St. Augustine of Canterbury Catholic Primary School

"Created by God to love and learn"

Our Science Curriculum

Our Core Values:

St Augustine of Canterbury Catholic Primary School provides an education that inspires and nurtures God's children to succeed to their full potential as we are **Created by God to love and learn**.

We believe in the concept of lifelong learning, and in the idea that both adults and children learn new things every day. We maintain that learning should be a rewarding and enjoyable experience for everyone. Through our teaching we strive to equip children with the skills, knowledge and understanding necessary to make informed choices about the important things in their lives. We believe that effective and stimulating teaching will lead to consistent and quality learning experiences to help children to lead happy and rewarding lives.

We consider the following ten values as instrumental when framing the life of the school.

- **Respect:** of ourselves and our neighbour both near and far from every culture and faith.
- **Love**: of everyone and everything God created.
- **Humility**: knowing that we are one of many and avoid selfishness
- **Courage**: in the face of the unknown or meeting a new challenge or just having a go!
- **Responsibility**: for our actions or inaction
- **Compassion**: showing care and support to others
- **Perseverance**: never giving up
- **Service**: supporting others by giving of our time, organising charitable activities
- **Honesty**: in thought and deed
- **Curiosity**: a pre-requisite for learning about the world about us

Our Approach, Aim, and Curriculum

Our key curriculum drivers are determined by our values and the needs of our learners: **Inclusivity Creativity Curiosity Oracy**

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Area of learning	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.	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. Developing Experts: 1. Understand that seeds grow into plants 2. Identify the basic parts of a plant and tree 3. Understand that different plants can grow in the same environment 4. Know the difference between deciduous and evergreen trees 5. Know that fruit trees and	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. Developing Experts: 1. Know the difference between seeds and bulbs 2. Design an experiment to find out what plants need to grow 3. Describe what plants need to grow and stay healthy 4. Describe the life cycle of a plant 5. Observe and record the growth of plants over time 6. Understand that plants adapt to	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 flowering plants, including pollination, seed formation and seed dispersal. Developing Experts:			

		vegetables are varieties of plants 6. Record the growth of a plant	suit their environment	1. Compare the effect of different factors on plant growth 2. Identify and describe the functions of different parts of a flowering plant and how they are used in photosynthesis 3. Investigate the way in which water is transported within plants 4. Explore the part that flowers play in the life cycle of flowering plants 5. Understand the pollination process and the ways in which seeds are dispersed 6. Compare the effect of different factors on plant growth			
Living things and their habitats	Children know about similarities and differences in relation to places,		Explore and compare the differences between things		Recognise that living things can be grouped in a variety of ways.	Describe the differences in the life cycles of a mammal, an	Describe how living things are classified into broad groups

	objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.		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 microhabitats. 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.		Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things. Developing Experts: 1. Explore different habitats 2. Research a habitat 3. Explore how animals can be classified 4. Create a classification key 5. Adaptations and classification within species 6. Explore and classify pond plants	amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Developing Experts: 1. Understand the life process of a plant 2. Understand the life cycles of mammals 3. Compare the life cycles of insects and amphibians 4. Understand the life cycle of birds and reptiles 5. Know about the life and work of Jane Goodall and David Attenborough 6. Research and present the life cycle of a creature	according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. Developing Experts: 1. Classify living organisms 2. Understand the kingdoms of life 3. Classify living things using the Linnaean system 4. Identify the characteristics of different types of microorganisms 5. Investigate asexual reproduction

			Developing Experts (unit 1): 1. Explore and compare the differences between things that are living, dead, and things that have never been alive 2. Identify and name a variety of plants and animals in a microhabitat 3. Design a suitable microhabitat where living things could survive 4. Find out what animals eat to survive in their habitats 5. Understand a food chain 6. Understand the journey food makes from the farm to the supermarket Developing Experts (unit 2): 1. Learn about habitats		Developing Experts (unit 2 Conservation): 1. Describe ecosystems and how they are affected by changes in the seasons 2. Understand human impact on the environment through deforestation 3. Explore air pollution 4. Understand water pollution 5. Explore methods that can be used to conserve water 6. Understand that humans can have a positive impact on nature		through spore dispersal 6. Classify and describe a living organism

			2. Appreciate that environments are constantly changing 3. Explore the rainforest and its problems 4. Describe life in the ocean 5. Discover the Arctic and Antarctic habitat 6. Create a model of a habitat				
Animals, including humans	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.	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,	Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	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. Construct and interpret a variety of food chains, identifying producers, predators and prey. Developing experts:	Describe the changes as humans develop to old age. Developing Experts: 1. Identify the key stages of a mammal's life cycle 2. Explore the gestation periods of mammals 3. Learn about foetal development 4. Investigate the hand span of	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and

		reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Developing Experts (unit 1): 1. Discover the basic parts of the human body 2. Learn about eyes and sight 3. Learn about ears and hearing 4. Explore the tongue and taste 5. Explore the sense of touch 6. Discover how your nose smells Developing Experts (unit 2): 1. Discover animal families 2. Learn about the differences between	Developing Experts (unit 1 Growth): 1. Describe the needs of animals for survival 2. Describe the needs of humans, for survival 3. Explore the importance of eating the right food 4. Describe what a healthy, balanced diet looks like 5. Investigate the impact of exercise on our bodies 6. Investigate the importance of hygiene Developing Experts (unit 1 Life Cycles): 1. Order the stages of the human life cycle 2. Describe the stages of a human life cycle 3. Identify the offspring and	Developing Experts: 1. Explore the 5 key food groups 2. Learn about the nutrition in the food we eat 3. Learn about the different types of skeletons 4. Learn about the human skeleton 5. Learn about animals and their skeletons 6. Explore the role of muscles	1. Identify the organs in the digestive system 2. Describe the functions of the main organs in the digestive system 3. Identify the types of human teeth and their functions 4. Investigate the effects of different liquids on the teeth 5. Understand food chains 6. Explore food webs	different aged children 5. Learn about the changes experienced during puberty 6. Describe the changes humans may experience during adulthood and old age	water are transported within animals, including humans Developing Experts: 1. Understand the function of the heart and its role in the circulatory system 2. Identify and compare blood vessels 3. Explore blood 4. Learn how the body transports water and nutrients 5. Investigate what affects your heart rate 6. Learn about the impact of drugs and alcohol on the body

		mammals and birds 3. Learn about the differences between amphibians, reptiles and fish 4. Discover the types of food living things eat 5. Explore the difference between wild animals and pets 6. Explain the characteristics of an animal	parent of an animal 4. Explore the life cycle of a chicken 5. Describe the life cycle of a butterfly 6. Explore the life cycle of a frog				
Evolution and Inheritance	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain						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

	why some things occur and talk about changes.						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. Developing Experts: 1. Understand how offspring vary and are not identical to their parents 2. Learn about animal adaptations 3. Learn about plant adaptations 4. Explore what we can learn from fossils

							5. Explore the theory of evolution 6. Explore human evolution
Seasonal Changes	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. Developing experts: 1. Understand there are 4 seasons 2. Understand the changes that take place in Autumn 3. Understand the changes that take place in winter 4. Understand the changes that take place in spring 5. Understand the changes that take place in summer 6. Investigate how you can measure rainfall					

Materials	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.	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 Developing Experts (unit 1): 1. Identify and name a variety of everyday materials	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. Developing Experts: 1. Identify different materials and their uses 2. Understand how to select the right materials to build a bridge 3. Explore and test the stretchiness of materials 4. Understand that materials can		Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Developing Experts: 1. Compare and group the 3 states of matter	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	

		2. Distinguish between an object and the material it is made from 3. Describe the properties of everyday materials 4. Identify objects that are natural and those that are manmade 5. Predict and identify if an object will float or sink 6. Explore which materials are best for different objects Developing Experts (unit 2): 1. Build a structure strong enough to withstand wind 2. Build a waterproof Structure 3. Understand the properties of glass and its uses 4. Understand that materials are used	change their shape by twisting, bending, squashing or stretching 5. Find out about Charles Macintosh and explore how materials are suitable for different purposes 6. Discover which materials change shape when making a road with John McAdam		2. Explore how particles behave in solids, liquids and gases 3. Investigate melting points 4. Explore freezing and boiling points 5. Explore evaporation and condensation 6. Understand the water cycle	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. Developing Experts (properties of materials):	

		to create a variety of furniture 5. Explore a variety of fabrics and understand their different properties 6. Explain the uses of materials and why they are suitable				1. Exploring properties of materials 2. Explore thermal conductors and thermal insulators 3. Explore the hardness of materials 4. Discover materials that become soluble in water 5. Investigate the solubility of materials 6. Explore how mixtures could be separated by filtering, sieving, evaporating or magnets Changes of materials: 1. Use evaporation to recover the solute from a solution 2. Recognise and describe	

						reversible changes 3. Observe chemical reactions and describe how we know new materials are made 4. Investigate rusting reactions 5. Investigate burning reactions 6. Investigate chemical reactions - acids and bicarbonate of soda	
Rocks	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain			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			

	why some things occur and talk about changes.			organic matter. Developing Experts: 1. Explore the formation and properties of igneous rocks 2. Explore the formation and properties of sedimentary and metamorphic rocks 3. Weathering and the suitability of rocks for different purposes 4. Explore how water contributes to the weathering of rocks 5. Understand how fossils are formed 6. Explore different types of soil			
Light	Children know about similarities and differences in relation to places, objects, materials and living things.			Recognise that they need light in order to see things and that dark is the absence of light.			Recognise that light appears to travel in straight lines. Use the idea that light travels in

	They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.			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 an opaque object. Find patterns in the way that the size of shadows change. Developing Experts: 1. Identify the difference between light sources and non light sources 2. Explore the light that comes from the sun and how to stay safe 3. Explore materials which are reflective			straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Developing Experts: 1. Explore how light travels 2. Explore reflection 3. Explore reflection and explain how it

				4. Discover how shadows are formed 5. Investigate how shadows change throughout the day 6. Investigate how you can change the size of a shadow			can be used to help us see 4. Investigate how shadows can change 5. Investigate how we can show why shadows have the same shape as the object that casts them 6. Investigate how we see objects
Forces	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.			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 or repel each other and attract some materials and not others. Compare and group together a variety of everyday		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers,	

				materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. Developing Experts: 1. Explore contact and noncontact forces 2. Compare how things move on different surfaces 3. Explore different types of magnets 4. Explore the properties of magnets and everyday objects that are magnetic		pulleys and gears, allow a smaller force to have a greater effect. Developing Experts: 1. Explore gravity and the life and work of Isaac Newton 2. Examine the connection between air resistance and parachutes 3. Explore factors which affect an object's ability to resist water 4. Investigate the effects of friction on different surfaces 5. Investigate mechanisms - levers and pulleys 6. Investigate mechanisms - gears	

				5. Understand that magnetic forces can act at a distance 6. Explore the everyday uses of magnets			
Sound	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.				Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.		

					Developing Experts: 1. Identify how sounds are made 2. Explore how vibrations from sounds travel through a medium to the ear 3. Explore sound insulation 4. Explore volume 5. Explore pitch 6. Explore sounds from near and from far		
Electricity	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain				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		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

	why some things occur and talk about changes.				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 with being good conductors. Developing Experts: 1. Explore electrical appliances and electrical safety 2. Learn about electrical components in a series circuit 3. Investigate electrical circuits 4. Explore conductors and insulators		loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. Developing Experts: 1. Describe the parts of an electric circuit 2. Explore voltage and its effect on an electrical circuit 3. Apply knowledge to identify and correct problems in a circuit 4. Investigate what affects the output of a circuit 5. Build a set of traffic lights 6. Apply knowledge of conductors and insulators

					5. Learn about electrical switches 6. Investigate how electrical components can change within a circuit		
Earth and Space	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.					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. Developing Experts:	

						1. Explore the solar system and its planets 2. Understand the heliocentric model of the solar system 3. Explain the Earth's movement in space 4. Explain the Earth's rotation and night and day 5. Explain the movement of the Moon 6. Design a planet using knowledge gained	
Scientific enquiry skills		Asking simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Using their observations and	Asking simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Using their observations and	Ask relevant questions and using different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where	Ask relevant questions and using different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific

		ideas to suggest answers to questions Gather and record data to help in answering questions	ideas to suggest answers to questions Gather and record data to help in answering questions	appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 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, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple	appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 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, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple	increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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 of and degree of trust in results, in oral and written forms such as	equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 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 of and degree of trust in results,

				conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings	conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings	displays, and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments	in oral and written forms such as displays, and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments