



St Leo's and Southmead Catholic Nursery and Primary School

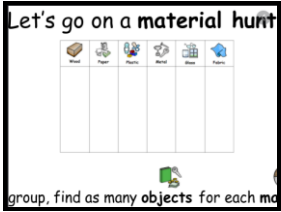

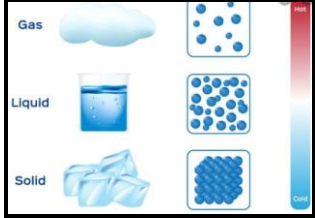
The Big Ideas of Science - Progression Knowledge/Concepts

<p><u>Materials</u></p> <p>Big Idea 1 All matter in the universe is made of very small particles</p> <p>Big Idea 4 The total amount of energy in the Universe is always the same but can be transferred from one energy source to another during an event.</p> <p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and climate</p>	<p>Nursery</p> <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.</p>	<p>Reception</p> <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside.</p>			
	<p>Year 1</p> <p><u>Everyday Materials</u></p> <p>Distinguish between an object and the material from which it is made.</p> <p>Name the materials – glass, wood, rock, metal, plastic, fabric/cloth and paper.</p> <p>Begin to give examples of why everyday objects are made from given material, identifying simple properties of materials. (eg, windows - glass because it is transparent).</p> <p>Not all metals are magnetic.</p> <p>Everyday materials have a variety of properties and these can be described in different</p>	<p>Year 2</p> <p><u>Use of Everyday Materials</u></p> <p>Name a range of common everyday materials (plastic, wood, paper, metal).</p> <p>Use knowledge of simple properties of materials to independently compare and group them.</p> <p>Confidently identify the use of everyday materials in life eg, use of plastic in toys because of durability etc.</p> <p>Twisting, bending, squashing and stretching can change the shape of some solid</p>	<p>Year 3</p> <p><u>Rocks and Soils</u></p> <p><u>Link to Y3 Rocks</u></p> <p>Rocks can be grouped in different ways according to their observable features (eg, colour, texture, permeability).</p> <p>Rocks are formed in three different ways. They are named - igneous rock, sedimentary rock and metamorphic rock.</p> <p>Scientific information (local examples of rocks) can be gathered, recorded and used to answer simple questions (eg, Why is slate a good material for a roof?).</p> <p>Fossils are formed when things that have lived are</p>	<p>Year 4</p> <p><u>States of Matter</u></p> <p>Particles within a material determine if it is a solid, liquid or gas.</p> <p>Solid – fixed shape, particles fit closely together, rigid and fixed volume.</p> <p>Liquid – particles not as close together as a solid, but not as far apart as a gas, not rigid, fixed volume, no fixed shape.</p> <p>Gas – particles very loosely together, not rigid, no fixed shape, no fixed volume.</p> <p>Some materials can state when they are heated or cooled (eg, water).</p> <p>Water freezes at 0 degrees Celsius and boils</p>	<p>Year 5</p> <p><u>Properties and changes of materials</u></p> <p>Confidently compare and group together materials based on a range of properties including hardness, solubility, conductivity (thermal and electrical), transparency and response to magnets.</p> <p>Some materials (eg, salt and sugar) will dissolve in a liquid to form a solution and these solutes can then be recovered by evaporating the solution. This is known as a reversible change. Demonstrate how these are reversible changes.</p> <p>When some materials</p>



St Leo's and Southmead Catholic Nursery and Primary School

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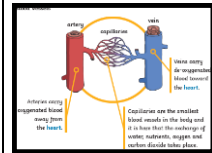
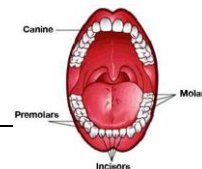
<p>ways. For eg, shiny, dull, hard, bendy, transparent, and soft.</p> <p>With adult support, compare and group together a variety of everyday materials on the basis of their simple properties – eg, glass and some plastics are transparent.</p>  	<p>materials (eg, plasticine).</p> <p>Begin to identify man made materials (eg, plastic) from non man made (eg, wood).</p> <p><u>Famous Scientists</u> Charles Macintosh invented the first waterproof fabric</p> <p>John Boyd Dunlop invented the first inflated rubber tyre</p> <p>John Loudon McAdam revolutionised road building by using smaller stones on a bed of large stones. He is seen as the father of modern road building</p>	<p>trapped in rock.</p> <p>Most fossils are found in earth that once lay underwater.</p> <p>After a living thing died, it sank to the bottom of the sea.</p> <p>Layers of earth and the remains of other living things built up on top of it.</p> <p>Over time, these layers turned into <u>rock</u>.</p> <p>Eventually, part or all of the living thing's hard parts also turned into rock.</p> <p>The fossil is the shape of these hard parts in the rock.</p> <p>Mary Anning was remarkable and contributed greatly to our understanding of fossils.</p> <p>Soil is composed of sand, small stones, organic matter and micro bugs.</p>	<p>at 100 degrees Celsius.</p> <p>Describe the water cycle:</p> <ul style="list-style-type: none"> • Water evaporates and transpiration (plants) • Clouds formed • Water condenses • Precipitation falls • Water collects <p>and the cycle then repeats.</p> <p>The rate of evaporation is linked to the temperature (the warmer the temperature, the quicker water evaporates).</p> <p>Link to Y4 Electricity – common conductors and insulators (metals good conductors)</p> 	<p>are mixed (for example, baking cakes), the materials cannot be recovered. This is an irreversible change.</p> <p>Use their knowledge of solids, liquids and gases to decide how solutions and mixtures might be separated (including filtration, sieving and evaporation).</p> <p>Use evidence from comparative and fair tests, for the use of everyday materials.</p> <p>Some changes result in the formation of new materials, and this kind of change is not usually reversible. For example, burning a material or the action of an acid (eg, vinegar) on bicarbonate of soda. This produces a gas and a new substance.</p>
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St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

<p>Animals including humans</p> <p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p> <p>Big Idea 7 Organisms are organised on a cellular basis and have a finite life span</p> <p>Big Idea 8 Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</p> <p>Big Idea 9 Generic information is passed down from</p>	<p>Nursery</p> <p>Use all their senses in hands-on exploration of natural materials.</p> <p>Begin to make sense of their own life-story and family's history.</p> <p>Understand the key features of the life cycle of plant and an animal (born, live, new plant/animal, die)</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p>			<p>Reception</p> <p>Talk about members of their immediate family and community.</p> <p>Name and describe people who are familiar to them.</p> <p>Recognise some environments that are different to the one in which they live.</p>		
	<p>Year 1</p> <p>The name of body parts including head, wrist, arm, legs, knees, elbow and ankle.</p> <p>Link between body parts and the senses (mouth to taste, nose to smell etc).</p> <p>Different animals have some similar and different body parts. Name some</p>	<p>Year 2</p> <p>All living things reproduce and have offspring.</p> <p>Animals change as they get older.</p> <p>Humans have offspring which grow into adults.</p> <p>Animals need water, food, air and shelter to survive.</p> <p>Describe why a balanced diet is essential to being</p>	<p>Year 3</p> <p>Animals, including humans, need the right types of nutrition in the correct portions.</p> <p>Animals, including humans, cannot make their own food; they get nutrition from what they eat.</p> <p>Identify food groups and the role they play in</p>	<p>Year 4</p> <p>Begin to identify and understand the function of the digestive system – Main parts: mouth, tongue, teeth, oesophagus, stomach, small and large intestines.</p> <p>Identify the different types of human teeth and their functions.</p>	<p>Year 5</p> <p>Covered via Journey of Love</p> <p>Name and explain the different types of reproduction (sexual and asexual).</p> <p>Name and order the 6 stages of human development (pre-natal, childhood, adolescence, early, middle and late adulthood).</p> <p>Describe and give reasons for the changes that occur during puberty.</p>	<p>Year 6</p> <p>Identify and name the main parts of the human circulatory system (veins, capillaries, arteries).</p> <p>Describe the functions of the heart, blood vessels and blood: heart pumps blood to lungs and then around the body.</p>





St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

one generation of organisms to another

Big Idea 10
The diversity of organisms, living and extinct, is the result of evolution.

of these body parts (tail, paws etc).

Human and animal senses can help to keep them safe.

Animals can be grouped together (classified) as birds, fish, amphibians, reptiles, mammals and invertebrates, based on their similarities.

Describe and compare some animals in each category.

Name a variety of common animals that are carnivore, herbivore and omnivore



healthy (food for energy etc). Describe why animals need to be healthy, for example, brushing teeth, regular hand washing. This stops infections from spreading.

Regular exercise is part of a healthy lifestyle. It strengthens the heart and other muscles and can improve your mood.

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. (Y2 - Living things and their habitats)



nutrition (carbohydrates for energy etc).

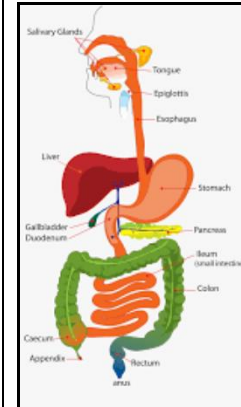
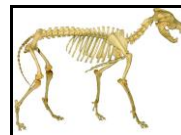
Identify which foods belong to which food groups (eg, meat is protein).

Humans and some animals have skeletons inside their body.

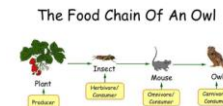
Some animals have skeletons on the outside of their body.

Some animals have no skeleton.

Skeletons and muscles give support, protection and movement to humans and some animals.



Construct their own food chains, identifying the producers, predators and prey.



Understand and explain how babies grow in height and weight.



Describe the differences 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. (Y5 - Living things and their habitats)

The blood transports gases, nutrients including water) and waste products.

Recognise the impact diet, exercise, drugs and lifestyles on the way their bodies function

Describe the different ways nutrients and water are transported within animals.

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. (Y6 - Living things and their habitats)



St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

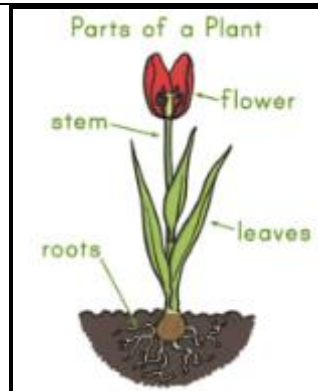
<p>Plants</p> <p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p> <p>Big Idea 7 Organisms are organised on a cellular basis and have a finite life span</p> <p>Big Idea 8 Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</p> <p>Big Idea 9 Generic information is passed down from one generation of organisms to another</p> <p>Big Idea 10 The diversity of organisms, living and extinct, is the</p>	<p>Nursery</p> <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. 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.</p>	<p>Reception</p> <p>Draw information from a simple map 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.</p>
	<p>Year 1</p> <p>A plant is a living thing that usually grows from the ground.</p> <p>Identify and name the roots, stem, leaves and flower.</p> <p>Identify and name tulips, roses, daffodils, bluebells and foxgloves.</p> <p>Trees – identify and name roots, trunk, branch, twig, leaves and crown.</p> <p>Know the following trees: ash, oak, beech, birch and maple.</p> <p>Some trees have green leaves all year round. These are called evergreen.</p> <p>Some trees lose their leaves in autumn and they grow again in spring. These are called deciduous.</p>	<p>Year 2</p> <p>When seeds start to grow this is called germination.</p> <p>To germinate, seeds need warmth, air (oxygen) and water.</p> <p>Seeds don't need light because they have a store of food inside them already.</p> <p>Once a seed breaks through the soil it is a plant.</p> <p>To grow and survive, plants need light, water and carbon dioxide. This is so they can make their own food.</p> <p>If a plant gets too hot or too cold then they will die.</p> <p>The lifecycle of a plant:</p> <ol style="list-style-type: none"> 1. A plant grows, 2. flowers grow, 3. flower dies, 4. fruits with seeds left behind. 5. seeds germinate



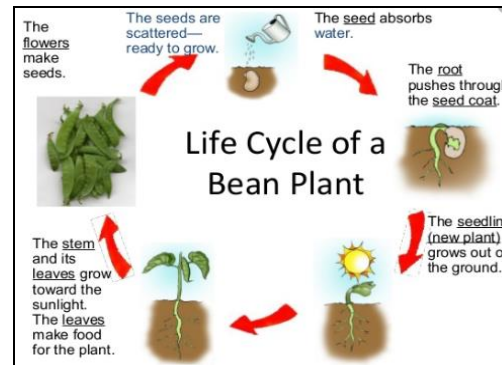
St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

result of evolution.



Many plants provide us with food by bearing fruits which carry seeds



and then through small vessels in the leaves.

Pollination

The process where pollen is transferred from one plant to another.

Seed formation

The formation of a seed when the pollen travels down the style and into the ovary.

Seed dispersal

The movement of seeds away from the parent by wind, animals, water and explosion.

Year 4

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 environment.

Recognise that environments can change and that this can sometimes pose dangers to living things.
(All covered in Y4 - Living things and their habitats)

Year 5

Describe the life processes of reproduction in some plants and animals.
(Covered in Y5 - Living things and their habitat)

Year 6


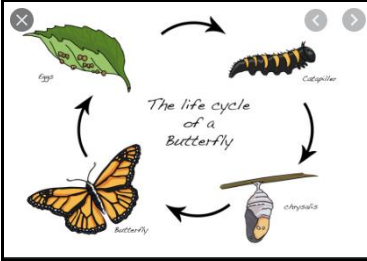
Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including plants and animals.

Give reasons for classifying plants and animals based specific characteristics.
(Covered in Year 6 - Living things and their habitat)



St Leo's and Southmead Catholic Nursery and Primary School


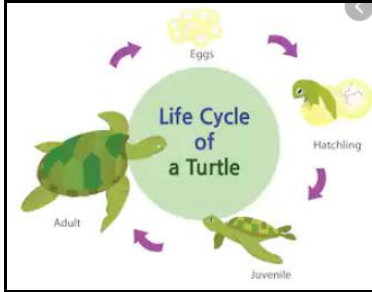
The Big Ideas of Science - Progression Knowledge/Concepts

<p>Living things and their habitats</p> <p>Big Idea 1 All matter in the universe is made of very small particles</p>	<p>Nursery</p> <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Begin to understand the need to respect and care for the natural environment and all living things.</p>		<p>Reception</p> <p>Draw information from a simple map 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.</p>	
<p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p> <p>Big Idea 7 Organisms are organised on a cellular basis and have a finite life span</p> <p>Big Idea 8 Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</p>	<p>Year 2</p> <p><u>Things can be split into 3 groups:</u></p> <p>Things that are alive Things that were alive, but are now dead Things that have never been alive</p> <p>Living things are made from cells and show signs of life (move, reproduce, grow and eat/nutrition)</p> <p>Most living things live in an environment they are suited to and this is called their "habitat"</p> <p>There are many different types of habitat – these include contrasting environments (hot/cold, high/low, dry/wet)</p> <p>Habitats provide the basic</p>	<p>Year 4</p> <p>Recognise that living things can be grouped in a variety of ways. Explore and use classification keys help to group, identify and name a variety of living things (local/wider area).</p>  <p>Name a variety of habitats and explore why organisms live in different habitats and habitats change throughout the year.</p> <p>Animals with a vertebrate can be classified as fish,</p>	<p>Year 5</p> <p>Describe the life process of reproduction in some plants and animals. Understand that sexual reproduction requires 2 parents and asexual requires only 1, producing an exact replica of the parent plant. Investigate growing plants from different parts of the parent plant (stem, seeds, bulbs or root cuttings)</p> <p>Research and compare the differences between the lifecycles of a mammal, insect, bird and amphibian.</p> 	<p>Year 6</p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Carl Linnaeus is famous for his work in Taxonomy: the science of identifying, naming and classifying organisms. He identified seven major levels of classification; Kingdom, Phylum, Class, Order, Family, Genus and Species.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary</p>



St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

<p>Big Idea 9 Generic information is passed down from one generation of organisms to another</p> <p>Big Idea 10 The diversity of organisms, living and extinct, is the result of evolution.</p> 	<p>needs for the animals/plants who live there</p> <p>The habitats of animals and plants can be dependent on each other.</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.</p> <p>Identify/name different sources of food.</p> <p>Notice that animals, including humans, have offspring which grow into adults (Y2 – Animals including humans)</p>	<p>amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects</p> <p>Humans can have a positive or negative impact on environments. Positive impact includes effects of nature reserves, ecologically planned parks, or garden ponds, and the negative impact includes the effects of population and development, litter or deforestation.</p> <p>Construct and interpret a variety of food chains, identifying producers, predator and prey (Y4 – Animals including humans)</p>		<p>and are not identical to their parents.</p> <p>Identify how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>(Y6 – Evolution and Inheritance)</p>
<p>Year 1</p> <p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)</p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans)</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals,</p>		<p>Year 3</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</p>		



St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

including humans) Observe changes across the four seasons. (Y1 - Seasonal change)	
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St Leo's and Southmead Catholic Nursery and Primary School


The Big Ideas of Science - Progression Knowledge/Concepts

<p>Evolution and Inheritance</p> <p>Big Idea 1 All matter in the universe is made of very small particles</p> <p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p> <p>Big Idea 7 Organisms are organised on a cellular basis and have a finite life span</p> <p>Big Idea 8 Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</p>	<p>Year 6</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>To explain the key ideas of the Theory of Evolution (characteristics are passed from parents to offspring; variation over time can make animals more or less able to survive in particular environments).</p> <p>This topic builds on the learning from previous years:</p> <ul style="list-style-type: none">• Nursery - Begin to understand the need to respect and care for the natural environment and all living things.• Reception - Recognise some environments that are different to the one in which they live.• Year 2 - 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. (Y2 - Living things and their habitats) and notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)• Year 3 - Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) and Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)• Year 4 - Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)• Year 5 - Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5) <p>Big Idea 9 Generic information is passed down from one generation of organisms to another</p> <p>Big Idea 10 The diversity of organisms, living and extinct, is the result of evolution.</p>
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St Leo's and Southmead Catholic Nursery and Primary School



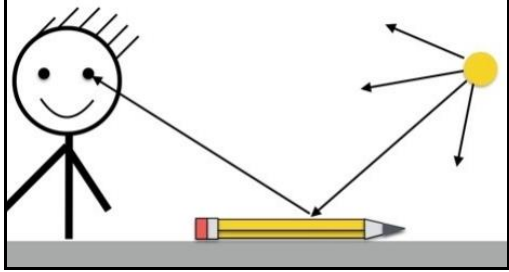
The Big Ideas of Science - Progression Knowledge/Concepts

Light Big Idea 2 Objects can affect other objects at a distance Big Idea 4 The total amount of energy in the Universe is always the same but can be transferred from one energy source to another during an event.	Nursery Explore how things work. Talk about differences between materials and changes they notice.	Reception Describe what they see, hear and feel whilst outside.	Year 1 Darkness is the absence of light There are many sources of light in the world – the sun, fire, lamps, televisions etc Daytime is when the world is full of light - the sun gives us this light even if we cannot see the sun because of the clouds Night time is when there is darkness Some objects will let light through. The object is said to be transparent. Some objects will not let light through. The object is said to be opaque.  Link to Y1 Animals including humans (use of eyes to see) Y1 – Materials (simple properties of a variety of everyday materials)
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Year 3	Year 5	Year 6
<p>Briefly recap what light and dark is; Identify/group common light sources</p> <p>Light is reflected from surfaces</p> <p>Light from the sun can be dangerous and there are ways protect their eyes</p> <p>Shadows are formed when light is blocked out by an opaque object</p> <p>The size of shadows varies depending on the distance of the opaque object from the light source</p>  	<p>Linked to Properties and changes of materials (compare and group together everyday materials based on their properties, including transparency)</p>	<p>Recap - Light sources, shadows, opaque, transparent and translucent.</p> <p>Light travels as a wave through space and moves in a straight line.</p> <p>Objects reflect light or give out light.</p> <p>We can see things because light travels in a straight line from a light source to our eyes. Objects can reflect light and that is why we see them.</p> <p>Shadows have the same shape as the object that cast them because light travels in straight lines.</p> <p>Light is refracted when it passes from one medium to another.</p> <p>Visible light is made up of the colour spectrum.</p> 



St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

<p>Forces and Magnets</p> <p>Big Idea 2 Objects can affect other objects at a distance</p> <p>Big Idea 3 Changing the movement of an object requires a net force to be acting on it</p>	<p>Nursery</p> <p>Explore how things work. Explore and talk about different forces they can feel (eg, wind outside). Talk about how materials can be changed by using a force (eg, rolling playdough)</p>	<p>Reception</p> <p>Explore the natural world around them. Describe what they hear, see and feel outside.</p>	<p>Year 2</p> <p>Link to Y2 – Uses of Everyday Materials (find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching)</p>
	<p>Year 3</p> <p>To know that every force is either a push or a pull and that some forces have special names.</p> <p>To identify examples of everyday pushes and pulls and what is in contact which causes movement.</p> <p>Objects move differently depending on the surface they are travelling along. The smoother the surface, the quicker the object will travel. This force is called friction. (investigate).</p> <p>Some forces require contact between two objects, but magnetic forces can act at a distance.</p> <p>Magnets have two poles and can attract or repel objects. Different poles attract each other and the same poles repel each other.</p> <p>If an object is attracted to a magnet, it is</p>	<p>Year 4</p> <p>Air resistance is a frictional force which slows down the rate at which objects fall. It occurs between the surface of a falling object and the air that surrounds it</p> <p>Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Galileo Galilei (1564 – 1642) was an Italian scientist and mathematician who wondered about gravity. In 1590, he decided to carry out an investigation to find the answer. He climbed to the top of the Leaning Tower of Pisa with two balls of similar shape and size, but of different masses. He dropped both of the balls from the top of the tower at the same time. Both balls hit the ground at the same time.</p> <p>Air resistance works with surface area, so the more surface area, the more air resistance.</p>	<p>Year 5</p> <p>Explain why unsupported objects fall towards the centre of earth</p> <p>Understand and explain the causal link between the mass of an object and the amount of force with which gravity acts upon it.</p> <p>Define friction as a force between two surfaces that are sliding, or trying to slide, across each other. It slows down movement. Friction can be useful, for example, to stop a car.</p> <p>Water resistance is a frictional force which slows an object when moving through water</p> <p>Recognise that mechanisms, including levers, gears and pulleys allow a smaller force to have a greater effect. Identify the uses on these mechanisms in everyday life (eg, scissors, bike gears).</p>

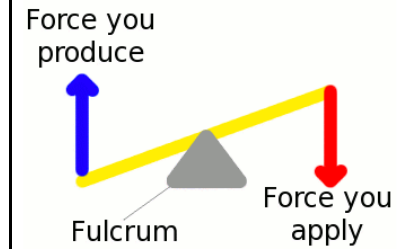


St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

said to be magnetic.

Compare and group together a variety of materials on the basis of whether or not they are attracted to a magnet. Identify some magnetic materials.





St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

<p>Electricity</p> <p>Big Idea 4 The total amount of energy in the Universe is always the same but can be transferred from one energy source to another during an event.</p>	<p>Nursery</p> <p>Explore how things work.</p>	
	<p>Year 4</p> <p>Televisions, computers, fridges and other common appliances run on electricity.</p> <p>Practical – make a simple series electrical circuit and name its basic parts (cells, wires, bulbs, switches and buzzers).</p> <p>For a lamp to light there must be a full circuit complete with a battery.</p> <p>A switch in a simple series circuit will switch a light on or off.</p> <p>Identify metals with being good conductors of electricity and wood, plastic and glass as being common insulators.</p> <p>Understand that simple circuits can be represented pictorially</p>	<p>Year 6</p> <p>Recap - Construction of simple series circuits and identify why circuits might not be working.</p> <p>The more bulbs/buzzers are added to a circuit, the dimmer the brightness of the bulb or loudness of the buzzer will decrease.</p> <p>Not all light bulbs have the same brightness.</p> <p>Not all buzzers emit the same level of sound.</p> <p>The brightness of a lamp or the volume of a buzzer is dependent on the number and voltage of cells used in the circuit</p> <p>Each component of an electrical circuit has an electrical symbol and series circuits can be drawn using these symbols. Apply this knowledge when drawing a simple circuit diagram.</p>

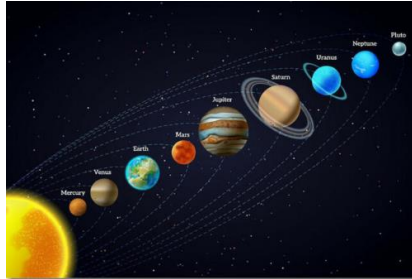


St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

<p>Seasonal Changes</p> <p>Big Idea 8 Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms</p> <p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p>	<p>Nursery</p> <p>Understand the key features of the life cycle of a plant and an animals.</p> <p>Reception</p> <p>Explain the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Understand the effect of the changing seasons on the natural world around them.</p>	<p>Year 1</p> <p>The year is split up into seasons called winter, spring, summer and autumn.</p> <p>Each season has different weather, there are a different number of hours of daily sunlight in each season and our outside world looks different in each season. Animals behave differently in each season (eg, hibernation) and plants can change (lose leaves, blossom etc)</p> <p>When it is winter in the northern hemisphere, it is summer in the southern hemisphere.</p>	<p>Year 3</p> <p>Recognise that light from the sun can be dangerous and there are ways to protect their eyes (Light)</p> <p>Year 5</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky (Earth and Space).</p>
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St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

<p>Earth and Space</p> <p>Big Idea 2 Objects can affect other objects at a distance</p> <p>Big Idea 6 Our solar system is a very small part of one of billions of galaxies in the Universe.</p>	<p>Reception</p> <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside.</p>	<p>Year 1</p> <p>Observe changes across the four seasons (Y1 – Seasonal Changes) Observe and describe the weather associated with the seasons and how the day length varies. (Y1 – Seasonal Changes)</p>
	<p>Year 2</p> <p>The planet we live on is called Earth</p> <p>The earth orbits around the sun</p> <p>Galileo Galilei discovered that the Earth orbits the sun</p> <p>The moon orbits the earth</p> <p>Day/night occur as the result of the rotation of the Earth around the sun</p> <p>The solar system is a group of planets that orbit the sun.</p> <p>Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune are the planets in our solar system</p> <div style="text-align: center;">  </div>	<p>Year 5</p> <p>Recap - the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>Recognise that the Sun, Earth and Moon are spherical bodies.</p> <p>Know the relative size of the Earth, Sun and Moon to each other.</p> <p>Understand the distances between the Earth, Sun and Moon and how far they are away from each other.</p> <p>Understand that shadows change position during the day and why</p> <p>To identify the moon as a satellite to the Earth.</p> <p>Identify the sun as a star at the centre of our universe.</p> <p>Know that the Earth spins on its axis once every 24 hours, making the Sun appear as though it is travelling across the sky.</p> <p>Explain why night and day do not happen at the same time in different parts of the world and the length of daylight changes throughout the year.</p> <p>Understand that a year is the length of time it takes the Earth to orbit the sun. and that an earth year is 365.25 days</p>



St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

<p>Sound</p> <p>Big Idea 2 Objects can affect other objects at a distance</p> <p>Big Idea 4 The total amount of energy in the Universe is always the same but can be transferred from one energy source to another during an event.</p>	<p>Nursery Explain how things work.</p> <p>Reception Describe what they see, hear and feel whilst outside.</p>	<p>Year 1 Sound can be made by hitting, blowing, plucking and rubbing an object.</p>  <p>Link to Y1 Animals including humans (link body parts to the senses)</p>	<p>Year 4</p> <p>Sound is created when something vibrates and sends waves of energy (vibration) into our ears.</p> <p>The vibrations travel through the air or another medium (solid, liquid or gas) to the ear.</p> <p>The stronger the vibrations, the louder the sound. (investigate)</p> <p>Sound changes depending on how fast or slow an object vibrates to make sound waves.</p> <p>There are patterns between the pitch of a sound and features of the object that produced it (investigate - eg, tightness of strings).</p> <p>Sounds get fainter as the distance from the sound source increases.</p>
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St Leo's and Southmead Catholic Nursery and Primary School
The Big Ideas of Science - Progression Knowledge/Concepts

Rocks	Nursery Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties.		Reception Explore the natural world around them. Describe what they see, hear and feel whilst outside.	
<p>Big Idea 5 The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate</p> <p>Big Idea 7 Organisms are organised on a cellular basis and have a finite life span</p> <p>Big Idea 10 The diversity of organisms, living and extinct, is the result of evolution.</p>	<p>Year 1</p> <p>Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</p> <p>Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)</p>	<p>Year 2</p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)</p>	<p>Year 3</p> <p>Rocks can be grouped in different ways according to their observable features (eg, colour, texture, permeability).</p> <p>Rocks are formed in three different ways. They are named - igneous rock, sedimentary rock and metamorphic rock.</p> <p>Scientific information (local examples of rocks) can be gathered, recorded and used to answer simple questions (eg, Why is slate a good material for a roof?).</p> <p>Fossils are formed when things that have lived are trapped in rock.</p> <p>Most fossils are found in earth</p>	<p>Year 6</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)</p>



St Leo's and Southmead Catholic Nursery and Primary School

The Big Ideas of Science - Progression Knowledge/Concepts

			<p>that once lay underwater.</p> <p>After a living thing died, it sank to the bottom of the sea.</p> <p>Layers of earth and the remains of other living things built up on top of it.</p> <p>Over time, these layers turned into rock.</p> <p>Eventually, part or all of the living thing's hard parts also turned into rock.</p> <p>The fossil is the shape of these hard parts in the rock.</p> <p>Mary Anning was remarkable and contributed greatly to our understanding of fossils.</p> <p>Soil is composed of sand, small stones, organic matter and micro bugs.</p>	
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St Leo's and Southmead Catholic Nursery and Primary School

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Famous Scientists studied

Year 2

Edward Jenner, Thomas Edison, Alexander Bell and Alexander Fleming

Year 3

Mary Anning, William Smith and Inge Lehmann

Year 5

Issac Newton, Stephen Hawking, Katherine Johnson, Mary Jackson

Knowledge/concepts – Those written in red show the links between the learning in the different areas and highlight the connectivity of science ideas.

Big Ideas of Science – Taken from “Working with Big Ideas of Science Education”, edited by Wynne Harlen