children start to label the body parts and begin to explore how children grow, as well as thinking about the healthy food that they need to eat and what is means to be healthy. They also build on the knowledge of the 5 senses by then describing the senses that they are able to experience. Children in F1 will begin to compare and categories familiar animals such as farm animals but then compare these to wild animals, some of which they may be less familiar with. This links in with their learning about habitats and life cycles of the animals they have become more familiar with. They will use this knowledge to create their own habitats for wild animals that may visit the school ground when they are not at school; demonstrating that there is life beyond their understanding of school and home. This will be linked again with familiar stories that have animals and their homes as the key focus. This is then developed further in F2 when children start to consider why animals have the habitats they do and make links between the life cycles of animals and what is it they need in order to survive. In materials, F1 start to use their sense to discover different materials that they have around they and discuss how these might feel. In F2, children expand this knowledge by having to name a variety of familiar materials and select appropriate materials based on their properties.				
Topic Areas	Plants	Animals, Including Humans	Living Things in their Habitats	Materials	Forces and Magnets
Objectives	To know that every living beings/plants has a life cycle and they change in shape and size as they grow. To know that living beings/plants follow a similar growth pattern and make comparisons. To listen to traditional stories such as Jack and the Beanstalk and talk about plants. Plant their own seeds and check how tall the plants grow.	To be able to talk about their basic body parts and what the function is of each part. To use senses to explore the world around them. To know the difference between farm animals and wild animals. To be able to categorise animals by their characteristics.	Make comparisons between habitats of farm animals and wild animals. Make own habitats using a range of resources. Listen to traditional stories such as Goldilocks and Three Little Pigs and talk about the habitats. Confidently talk about the life cycle of a plant and animals.	Explore collections of materials with similar or different properties.	To talk about forces they feel.

Year Group	F2				
Rationale	In F2 children develop their simple questions from the previous year and explore the direct world around them. They will use this exploration to grow their own plants and care for them based on their basic needs which builds on their prior knowledge of plants that grow in similar ways. This expands further in Year 1, when children focus on identifying and comparing specific plants and trees within their locality. In F2, the human body is explored further when the children start to label the body parts and begin to explore how children grow, as well as thinking about the healthy food that they need to eat and what is means to be healthy. They also build on the knowledge of the 5 senses by then describing the senses that they are able to experience. As this develops in Year 1, children start to label the body parts of animals as well as humans. They will also build on the basic categorising skills of F1 and F2 as they start to use more scientific language to classify and compare. In F2 when children start to develop their understanding of habitats and life cycles as they begin to consider *why* animals have the habitats they do and make links between the life cycles of animals and what is it they need in order to survive. This unit is then revisited in Year 2, where children start to widen their search of habitats in to those around the world and how the animal's life cycle is intertwined within their habitat. Materials will now begin to be names and selected by their properties in order to be used appropriately. In Year 3, children will need to use this knowledge to compare and categories materials that they have experienced around them. At this stage, children first begin to talk about the changes they notice in the environment around them; observing the weather and the changes of the seasons. In the next year, children will start to discuss the change of each season, including the understanding that the hours of daylight in summer are longer than those in winter.				
Topic Areas	Plants	Animals, Including Humans	Living Things in their Habitats	Materials	Earth
Objectives	To plant seeds and care for growing plants.	To talk about how they have changed since they were a baby. To know and label body parts. To know that some animals are nocturnal. To identify and sort healthy/ unhealthy foods. Describe what they see, hear and feel while outside.	Exploring a range of habitats, looking at why the animal lives like that. To know that humans and other animals and plants can grow. Talking about the life cycle of plants and animals and what they need to survive.	To name and identify a range of different materials and to know how they are used in familiar environments. To select appropriate materials according to their properties.	To talk about the changes and explore the effect they observe in their environment – Seasons link.

Year Group	1			
Rationale	In Year 1, children are identifying, observing and comparing common objects that are familiar to them and found within their more localised environment. It develops the exploratory aspects, learnt in EYFS and focuses more specifically on identifying common trees and plants in their locality and explore plant structure. In Year 2, the children will build on this knowledge further by understanding the needs and life cycle of the common plants they have studied in Year 1 and compare this with the needs of animals. This will be developed further in Year 3, when children will discover the function of each part of the plant and its purpose and the dispersal of seeds in the plant life cycle. Eventually children will apply this knowledge to their understanding of evolution and inheritance of plants and animals in Year 6. The days of the week and general understanding of weather from EYFS is also developed by understanding more about how this coincides with the different seasons and why summer days are longer than those in winter. In Year 1, the children will categorise animals and label parts of the human body. This will progress throughout the rest of their school life. In Year 2, it develops by understanding the basic needs of animals and humans. In Year 3, this becomes more developed with the knowledge that food provides nutrition and the exploration of the inner body, such as the skeleton and muscles and their purpose. In Year 4, their learning will progress in to the understanding of the internal organs for digestion and teeth. They will also use their knowledge of animals and their needs for food and nutrition learning about simple food chains, showing children how animals link together. In Year 5, there will be a more focussed look at the life cycle and aging process of the human body before grasping the challenging knowledge of the circulatory system and how nutrition is absorbed by the human body in Year 6. Materials will also take the children on a Journey in to KS2. They begin with the categorising of materials and their properties in Year 1, which is built upon in Year 2 when children look at how these properties are used in their suitability of everyday objects. In Year 3, children use their identifying, comparing and categorising skills to focus more closely on rocks and is taken in to the wider environment. Year 5 shows children the materials that impact their daily life in the way of the different states and the water cycle. This understanding in the different states and how they can be changed leads perfectly in to Year 6 where they use this knowledge to understanding the use of evaporation in separating objects and identifying changes that can be reversible or irreversible.			
Topic Areas	Plants	Animals, Including Humans	Materials	Earth
Topic Driver	**Geography Topic-** Where Do We Live? The children will explore the plants and trees in their locality, whilst exploring it through their Geography field work. They will explore whether these tree are evergreen or deciduous and their look more closely at the structure of the plants that they find on their locality walk.	**Science Topic-** What can you find about animal kind? **Study- Carl Linnaeus** This will be science focus topic about animals and categorising them based on their bodies e.g. vertebrate etc. and also by what they eat e.g. omnivore, carnivores or herbivores. This Topic can be link with visits to local zoos and farms, where children can explore a vast range of animals from both their locality and of further afield.	**History Topic-** Conisbrough Castle **Study- Charles Macintosh** Whilst explore Conisbrough castle, children will compare the materials of the castle and those around their homes and school. They will also look at the different used in the construction of the castle throughout its many rebuilds. They will compare and group these, as well as identifying their different properties.	**Independent** The children will explore the change in the seasons and the change of daylight length in this isolated topic.
Prior Topic Studied	EYFS- Understand the World Around Us	EYFS- Understand the World Around Us	EYFS- Understand the World Around Us	EYFS- Understand the World Around Us
Scientific Enquiry	Plant/tree hunt- observing and grouping Comparing flowers and their parts	Researching and grouping animals Labelling their own body parts. Which animal is most similar to a human?	Macintosh link- which materials are waterproof? Grouping and comparing properties	Comparing seasons. Finding evidence of seasons in and out of school.

Year Group	2			
Rationale	In year 2, children are exploring common animals and plants in much more detail. They will start to develop a basic understanding of the needs of the plants and animals that they observed in Year 1 and start to make comparisons. They will build on the Year 1 knowledge of basic plant structure to then explain how that structure is used to help the plants grow. This will be developed further in Year 3 when children will discover the function of each part of the plant and its purpose as well as discovering the use of the dispersal of seeds in the plant life cycle. In Year 2, children will develop their Year 1 understanding of how animals can be categorised by developing the understanding of animals' needs as they investigate the nutrition animals gain from food and the purpose for some animals to need a skeleton. In Year 3, this becomes more developed with the knowledge that food provides nutrition and the exploration of the inner body, such as the skeleton and muscles and their purpose. In Year 4, their learning will progress in to the understanding of the internal organs for digestion and teeth. They will also use their knowledge of animals and their needs for food and nutrition learning about simple food chains, showing children how animals link together. In Year 5, there will be a more focussed look at the life cycle and aging process of the human body before grasping the challenging knowledge of the circulatory system and how nutrition is absorbed by the human body in Year 6. Living things and their habitats will now be introduced. In EYFS children look at the homes of animals. In Year 2, this concept will be developed in to an understanding of habitats and what makes a habitat suitable for a variety of different creatures, including how this habitat can allow animals to obtain food. They will take this further in to exploring simple food chains from within each of those habitats. Children will need this understanding for Year 4, when they will explore classification keys to sort and group animals from a wider environment and how the change in habitats can pose a danger for certain species. In Year 5, children delve more closely in to their understanding of life cycles and the role of reproduction in some plants and animals. These basic observations and the sorting of plants and animals will be used with more focus in Year 6 when children will give reasoning for classifications and describing how broad groups of animals and plants have been classified based on common characteristics. Children will extend their understanding of materials and their properties that they identified in Year 1 by researching their suitability for different purposes and how these materials can be manipulated. This knowledge will continue to be developed throughout the children's school journey. In Year 3, children use their identifying, comparing and categorising skills to focus more closely on rocks and is taken in to the wider environment. Year 5 shows children the materials that impact their daily life in the way of the different states and the water cycle. This understanding in the different states and how they can be changed leads perfectly in to Year 6 where they use this knowledge to understanding the use of evaporation in separating objects and identifying changes that can be reversible or irreversible.			
Topic Areas	Plants	Animals, Including Humans	Living Things in their Habitats	Materials
Topic Driver	**Science Topic-** How Does Your Garden Grow? **Study- George Washington-Carver**	**History-** Polar Explorers **Study- Jane Goodall** Children will learn about what humans and animals need to survive and the importance of exercise, nutrition and hygiene. This will be link with concepts about the explorers needs in order to survive in polar climates and whilst on expeditions.	**History-** Polar Explorers **Study- Charles Elton** Children will explore different habitats both in their locality and that of polar climates. They will look at the suitability of those habitats and identify the plants and animals that live there. It also provides good opportunity to compare food chains and discover how food is obtain by different species.	**History-** Great Fire of London **Study- Isambard Kingdom Brunel** Children will develop their knowledge of materials by discovering their suitability for different purposes. Through this topic, children will identify useful and useless materials resulting in the Great Fire of London and consider alternative materials.
Prior Topic Studied	Year 1 Plants	Year 1 Animals Including Humans		Year 1 Materials
Scientific Enquiry	What does a plant need to grow well? Growing plants in different conditions and observing growth.	How can explorers survive in harsh climates?	Identify patterns in different food chains.	What is the best material for traction man?

				Comparing and grouping materials.

Year Group	3				
Rationale	In Year 3, children will take their knowledge of comparing and identifying the needs of plants, as taught in KS1, and focus it more specifically on the functions of the different parts of the plant, as well as exploring the role of flowers in the flowering plant's life cycle. Through this they will also discover the different ways in which seed dispersal can occur. This knowledge needs to be concrete in Year 3 as they will not revisit plants again until Year 6 where they will apply the knowledge to their understanding of evolution and inheritance in both plants and animals. While learning about animals, including humans in Year 3, children will develop their understanding of human and animals' basic needs from Year 2 by looking more closely at how food provides nutrition and go beyond labelling body parts like in Year 1, to start observing the skeleton and muscular purpose of the human body. In Year 4, their learning will progress in to the understanding of the internal organs for digestion and teeth. They will also use their knowledge of animals and their needs for food and nutrition learning about simple food chains, showing children how animals link together. In Year 5, there will be a more focussed look at the life cycle and aging process of the human body before grasping the challenging knowledge of the circulatory system and how nutrition is absorbed by the human body in Year 6. In materials, Year 3 pupils will move away from the generalised understanding of materials and their properties as taught in KS1 and focus on rocks and fossils, providing a more natural focus on materials. Year 4 shows children the materials that impact their daily life in the way of the different states and the water cycle. This understanding in the different states and how they can be changed leads perfectly in to Year 5 where they use this knowledge to understanding the use of evaporation in separating objects and identifying changes that can be reversible or irreversible. Light is introduced in Year 3 for the first time as an isolated topic but children will have explored light in Year 1 with their understanding of daylight and nigh time and the change in length based on the seasons. In Year 3, the focus will be on the need for light to see and that darkness is the absent of light, that shadows are made by blocking the sun and they will investigate how to change the shape of shadows. They will also discover the difference between shadow and reflection, something often misunderstood by younger children Light will not be revisited until Year 6 when children will understand how light travels and how this allows us to see. In Year 3, children will be introduced to magnets and the idea of forces occurring between 2 objects. They will compare, experiment and investigate with magnets and observe their reactions between each other as repel or attract. They will begin the basic understanding of friction as the movement between two surfaces. In Year 5, this knowledge is expanded upon with the concept as air and water resistance being a form of friction, the introduction of gravity and the use of pulleys and levers.				
Topic Areas	Plants	Animals, Including Humans	Materials	Earth	Forces and Magnets
Topic Driver	**Romans** **History** **Study- Jagadish Chandra Bose** As part of the Romans topic, children will link their learning about the function of plant parts and seed dispersal to the Roman's impact on farming. The Romans played a role in bringing many plants home from their Italy. Children will explore how this was done without the plants dying and how seed dispersal was used.	**Science Topic-** **Study-Andreas Vesalius**	**Wales** **Geography** **Study- Mary Annings** While exploring the physical geography of Wales, they will be ample opportunities to make links with rocks, their properties and the formation of fossils. Wales has a rich, natural environment and has a range of different rock types. The mountainous areas and changes to land provide great opportunity to discover fossils and how they are made.	**Independent** Children will discover light in isolation. They will explore the light sources, how we see, shadows and investigate how shadows can be changed.	**Independent** **Study- William Gilbert** Children will be taught forces and magnets in isolation. They will discover and explore magnet and the concept of 2 forces working against or for each other. They will start the basic understanding of friction, as two surfaces moving against each other.
Prior Topic Studied	Year 1 and 2 Plants	Year 1 and 2 Animals Including Humans	Year 1 and 2 Materials	Year 1 Earth	

Scientific Enquiry	Colour carnation investigation to show how flowers take up water to use throughout the plant		Classifying and grouping based on properties	Light glasses investigation What makes the best curtains?	What is magnetic? Grouping.

Year Group	4				
Rationale	In Year 4, the children will go beyond their knowledge of the structural aspects on the body as taught in the previous years and start to observe the internal organs and how the digestive system works. They will also look at the types of teeth in both humans and animals and explore the role this takes in the digestive process. In Year 5, there will be a more focussed look at the life cycle and aging process of the human body before grasping the challenging knowledge of the circulatory system and how nutrition is absorbed by the human body in Year 6. In living things and their habitats, pupils will use classification keys to more specifically and scientifically sort plants and animals and what dangers there are for these animals when their habitats are changed. In Year 5, children delve more closely in to their understanding of life cycles and the role of reproduction in some plants and animals. These basic observations and the sorting of plants and animals will be used with more focus in Year 6 when children will give reasoning for classifications and describing how broad groups of animals and plants have been classified based on common characteristics. In Year 4, children will start to focus their knowledge of materials on the three states of matter, taking in to account the experience they have with a range of materials and their properties from the previous years. They will use this knowledge to define what makes a solid, liquid or gas and how the heating and cooling of some materials can cause a change in its original state. They will apply this to the water cycle. This understanding in the different states and how they can be changed leads perfectly in to Year 5 where they use this knowledge to understanding the use of evaporation in separating objects and identifying changes that can be reversible or irreversible. During the electricity topic, children will make simple circuits and investigate the use of bulbs, buzzers and switchers. They will also identify and compare a range of insulators and conductors. This will link with the exploration of different electrical appliance and the conductors and insulators needed to keep these products safe. In Year 6, the children will go beyond making a simple circuit and start to investigate the variations of functions in components such as bulb brightness, buzzer volume etc. Year 4 is the only year that will explore sound. The children will discover how sounds is made and the role our ears play in hearing, as well as finding pattern in pitch and volume in regards to the instrument it is plays on and the affect distance has on volume.				
Topic Areas	Animals, Including Humans	Living Things in their Habitats	Materials	Electricity	Sound
Topic Driver	**Science Topic- Bottoms, Burps and Bile** **Study- William Beaumont** This will be science focused topic where children will learn about the digestive system and the types and rolls of teeth in both animals and humans.	**Independent** **Study- Greta Thunberg** Children will use classification keys to group and sort a range of animals in this isolated topic. They will also explore the change that may happen to habitats and how this poses a danger for the animals that live there.	**Independent** **Study- Anders Celsius** This topic will be taught in isolation. It will explore materials in the three different states of solid, liquids and gases and the roles of these states in the water cycle. Children will also investigate the changes of state when they are heated and cooled. This provides ample opportunities for investigation in the changes of state and indoor water cycles can be made.	**Independent** **Study- Nikola Tesla** This topic will be taught in isolation. The children will focus on simple circuits and the components used to make them. They will make links to electronic appliance and explore conductors and insulators. They will also investigate circuits, including the use of lights, switches and buzzers.	**Music Lessons** Music will be explored through the class instrument. This will be taught in isolation by a professional music teacher.
Prior Topic Studied	Year 1, 2 and 3 Animals Including Humans	Year 2 Living Things and Their Habitats	Year 1, 2 and 3 Materials		
Scientific Enquiry	Tights digestive system Cola teeth.	Grouping animals, Bug hunt observations.	Weight of gas in fizzy pop. Chocolate/ice melting.	Sorting conductors and insulators	This topic is taught through practical guitar lessons.

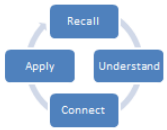
		Woodlice tray- quadrants	Invent something to keep ice frozen.	Making own switches with card and conductors (split pins of other conductors).	

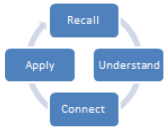
Year Group	5				
Rationale	In year 5, children will now look at the changes in the human body during the aging process. This will build on the children's understanding of the differences between animals and humans and their needs and will need this solid understanding before grasping the challenging knowledge of the circulatory system and how nutrition is absorbed by the human body in Year 6. The children will have already gained the knowledge of different basic animals and their needs, including those of humans. They will have also looked at and compared how these are grouped and sorted, as well as identifying the terms for these e.g. mammal, amphibian etc. In year 5, children will look more closely and the life cycles of different animals and make further comparisons as well as recognising the reproduction of some plants and animals. This understanding of sorting and comparing animals by characteristics and life cycles will support more detailed understanding in Year 6 when children will give reasoning for classifications and describing how broad groups of animals and plants have been classified based on common characteristics. In Key Stage 1 and year 3, children have already identified various materials and their uses, as well as identifying their properties, In Year 4, children focused their knowledge of materials on the three states of matter. They will use this knowledge, now in Year 5, to define what makes a solid, liquid or gas and how the heating and cooling of some materials can cause a change in its original state. They will apply this to the water cycle and the understanding of the different states and how they can be changed leads perfectly in to Year 5 where they use this knowledge to understanding the use of evaporation in separating objects and identifying changes that can be reversible or irreversible. It will be the first and only time that children will have experience space since EYFS when they have some basic understand and have heard the name of some plants and have some understanding of the Sun, Earth and Moon as something they can see as part of their everyday life. They will have touched on the topic of Sun in Year 3 with the light topic as they identify as the Sun as a source of light, but now they will look at the Sun, Moon and Earth in terms of their relationship with each other and the other planets. They will also now explore day and night and how the rotation of the Earth produces this. In Year 3, children learn the basic understanding of magnets and frictions as a force between two objects. They will use this basic understanding to now explore and learn about this affects when in water and the movement of objects through air. They will now be introduced to the concept of gravity and how the use of levers and pulleys can support us lifting large objects as the effect of gravity plays a role in the weight of those objects.				
Topic Areas	Animals, Including Humans	Living Things in their Habitats	Materials	Earth	Forces and Magnets
Topic Driver	**Ancient Greece** **History** The children will explore the changes in the human body during the aging process. This will fit in perfectly with their study of life cycles. It also links in with the Ancient Greek soldiers. They will explore and determine which age group would be most appropriate for fighting in battles based on their understanding of the changes throughout a human's life.	**Ancient Greece** **History** **Study- Sir David Attenborough** Children will link this topic with Aristotle's interest in the life cycle of chicks. He observed the changes throughout the hatching process. Children will be able to make their own observations of chicks hatching and then use this to widen their understanding by exploring the life cycle of other animals. From this they will move on to the reproduction process of some animals and then plants.	**Victorians** **History** **Study- George Stephenson** The Victorians had a keen interest in afternoon tea. During this topic, children will investigate the changes that occur in ingredients as they are made in to different tea-time treats, such as cakes. They will also explore filtration and use of tea filters. This will support their understanding of reversible and irreversible changes and the separation of materials using techniques such as filtering, evaporation and sieving.	**Science Topic- Space** **Study- Nicolaus Copernicus** This topic will be a science focus topic. Children will explore the movement of the planets in relation to the Sun, the Moon's movement in relation to the Earth and the rotation of the Earth and how this creates day and night. They will also learn the shape of the Sun, Earth and Moon.	**North America** **Geography** **Study- Sir Isaac Newton** Children will be exploring natural disasters during this topic. The link will be made to forces and their cause and effect of forces when they are moving against each other i.e. tectonic plates during an earthquake. They will also explore levers and pulleys and how gravity is the force that makes falling objects fall towards the Earth.
Prior Topic Studied	Year 1, 2, 3 and 4 Animals Including Humans	Year 2 and 4 Living Things and Their Habitats	Year 1, 2, 3 and 4 Materials		Year 3 Forces and Magnets
Scientific Enquiry	Freeze-frames of different stages- Communication cards.	Observations and growing plants from A-sexual and sexual reproduction	Malteasers and straw to show forces of sucking malteaser to straw.	Human Solar System	What solids dissolve in water?

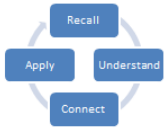
			Water-resistance- streamlined shapes Card cogs, pulleys systems and levers. Gyrocopters- paper airplanes		What makes solids dissolve faster? Separating mixtures of materials.

Year Group	6					
Rationale	This children's knowledge of plants; their features, needs and life cycle will now be put in to application in their Year 6 topic of Evolution and Inheritance. They will now have to apply their understanding in to how plants have changed and adapted in order to survive different physical and social changes throughout history. In Year 6, children will now learn about the complex circulatory system and how nutrients and water are transported around the body. This will have built on the children's basics understanding of humans and animals in Key Stage 1 and then the more focussed elements in Key Stage 2 of the teeth and internal organs. The children will have already experience the need for humans to gain nutrients and healthy eating. They will now deepen this understanding by finding out how these nutrients are used within the body. They will also now explore the outside factors of drugs, alcohol and exercise on the internal workings of the human body. In years 2, 4 and 5, children have already sorted, classified and compared a range of animals. In Year 6, they will build on this by giving much broader classifications and grouping and by giving reasoned responses to their grouping choices. They also now explore micro-organisms as something that can be grouped. This is the only year children will learn about evolution and inheritance. At this point, children should have a broad understanding of a range of plants and animals, including their parts, needs, life cycles and functions. In year 6, they will have to apply that knowledge to understand how these plants and animals have had to adapt and change in order to survive both the physical and social changes in the world and throughout history. In Year 5, children learn about the reproduction of some plants and animals. Now, in Year 6, children will explore how these offspring inherit characteristics from their parents and understand that although they produce the same kind of animal, we do not produce offspring that are identical to us. In Year 3, children will have explored and investigated the need of light to see and the absence of some light in order to create shadows. They will have also investigated how this can change the size and shape of shadows. In Year 6, children will now learn that this can only be achieved as the light travels in a straight line from the surface to our eye. They will build on the concept of shadows and learn that the straight line of light is what creates a shadow in the same form as the object that is blocking it. In electricity, children will go beyond the understanding of a simple circuit creating a light or sound that they investigated in Year 5 and investigate how changing the circuits placement or components can have an impact on the brightness of bulbs and the volume of buzzers and give reasoned responses as to why the changes have had an impact on the circuit. They will also now need to be able to not just identify components, but to recognise the symbols of these are read them within a circuit diagram.					
Topic Areas	Plants	Animals, Including Humans	Living Things in their Habitats	Evolution and Inheritance	Earth	Electricity
Topic Driver	**Link with Science Topic- Evolution** In this topic, children will consolidate their learning of plants throughout their previous years and apply this to their work in evolution and inheritance. They will explore how plants have changed and adapted based on the physical and social changes.	**Study- William Harvey**	**Link with Science Topic- Evolution** This topic fits in perfectly with Evolution and Inheritance and the wider curriculum topic of Darwin. In this unit, children will identify, group and classify animals. This will link with Darwin's own use of studying and classifying animals.	**Science Topic- Darwin's Delights** **Study- Charles Darwin** This is a science specific topic that will include also the plants and Living Things objectives. During this unit, children will understand how plants and animals have changed over millions of years and the role of adaption in this process. They will explore how animals and humans produce offspring of the same kind but that their offspring are not identical too them.	**Study- Ib Al-Haytham**	**WW2** **History** **Study- Michael Faraday** As part pf the WW2 topic, children will be able to create Blitz light boxes. These will have a blitz seen and they will have to use circuits, buzzer and bulbs to create the sound and light of the blitz. In this topic they will compare and explore the brightness and volume of sounds in circuits and identify the different components. They will use this knowledge when creating their light box to determine whether the sounds and brightness of

						the bulb works well in their work.
Prior Topic Studied	Year 1, 2 and 3 Plants	Year 1, 2, 3. 4 and 5 Animals Including Humans	Year 2, 4 and 5 Living Things and Their Habitats		Year 3 Light	Year 4 Electricity
Scientific Enquiry	School field study to collect and classify plants and animals. (Micro-organisms: Experiment: In which conditions does mould grow best (on bread)?	Create lungs from plastic bottles and balloons:	School field study to collect and classify plants and animals. Look at sources of information, images and observe how they have changed through evolution and how they are considered to have common ancestors (EG humans and apes)	**Enquiries from Plants and Living things and their Habitats units.**	How we see images differently through water (EG straw in a glass of water)	Does the number of cells affect the brightness of a bulb? Does wire length affect the brightness of a bulb?

	<u>Key Stage 1</u>
Rationale	In Year 1 and 2, children will start to build on their questioning skills from EYFS. It focuses on asking more specific questions about the world around them and discovering how we might answer them. Children will begin to use a range of observation skills and methods of recording. This gives a basic understanding that will be developed in LKS2, when children will use their mathematical understanding to record and present findings. The basic concepts learnt in KS1 will provide a foundation for children to carry out more relevant and scientific based enquiries in Lower Key Stage 2 and they will begin to ask more relevant questions. They will also use their recording knowledge to present findings and use more mathematical methods of recording such as charts. In Upper Key Stage 2, children will have to ask, plan and carry out a variety of scientific enquiries. They will have to use their prior knowledge to determine which method of enquiry, equipment, recording and presenting skills will be most appropriate. They will also take this knowledge further by using it to give a reasoned conclusion to findings and provide supporting evidence.
Scientific Investigation	• Ask simple questions and recognise that they can be answered in different ways • Observe closely, using simple equipment • Perform simple tests • Identify and classify • Use observations and ideas to suggest answers to questions • Gather and record data to help in answering questions.
Key Vocab	Recognise, observe, identify, classify, record.

	Lower Key Stage 2
Rationale	In Lower Key Stage 2, children will begin to ask more relevant questions linking to their science, or wider curriculum topic. They will begin to explore different methods of enquiry, as well as recording their finding more scientifically with the support of tables, charts and diagrams. This will build on their prior knowledge of collecting findings and making comparative enquiries. They will also now start to report what they have found out and make predictions based on their scientific and real-life experiences. This will extend their knowledge of simply gathering information and making observations from Key Stage 1. In Upper Key Stage 2, children will have to ask, plan and carry out a variety of scientific enquiries. They will have to use their prior knowledge to determine which method of enquiry, equipment, recording and presenting skills will be most appropriate. They will also take this knowledge further by using it to give a reasoned conclusion to findings and provide supporting evidence.
Scientific Investigation	• Ask relevant questions • Set up simple practical enquiries, comparative and fair tests • Make accurate measurements using standard units, using a range of equipment. • Gather, record, classify and present data in a variety of ways to help in answering questions • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Report on findings from enquiries. • Use results to draw simple conclusions, make predictions for setting up further tests. • Use straightforward scientific evidence to answer questions or to support their findings.
Key Vocab	Recognise, observe, identify, classify, record, enquire, results, conclusion, similarities, differences, fair test.

	Upper Key Stage 2
Rationale	In Upper Key Stage 2, children will have to use all their prior knowledge it to making reasoned and relevant questions and make decisions about which planning, enquiry and recording method is most appropriate for each enquiry. They will have to provide detailed and concise recording of data to allow them to make a clear and reasoned summary. Enquiries will be presented using clear and appropriate evidence and predictions will be more reasoned and considered as they will have a greater scientific and real-life experience and understanding. At this stage, children will use the knowledge built on from Key Stage 1 and Lower Key Stage 2 to provide clear, thoughtful and reasoned enquiries that are summarised and consider further enquiry pathways.
Scientific Investigation	• Plan enquiries to answer questions, including recognising and controlling variables where necessary. • Use appropriate techniques and apparatus taking measurements, using a range of scientific equipment, with increasing accuracy and precision. • Recording data and results of increasing complexity in a scientific way. • Use test results to make predictions to set up further comparative and fair tests • Report and present findings from enquiries, including conclusions, causal relationships and explanations o in oral and written forms such as displays and other presentations • Use scientific evidence to describe scientific ideas identifying evidence that has been used to support or refute ideas or arguments.
Key Vocab	Recognise, observe, identify, classify, record, enquire, results, conclusion, similarities, differences, fair test, controlling variables, classification keys, causal relationships, scientific evidence, hypothesis.