ST MICHAEL & ALL ANGELS C. E. (FOUNDATION) PRIMARY AND PRE-SCHOOL

Subject Overview - Science

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Pre-school						

Understanding the World

Birth to Three

Repeat actions that have an effect.

- Explore materials with different properties.
- Explore natural materials, indoors and outside.
- Explore and respond to different natural phenomena in their setting and on trips.

Three- and four-Year-olds

Use all their senses in hands-on exploration of natural materials.

- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary.
- Explore how things work.
- Plant seeds and care for growing plants.
- Understand the key features of the life cycle of a plant and an animal.
- Begin to understand the need to respect and care for the natural environment and all living things.
- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice

Understanding of the world is taught throughout the year and is based on a child lead approach.

Links and visits	Eric Carle Stories Visit from Dentist/nurse

Reception

Understanding the World

Children in Reception

Explore the natural world around them.

- Describe what they see, hear and feel whilst outside.
- Recognise some environments that are different to the one in which they live.
- Understand the effect of changing seasons on the natural world around them.

ELG - The Natural World

Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Topic	Learn about woodland creatures and their habitats. Think about Autumn and observe and describe seasonal changes.	Our Bodies. Naming body parts and how to keep our bodies healthy. Doctors Role Play Woodland creatures, hibernation, nocturnal animals. Describe different animal's habitats.	Observe seasonal changes. Look at weather and discuss temperature and changes over time. Winter, Polar regions Snow/ice environments. Animals that live in cold places and their habitats. Learn the animal names and label body parts. Difference and similarities between Shelf and cold places. Materials – Look at different materials and begin to investigate their uses. Floating/ sinking Observe and record how water changes when heated and cooled.	What happens in Spring? Planting different seeds, observe and describe the changes. Grow beans in different conditions. Learn to recognise familiar plants. After close observation draw pictures of the natural world. Introduce the children to recycling and how to take care of our world. Look at what rubbish can do to the animals and our environment. Create opportunities to discuss how we care for the natural world around us. Explore how the wind can move objects and how they can move in water.	Growing in the garden, Minibeasts, lifecycle of a butterfly Build a bug hotel. Observe, describe and draw mini beasts. Animals and their young. Sea creatures. Compare animal's different habitats including the woods, cold places and the sea. Explore shadows	Seasonal changes. Space Introduce the children to NASA and America Environments – Looking at places using google maps. How are they similar/ different, Children to differentiate between land and water.
Visits		Autumn walk in Shelf woods		Walk around Shelf woods, compare to Autumn	Pets at Home or Pet Shop	

Year 1

Working Scientifically	Pupils should read and spell scientific vocabulary at a level consistent with their increasing word and spelling knowledge at KS1 Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Performing simple test. Identifying and classifying Using their observation and ides to suggest answers to questions. Gathering and recording data to help in answering questions.				
Topic	**Seasonal changes: Autumn and Winter**(physics) Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	**Animals; including humans.** (biology) Identify and name a variety of common animals including fish, amphibians, reptiles, birds 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, reptiles, birds and mammals including pets)	**Animals; including humans.** (biology) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Seasonal Changes: Spring and Summer** (Physics)	**Everyday Materials** (chemistry) 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.	**Plants**: (biology) 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.
Key Questions	Why do we have different weather in different seasons? What are the seasons called? Which seasons belong to which months?	What are the features of birds, mammals, reptiles, amphibians and fish? How can we group different animals? What makes an animal a carnivore/herbivore/omnivore?	Can I name and label the parts of the human body? Can I name the five senses and to perform simple tests to find out more about them?	What is a material? What materials are objects made of? What are the different materials? What are the properties of different materials? What materials would I use for an umbrella? What is an investigation?	What does a plant need to grow? How do plants grow? What are the parts of a tree called? What is a deciduous or evergreen tree? How can we identify deciduous or evergreen trees? What are the parts of a plant? What is important about the different parts of a plant? What plants are there in our school ground?

					What trees are there in our local area?
Past topic question to review	Why does it get dark earlier in winter?	Why are humans not like tigers?		Which materials should the Three Little Pigs used to build their house?	Which birds and plants would Little Red Riding Hood find in the wood?

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Year 2					
Working Scientifically	Pupils should read and spell scientific vocabulary at a level consistent with their increasing word and spelling knowledge at KS 1 Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Using their observation and ideas to suggest answers to questions. Performing simple test. Identifying and classifying Gathering and recording data to help in answering questions.				
Topic	**Animals; including humans** (biology) Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	**Everyday materials.** (chemistry) 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.	**Living things and Habitats** (biology) Explore and compare the difference between things that are living, dead and things that have never been alive. 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. Identify and name a variety of plants and animals in their habitats, including micro habitats. 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.	**Environment** (biology) Asking simple questions and recognising that they can be answered in different ways. Observing closely, using simple equipment. Using their observation and ideas to suggest answers to questions. Performing simple test. Identifying and classifying. Gathering and recording data to help in answering questions.	**Plants** (biology) 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.
Key Questions	Can I match, sort and group young animals and their adults? Can I find out how animals change as they grow into adults? Can I compare the stages of the human life cycle?	Can I compare everyday materials? Can I identify the uses of everyday materials? Can I use suitable materials for a task?	Can I compare the differences between things that are living, dead and have never been alive? Can I answer questions about things that are living, dead or have never been alive?	Can I measure the melting of ice in a comparative test? Can I perform a test and draw a conclusion? Can I sort items for recycling based on their materials?	Can I design and set up a test to find out what plants need to stay healthy? Can I look closely at the parts of a seed that will grow into a plant and explain how it will germinate? Can I describe the life cycle of a plant?

	Can I research and describe what animals, including humans, need to survive? Can I test the effects of exercise on the human body? Can I investigate the importance of healthy eating and hygiene?	Can I explain how the shapes of objects made from some materials can be changed? Can I explain the process of recycling?	Can I map a habitat and identify what is in it? Can I classify objects as those that are living, dead and those that have never been alive? Can I identify animals in their habitats? Can I use information I have gathered to answer a question? Can I describe a habitat and identify animals that live in it and answer questions about it? Can I identify how an animal is suited to its habitat. Can I explain how living things in a habitat depend on each other? Can I describe how animals get their food?	Can I suggest ways we can reduce, re-use and recycle? Can I take surveys and use the information to help answer a question? Can I ask and answer questions about the rainforest? Can I identify and classify rainforest animals? Can I set up a test and record the results? Can I accurately measure water and record my measurements? Can I ask and answer questions about endangered animals?	Can I explain what plants need to grow and stay healthy? Can I describe what happens if plants don't get all the things they need? Can I explain how plants are suited to their habitats?
Past Topic question to review	How will 5 a day help me to be healthy?	What is our school made of?	Why would a meerkat not make a good pet?		How do plants grow?
Year 3					
Working Scientifically	Pupils should read and spell scientific **vocabulary** correctly and with confidence, using their growing word reading and spelling knowledge. Asking relevant **questions** and using different types of scientific enquiries to answer them. Using straightforward **scientific evidence** to answer questions or to support their findings. Making systematic and careful observations and where appropriate, taking accurate **measurements** using standard units, using a range of equipment, including thermometers and data loggers. Setting up simple practical **enquires,** comparative and **fair tests.** **Identifying** differences, similarities or changes related to simple scientific ideas and process. **Using results** draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Recording** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Gathering, recording, classifying and presenting **data** in a variety of ways to help answering questions. **Reporting** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.				

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Topic	**Animals; including humans.** (biology) Identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Describe the importance for humans and some animals of having skeletons and muscles for support, protection and movement.	**Forces & magnets** Compare how things move on different surfaces. Notice that some forces need contact between two objects but magnetic forces can act at a distance. Observe how magnets attract and 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 magnetics as having two poles. Predict whether two magnets will attract or repel each other depending on which poles are facing,	**Plants.** (biology) 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. Explore the part that flowers play in the life cycle of a flowering plant, including pollination, seed formation and seed dispersal.	**Rocks** (chemistry) Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	**Light.** (physics) Recognise that they need light in order to see things and that dark is an 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. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the size of shadows change.
Key questions	How do living things obtain food? Why do animals and humans need the right type of nutrients? Can I compare and group animals by their diet? Can I sort animals based on their skeleton? Can I identify and name bones? What are the three main functions of a skeleton? Why do humans need muscles?	What is a force? Were predictions correct? Were tests fair? What would happen if I used a magnet?	Can I name the different parts of flowering plants and explain their jobs? Can I set up an investigation to find out what plants need to grow well? Can I record my observations and present the results of my investigation using scientific language?	Can I compare different types of rocks? Can I make systematic and careful observations? Can I group rocks based on their properties? Can I explain how fossils are formed? Can I explain Mary Anning's contribution to palaeontology? Can I explain how soil is formed? Can I observe carefully and systematically and present my findings using scientific vocabulary?	Can I recognise that I need light to see things, and that dark is the absence of light? Can I investigate which surfaces reflect light? Can I use a mirror to reflect light and explain how mirrors work? Do I know that light from the sun can be dangerous and that there are ways we can protect our eyes? Can I investigate which materials block light to form shadows? Can I find patterns when investigating how shadows change size?

			Can investigate how water is transported in plants? Can I name the different parts of a flower and explain their role in pollination and fertilisation? Can I understand and order the stages of the life cycle of a flowering plant?		
Past topic question to review	How can Usain Bolt move so quickly?	Are you attractive enough?	How did blossom become an apple?	What do rocks tell us about how the earth was formed?	How far can you throw your shadow?
Year 4					
	Pupils should read and spell scientific **vocabulary** correctly and with confidence, using their growing word reading and spelling knowledge. Asking relevant **questions** and using different types of scientific enquiries to answer them. Using straightforward **scientific evidence** to answer questions or to support their findings. Making systematic and careful observations and where appropriate, taking accurate **measurements** using standard units, using a range of equipment, including thermometers and data loggers. Setting up simple practical **enquires,** comparative and **fair tests.** **Identifying** differences, similarities or changes related to simple scientific ideas and process. **Using results** to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Recording** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Gathering, recording, classifying and presenting **data** in a variety of ways to help answering questions. **Reporting** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions				

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Topic	**States of Matter** (chemistry) 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 of which this happens in degrees Celsius (c) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	**Animals including humans;** (biology) Construct and interpret a variety of food chains identifying producers, predators and prey. Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions	**Sound** (physics) Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sound travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. 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 increases.	**Living Things and their Habitats.** (biology) 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 changes to living things.	**Electricity** (physics) 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. 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 as being good conductors.
Key Questions	What are the properties of a solid, liquid and gas? What are the differences between the particles in solids, liquids and gases? What are some gases used for? Do gases weigh anything? How does heat cause solids to change to liquids and vice versa? Do materials melt at different temperatures? What are the freezing temperatures of different materials? How does water change state? What are the different states of the water cycle?	What does digest/ digestion mean? What are the parts of the digestive system? How does the digestive system work? Why do we have different types of teeth? What is their purpose? Do other animals have the same type of teeth as humans? Why? Why not? Does the diet of animals effect the teeth they have? What is a food chain? How is a food chain instructed? How are food webs similar/ different to food chains? Why are food webs useful?	What is a sound source? How are sounds made? How does sound travel to our ears? How do we hear sound? Why are some sounds louder/quieter than others? How do sounds change over distance? Which materials are best for absorbing sound? How do different instruments work?	Can I group living things in a range of ways? Can I identify vertebrates using a classification key? Can I make observations and identify invertebrates? Can I create a classification key using the characteristics of living things? Can I recognise positive and negative changes to the local environment? Can I describe environmental dangers to endangered species?	Can I identify common appliances that run on electricity? Can I construct a simple series circuit and identify and name the parts? Can I identify whether or not a lamp will light in a simple series circuit? Can I explain the effect of a switch in a circuit? Can I recognise whether a material is a conductor or an insulator?

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for the Lord your God will be with you wherever you go. – Joshua 1:9

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Past topic question to review	How would we survive without water?	What happens to the food we eat?	Why is the sound of music enjoyed by so many?	Which wild animals and plants thrive in your locality?	How could we cope without electricity for a day?
Year 5					
Working Scientifically	Pupils should read and spell and pronounce scientific **vocabulary** correctly. Planning different types of scientific enquiries to answer **questions**, including recognising and controlling variables where necessary. Identifying **scientific evidence** that has been used to support or refute ideas or arguments. Taking **measurements;** using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading where necessary. **Using test results** to make predictions to set up comparative and fair tests. **Recording** data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. **Reporting** and presenting findings from enquiries, including conclusions, causal relationships and explanations of degree of trust in results, in oral and written forms such as displays and other presentations.				
Topic	**Space** (physics) 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. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	**Forces** (physics) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling objects. Identify the effects of air resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have greater effect.	**Properties and changes of materials** (chemistry) 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. 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.	**Living things and their habitat** (biology) Describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	**Animals including humans** (biology) Describe the changes as humans develop from birth to old age

Key Questions	Can I explain why we know the Sun, Earth and Moon are spherical? Can I name and describe features of the planets in our solar system? Can I order the planets in our solar system? Can I explain how planets move in our solar system? Can I identify scientific evidence which does or does not provide evidence for an idea or argument? Can I explain day and night and the apparent movement of the sun across the sky? Can I investigate night and day in different parts of the Earth? Can I explain the movement of the Moon?	What are forces? Can I identify pushes and pulls? What is gravity? Can I measure the force of gravity on pulling objects? Can I explain and explore how air resistance affects moving objects? Can I explain and explore water resistance? Can I identify the effects of friction? Can I explain the benefit of mechanisms?	Can I identify and compare properties of materials? Can I explain why different materials are used for different things? Can I understand what thermal conductors and insulators are? Can I understand what electrical conductors are? Can I understand what dissolving means? Can I understand what solubility means? Can I separate mixtures of materials? Can I understand reversible and irreversible changes?	Can I describe how some plants reproduce? Can I describe the life cycles of different mammals? can explain what Jane Goodall discovered about chimpanzees? Can I compare the life cycles of amphibians and insects? Can I compare the life cycles of plants, mammals, amphibians, insects and birds?	Can I describe the stages of human development? Can I explain how babies grow and develop? Can I present data? Can I describe and explain the main changes that occur during puberty? Can I identify the changes that take place in old age? Can I report findings from enquiries? Can record complex data using graphs and models? Can identify the relationship between variables?
Past Topic question to review	Will we ever send another human to the moon?	Can you feel the force?	Could you be the next CSI investigator?	Do all animals and plants start from a seed?	How different will you be when you're a Grandparent?
Year 6					

	Pupils should read and spell and pronounce scientific **vocabulary** correctly. Planning different types of scientific enquiries to answer **questions**, including recognising and controlling variables where necessary. Identifying **scientific evidence** that has been used to support or refute ideas or arguments. Taking **measurements;** using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading where necessary. **Using test results** to make predictions to set up comparative and fair tests. **Recording** data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. **Reporting** and presenting findings from enquiries, including conclusions, causal relationships and explanations of degree of trust in results, in oral and written forms such as displays and other presentations.				
Topic	**Light** (Physics) 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 the light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that travels in straight lines to explain why shadows have the same shape as the objects that cast them.	**Animals and their habitat** (biology) Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics	**Evolution and inheritance** (biology) 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.	**Electricity** (physics) Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 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.	**Animals including humans.** (biology) Describe the ways in which nutrients and water are transported within animals, including humans. 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.
Key Questions	Where does light come from? How is light reflected? Can I explain refraction? What colour is light? How can light be filtered?	What is classification? What is the Linnaean system? How can I group animals? What are micro-organisms? Are they helpful or harmful? What conditions cause mould to grow?	Can I explain the scientific concept of inheritance? Can I demonstrate understanding of the scientific meaning of adaptation?	Can I explain the importance of the major discoveries in electricity? Can I observe and explain the effects of differing volts in a circuit? Can observe and explain the effects of differing volts in a circuit? Can I plan an investigation. And understand variations in how components function?	Can I identify and name the parts of the circulatory system and describe the function of the main parts? Can I explain how water and nutrients are transported round the body?

		Where do creatures live?	Can I identify the key ideas of the theory of evolution? Can I identify evidence for evolution from fossil records? Can I understand how human beings have evolved? Can I explain how adaptations can result in both advantages and disadvantages? Can I explain how human intervention affects evolution?	Can I conduct an investigation and record my data and report my findings? Can I investigate my results further?	Can I describe how diet and exercise impact human bodies? Can I explain the impact of drugs and alcohol on the body?
Topic question to be reviewed	How does light help us see?	Have we always looked like this?			What would a journey through your body be like?

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