Cowling Community Primary School

Supporting Excellence In Education

Science Essential knowledge

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Curricular Goals:
For our children to be naturally curious and inquisitive throughout their time with us and beyond.
For our science curriculum to help our children to foster a healthy curiosity in our universe and promote respect for the living and non-living.
For them to have developed scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
have developed an understanding of the nature, processes and methods of science through different types of science enquiries (Identifying classifying and grouping, pattern seeking, research using secondary sources, comparative and fair testing and observing over time) that help them to answer scientific questions about the world around them.
To be equipped with the scientific skills required to understand the uses and implications of science, today and for the future.

EYFS Essential Knowledge	Year 1 Essential Knowledge	Year 2 Essential Knowledge	Year 3 Essential Knowledge	Year 4 Essential Knowledge	Year 5 Essential Knowledge	Year 6 Essential Knowledge
Sound and Light						
Explore shadows Explore rainbows	**Light: (additional unit)** We see with our eyes Need light to see things. Sources of light. Without light it is dark. Sun gives us daylight. Dangerous to look at the sun.		**Light:** Need light in order to see things, and that dark is the absence of light. Light is reflected from surfaces. Light from the sun can be dangerous and that there are ways to protect their eyes. Shadows are formed when the light from a light from a light source is blocked by an opaque object. Patterns in the way that the size of shadows change.		**Light:** 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. We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Shadows have the same shape as the objects that cast them.	
Explore how to change how things work Explore how the wind can move objects Explore how objects move in water			**Sound:** How sounds are made. Vibrations from sounds travel through the medium in the ear. Patterns between the pitch of a sound and features of the object that produced it. Patterns between the volume of a sound and the strength of the vibrations that produced it. Sounds get fainter as the distance from the sound source increases.		**Sound:** Sounds can be high or low (pitched). Describe how sounds are made when objects vibrate. Not all objects can be seen to vibrate. Vibrations can travel at different speeds through different mediums.	
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Forces						

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	Additional Unit Pushing, pulling and twisting can make objects change shape. Pushes and pulls can make objects move. Pushes and pulls can make objects speed up, slow down, change direction or stop. Objects fall downwards. Pushes and pulls are forces		Things move on different surfaces. Some forces need contact between two objects, but magnetic forces can act at a distance. Magnets attract or repel each other and attract some materials and not others. Compare and group materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. Magnets have two poles- attract and repel.		Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Effects of air resistance, water resistance and friction that act between moving surfaces. Some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. (Galileo Galilei and Isaac Newton)	
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Super Scientists						
	Marie Curie Alexander Graham Bell Charles Darwin		Carl Linnaeus Mary Anning		Galileo Galilei Isaac Newton David Attenborough Jane Goodall Ptolemy Alhazen Copernicus	
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Seasons						
Play and explore outside in all seasons and in different weather. Observe living things throughout the year	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					
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Animals including humans						
Name and describe animals that live in different habitats. Describe different habitats	Common animals including fish, amphibians, reptiles, birds and mammals. Carnivores, herbivores and omnivores. Structure of a variety of common animals. Parts of the human body.		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.		Describe the changes as humans develop to old age (puberty and SRE). Main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	

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Describe people who are familiar to them Learn about how to take care of themselves	Senses. Animals, including humans, have offspring which grow into adults. Basic needs of animals, including humans, for survival. Healthy lifestyle		Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Simple functions of the basic parts of the digestive system in humans. Types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey		Impact of diet, exercise, drugs and lifestyle on the way their bodies function. Ways in which nutrients and water are transported within animals, including humans.	
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Materials						
Explore a range of materials, including natural materials. Make objects from different materials, including natural materials. Observe, measure and record how materials change when heated and cooled. Compare how materials change over time and in different conditions	Distinguish between an object and the material from which it is made. Name a variety of everyday materials. Simple physical properties of a variety of everyday materials. Compare and group together materials on the basis of their simple physical properties. Uses of everyday materials Suitability of a variety of everyday materials. Shapes of solid objects made from materials can be changed by squashing, bending, twisting and stretching.		Compare and group materials together, according to whether they are solids, liquids or gases. Some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		Group and compare materials on the basis of their properties. Some materials dissolve in liquid to form a solution and you can recover a substance from a solution. Separating solids, liquids and gases. Use comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Dissolving, mixing and changes of state are reversible changes. Changes result in the formation of new materials, and that this kind of change is not usually reversible.	
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Plants						
	Name a variety of common wild and garden plants, including deciduous and evergreen trees.		Functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers.		Seed dispersal ensures that new plants survive Nutrients are taken in through plant roots Leaves use light to make food for the plant	

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	Identify and describe the basic structure of a variety of common flowering plants, including trees. Seeds and bulbs grow into mature plants. Plants need water, light and a suitable temperature to grow and stay healthy.		Requirements of plants for life and growth and how they vary. Way in which water is transported within plants. Life cycle of flowering plants, including pollination, seed formation and seed dispersal.		Keys are a way of identifying different living things.	
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Living Things and their habitats						
Explore the plants in the surrounding natural environment Explore the animals in the surrounding natural environment Explore plants and animals in a contrasting natural environment	Living things and their habitats Differences between things that are living, dead, and things that have never been alive. Animal's habitats. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Animals obtain their food from plants and other animals.		Living things can be grouped in a variety of ways. Classification keys to help group, identify and name a variety of living things in their local and wider environment. Environments can change and that this can sometimes pose dangers to living things. (Carl Linnaeus)		Differences in the life cycles of a mammal, an amphibian, an insect and a bird. Life process of reproduction in some plants and animals. Classification of micro-organisms, plants and animals. Classifying plants and animals based on specific characteristics (David Attenborough and Jane Goodall).	
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Earth and Space						
Learn about the Earth, Sun, Moon, planets and stars. Learn about space travel			How the Sun appears to move across the sky from East to West. How the apparent movement of the Sun across the sky causes shadows to change How we can see the Moon because the Sun's light reflects off it. How the Earth and Moon go around the Sun in one year Recognise that humans have been to the Moon		Movement of the Earth, and other planets, relative to the Sun in the solar system. Movement of the Moon relative to the Earth. Sun, Earth and Moon as approximately spherical bodies. Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	
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Electricity						

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			Appliances that run on electricity. 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. A switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Conductors and insulators, and associate metals with being good conductors.		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.	
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Evolution						
					Recap on how fossils are formed. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Revisit Charles Darwin and Alfred Wallace)	
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Rocks and Soils						
			Compare and group rocks on their appearance and simple physical properties. How fossils are formed when things that have lived are trapped within rock. Soils are made from rocks and organic matter.			

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