

Progression in PE

Intent

We aim for children to have acquired the essential characteristics of scientists:

- experience a wide range of physical activity and cater for the different strengths, needs and preferences of each child by using differentiated activities (where appropriate) consisting of individual paired and group activities
- enable children to develop and explore physical skill with increasing control and coordination
- develop confidence and competence in performing different skills
- develop positive attitudes to physical activity. Through the variety of opportunities that PE offers children can develop a sense of personal achievement, fair play, teamwork and an understanding of the ways in which sport can transcend social and cultural boundaries
- improve social and interpersonal skills
- appreciate the efforts of others, as well as their own
- respond positively to different challenges
- persevere and make sustained efforts to develop and improve their own performance
- pursue habits and interests that promote a healthy lifestyle
- become increasingly aware of how physical activity affects the body. Children who are taught to appreciate the importance of a healthy and fit body begin to understand those factors which affect health and fitness. Our aim to raise children's awareness in this regard is therefore closely aligned with the school's policy on Personal, Social and Health Education (PSHE)
- children of all abilities will be encouraged to join clubs and organisations with the aim of extending their interest and involvement in sport. We will also encourage children to develop their creative and expressive abilities, through improvisation and problem-solving
- through the Government Funding for Sport the School will, where possible, provide opportunities for both pupils and teachers to work with and alongside PE specialists and sports coaches, with particular use made of the East Staffs School Sports Partnership. The aim is to enhance specialist and coaching facilities and to develop the skills and expertise of staff to provide better coaching, mentoring and advice to pupils across the whole PE and sport spectrum

Implementation:

- 1 Curriculum drivers (the Arts and Possibilities) shape our curriculum breadth in science. They are derived from an exploration of the backgrounds of our students, our beliefs about high quality education and our values. They are used to ensure we give our students appropriate and ambitious curriculum opportunities.
- 2 Cultural capital gives our students the vital background knowledge required to be informed and thoughtful members of our community who understand and believe in British values.
- 3 Curriculum breadth is shaped by our curriculum drivers, cultural capital, subject topics and our ambition for students to study the best of what has been thought and said by many generations of academics and scholars.
- 4 Our curriculum distinguishes between subject topics and 'threshold concepts'. Subject topics are the specific aspects of subjects that are studied.
- 5 **Threshold concepts** tie together the subject topics into meaningful schema. The same concepts are explored in a wide breadth of topics. Through this 're-visiting' of the curriculum, students return to the same concepts over and over and gradually build understanding of them. In PE, these threshold concept is develop practical skills in order to participate, compete and lead a healthy lifestyle.
- 6 **Knowledge categories**: These categories help students to relate each topic to previously studied topics and to form strong, meaningful schema. In PE these knowledge categories include: games, gymnastics, dance, athletics, swimming and outdoor/adventurous activities.

7. **Milestones:** For each of the threshold concepts three Milestones, each of which includes the procedural and Knowledge categories in each subject give students a way of expressing their understanding of the threshold concepts. Milestone 1 is taught across Years 1 and 2, milestone 2 is taught across Year 3 and 4 and milestone 3 is taught across Year 5 and Year 6
8. **Cognitive Domains:** Within each Milestone, students gradually progress in their procedural fluency and semantic strength through three cognitive domains: basic, advancing and deep. The goal for students is to display sustained mastery at the 'advancing' stage of understanding by the end of each milestone and for the most able to have a greater depth of understanding at the 'deep' stage.

Progression through the Cognitive Domains		
Basic	Advancing	Deep
Acquiring knowledge.	Applying knowledge.	Reasoning with knowledge.
Knowledge is explicit and unconnected.	Knowledge is explicit and connected.	Knowledge is connected and tacit.
Relying on working memory.	Drawing on long-term memory, freeing working memory to consider application.	Relies on long-term memory, freeing working memory to be inventive.
Procedures processed one at a time with conscious effort.	Procedures being automatic.	Automatic recall of procedures.
Understands only in the context in which the materials are presented.	Sees underlying concepts between familiar contexts.	Uses conceptual understanding in unfamiliar situations.
New information does not readily stick. Schemes are limited.	New information is linked to prior knowledge. Schemas are strong.	Readily assimilates new information into rapidly expanding schemas.
Struggles to search for problem solutions. Relies on means-end analysis.	Combines searching for problem solutions with means-end analysis.	Draws on a vast store of problem solutions.
Requires explicit instructions and models.	Uses models effectively.	Prefers discovery approaches to learning.

9. **Key vocabulary** – move the learning from basic to deep and show progression through the milestones.
10. **Pedagogical Content Knowledge and Strategies:** As part of our progression model we use a different pedagogical style in each of the cognitive domains of basic, advancing and deep. This is based on the research of Sweller, Kirschner and Rosenshine who argue to direct instruction in the early stages of learning and discovery based approaches later. We use direct instruction in the basic domain and problem based discovery in the deep domain. This is called the reversal effect.
11. Also as part of our progression model we use
12. Our curriculum design is based on evidence from cognitive science; three main principles underpin it:
- Learning is most effective with spaced repetition.
 - Interleaving helps pupils to discriminate between topics and aids long-term retention.
 - Retrieval of previously learned content is frequent and regular, which increases both storage and retrieval strength.
13. In addition to the three principles we also understand that learning is invisible in the short-term and that sustained mastery takes time.
14. Our content is subject specific. We make intra-curricular links to strengthen schema.
15. Continuous provision, in the form of daily routines, replaces the teaching of some aspects of the curriculum and, in other cases, provides retrieval practice for previously learned content.

Milestone 1 Key Stage 1	Milestone 2 Lower Key Stage 2	Milestone 3 Upper Key Stage 2
GAMES		
<p>This concept involves learning a range of physical movements and sporting techniques.</p>		
<ul style="list-style-type: none"> • Use the terms 'opponent' and 'team-mate'. • Use rolling, hitting, running, jumping, catching and kicking skills in combination. • Develop tactics. • Lead others when appropriate. 	<ul style="list-style-type: none"> • Throw and catch with control and accuracy. • Strike a ball and field with control. • Choose appropriate tactics to cause problems for the opposition. • Follow the rules of the game and play fairly. • Maintain possession of a ball (with, e.g. feet, a hockey stick or hands). • Pass to team mates at appropriate times. • Lead others and act as a respectful team member. 	<ul style="list-style-type: none"> • Choose and combine techniques in game situations (running, throwing, catching, passing, jumping and kicking, etc.). • Work alone, or with team mates in order to gain points or possession. • Strike a bowled or volleyed ball with accuracy. • Use forehand and backhand when playing racket games. • Field, defend and attack tactically by anticipating the direction of play. • Choose the most appropriate tactics for a game. • Uphold the spirit of fair play and respect in all competitive situations. • Lead others when called upon and act as a good role model within a team.
DANCE		
<p>This concept involves learning a range of physical movements.</p>		

<ul style="list-style-type: none"> • Copy and remember moves and positions. • Move with careful control and coordination. • Link two or more actions to perform a sequence. • Choose movements to communicate a mood, feeling or idea. 	<ul style="list-style-type: none"> • Plan, perform and repeat sequences. • Move in a clear, fluent and expressive manner. • Refine movements into sequences. • Create dances and movements that convey a definite idea. • Change speed and levels within a performance. • Develop physical strength and suppleness by practising moves and stretching. 	<ul style="list-style-type: none"> • Compose creative and imaginative dance sequences. • Perform expressively and hold a precise and strong body posture. • Perform and create complex sequences. • Express an idea in original and imaginative ways. • Plan to perform with high energy, slow grace or other themes and maintain this throughout a piece. • Perform complex moves that combine strength and stamina gained through gymnastics activities (such as cartwheels or handstands).
GYMNASTICS		
<p>This concept involves learning a range of physical movements.</p> <ul style="list-style-type: none"> • Copy and remember actions. • Move with some control and awareness of space. • Link two or more actions to make a sequence. • Show contrasts (such as small/tall, straight/curved and wide/narrow). • Travel by rolling forwards, backwards and sideways. • Hold a position whilst balancing on different points of the body. 	<ul style="list-style-type: none"> • Plan, perform and repeat sequences. • Move in a clear, fluent and expressive manner. • Refine movements into sequences. • Show changes of direction, speed and level during a performance. • Travel in a variety of ways, including flight, by transferring weight to generate power in movements. • Show a kinesthetic sense in order to improve the placement and alignment of body parts (e.g. in balances experiment to find out how to get the centre of gravity successfully over base and organise body parts to create an interesting body shape). • Swing and hang from equipment safely (using hands). 	<ul style="list-style-type: none"> • Create complex and well-executed sequences that include a full range of movements including: <ul style="list-style-type: none"> • travelling • balances • swinging • springing • flight • vaults • inversions • rotations • bending, stretching and twisting

























<ul style="list-style-type: none"> • Climb safely on equipment. • Stretch and curl to develop flexibility. • Jump in a variety of ways and land with increasing control and balance. 		<ul style="list-style-type: none"> • gestures • linking skills. • Hold shapes that are strong, fluent and expressive. • Include in a sequence set pieces, choosing the most appropriate linking elements. • Vary speed, direction, level and body rotation during floor performances. • Practise and refine the gymnastic techniques used in performances (listed above). • Demonstrate good kinesthetic awareness (placement and alignment of body parts is usually good in well-rehearsed actions). • Use equipment to vault and to swing (remaining upright).
SWIMMING		
<p>This concept involves learning a range of physical movements.</p> <ul style="list-style-type: none"> • Swim unaided up to 25 metres. • Use one basic stroke, breathing correctly. • Control leg movements. 	<ul style="list-style-type: none"> • Swim between 25 and 50 metres unaided. • Use more than one stroke and coordinate breathing as appropriate for the stroke being used. • Coordinate leg and arm movements. • Swim at the surface and below the water. 	<ul style="list-style-type: none"> • Swim over 100 metres unaided. • Use breast stroke, front crawl and back stroke, ensuring that breathing is correct so as not to interrupt the pattern of swimming. • Swim fluently with controlled strokes. • Turn efficiently at the end of a length.
OUTDOOR and ADVENTUROUS ACTIVITIES		
<p>This concept involves learning a range of physical movements.</p>	<ul style="list-style-type: none"> • Arrive properly equipped for outdoor and adventurous activity. 	<ul style="list-style-type: none"> • Select appropriate equipment for outdoor and adventurous activity.

<ul style="list-style-type: none"> • Not applicable. 	<ul style="list-style-type: none"> • Understand the need to show accomplishment in managing risks. • Show an ability to both lead and form part of a team. • Support others and seek support if required when the situation dictates. • Show resilience when plans do not work and initiative to try new ways of working. • Use maps, compasses and digital devices to orientate themselves. • Remain aware of changing conditions and change plans if necessary. 	<ul style="list-style-type: none"> • Identify possible risks and ways to manage them, asking for and listening carefully to expert advice. • Embrace both leadership and team roles and gain the commitment and respect of a team. • Empathise with others and offer support without being asked. Seek support from the team and the experts if in any doubt. • Remain positive even in the most challenging circumstances, rallying others if need be. • Use a range of devices in order to orientate themselves. • Quickly assess changing conditions and adapt plans to ensure safety comes first.
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ATHLETICS

<p>This concept involves learning a range of physical movements and sporting techniques.</p> <ul style="list-style-type: none"> • Athletic activities are combined with games in Years 1 and 2. 	<ul style="list-style-type: none"> • Sprint over a short distance up to 60 metres. • Run over a longer distance, conserving energy in order to sustain performance. • Use a range of throwing techniques (such as under arm, over arm). • Throw with accuracy to hit a target or cover a distance. • Jump in a number of ways, using a run up where appropriate. • Compete with others and aim to improve personal best performances. 	<ul style="list-style-type: none"> • Combine sprinting with low hurdles over 60 metres. • Choose the best place for running over a variety of distances. • Throw accurately and refine performance by analysing technique and body shape. • Show control in take off and landings when jumping. • Compete with others and keep track of personal best performances, setting targets for improvement.
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Key Vocabulary Progression

 categorise  compare and contrast  label  Explaining  observe  Experiment  Suggest	 compare and contrast  Explaining  construct  draw  label  Measure  Experiment  graph  observe  tagged	 We will be reporting The effect of exercise  We will be testing and predicting: How to make a motor and buzzer work How to make bulbs brighter Patterns of voltage and various components  We will be using: Symbols to represents components in circuits  We will be enquiring about: The changes in human develop How our bodies differ from birth to old age  We will be gathering data On the phases of the moon On how we get the calendar (Year, months, seasons)
		 Explaining  We will be making observations and describing the effects of: Gravity Air and water resistance Drag forces



Vocabulary



Vocabulary

Progression in Science Vocabulary		
Milestone 1 Key Stage 1	Milestone 2 Lower Key Stage 2	Milestone 3 Upper Key Stage 2
Tier 2 vocab- Key vocabulary.		
Draw, label, name, recognise, describe, match, identify, observe, list, apply, follow instructions, place, plan, think, illustrate, explain, group, design, summarise, notice, construct, predict	Answer questions, compare and contrast, recommend, suggest reasons, reason, justify, propose, arrange, complete, experiment, summarise, cite evidence, relate, note, similarities and differences, Explain concepts, give examples, Demonstrate, Prove or disprove.	Graph, interpret, generalise, argue the statement, demonstrate, present, adapt,

Suggest, create, diagnose, modify, devise, prove, contrast, evidence, reason and justify.			explain patterns, continuous variables.												
Tier 2- Working scientifically															
<ul style="list-style-type: none">Question, answer, observe, equipment, identify, classify, sort, group, record, map, data, compare, describe, Biology, Chemistry, Physics.		Scientific enquiry, comparative and fair test, systematic, accurate, measurements, equipment, datalogger, thermometer, gather, classify, labelled diagrams, differences and similarities, changes, improve, construct, prove.	Present, interpret, variables, precision, repeat readings, report, conclusion, causal relationships, explanations, degree of trust, reliability, quantitative measurements												
Tier 3 subject specific vocabulary															
Understanding plants															
<table><tr><td>Deciduous</td><td>A tree that loses its leaves in the Autumn.</td></tr><tr><td>Evergreen</td><td>A tree that keeps its leaves all year round.</td></tr><tr><td>Reproduction</td><td>Where new plants/animals are produced.</td></tr><tr><td>Bulb</td><td>A bulb is structurally a short stem with fleshy leaves</td></tr><tr><td>Roots</td><td>Transports water through the plant and holds the plant firm in the ground.</td></tr><tr><td>Stem</td><td>Supports the plants and transports water from the roots.</td></tr></table>		Deciduous	A tree that loses its leaves in the Autumn.	Evergreen	A tree that keeps its leaves all year round.	Reproduction	Where new plants/animals are produced.	Bulb	A bulb is structurally a short stem with fleshy leaves	Roots	Transports water through the plant and holds the plant firm in the ground.	Stem	Supports the plants and transports water from the roots.	Warmth, growth, height, function, support, seed dispersal, capillary, xylem, phloem, stamen, anther, pollen, oxygen, carbon dioxide, photosynthesis, pollination, fertilizer, nutrition Ash, Silver birch, Horse Chestnut, oak, willow, ash Foxglove, bluebell, dandelion, lavender, geranium, Roses Birds- Rook, blue tit, Great Tit, chaffinch, sparrow, Wren, Kestrel, Heron, Fertilise – The male part meeting the female part to produce a new living thing Insect – A small animal that has six legs and generally one or two pairs of wings	, Trees- Sycamore, Alder, Lime, Crab Apple, Hawthorne, Rowan Flowers- Primrose, heather, pansies, honeysuckle, chrysanthemum, Birds-Tawny owl, Barn owl, swallow, House Martin, Greenfinch, Coal Tit, Warbler. Kite
Deciduous	A tree that loses its leaves in the Autumn.														
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Reproduction	Where new plants/animals are produced.														
Bulb	A bulb is structurally a short stem with fleshy leaves														
Roots	Transports water through the plant and holds the plant firm in the ground.														
Stem	Supports the plants and transports water from the roots.														

<p>Nutrients – the essential food for a living thing to grow and survive. Water Temperature – how hot or cold something is. Flowers, Blossom, Fruit, Vegetable</p> <p>Holly, Yew, Sots Pine Oak, Beech, Willow</p> <p>Flowers: Daisy, snowdrop, daffodil, Rose, Poppies, sun flower,</p> <p>Birds- Wren, Blackbird, Robin, Carrion Crow, Magpie, pigeon, Sparrow Hawk</p>	<p>Leaves- These make food for the plant using sunlight and carbon dioxide from the Life processes – The series of processes in the life of an organism including reproduction</p> <p>Nectar - a sugary fluid within flowers to encourage pollination</p> <p>Nutrients - These substances are needed by a living things to grow and survive. Plants get nutrients from the soil and also make their own food in their leaves</p> <p>Pollen - a fine powdery substance, discharged from the male part of the flower that fertilises the female part</p> <p>Pollination – transferring pollen to allow fertilisation</p> <p>Roots- These anchor the plant into the ground and absorb water and nutrients from the soil.</p> <p>Stamen- The male parts of the flower. The stamen is made up of the <u>anther</u> and the <u>filament</u>. The filament's job is to hold up the anther. The job of the anther is to make the pollen.</p> <p>Stem -This holds the plant up and carries water and nutrients from the soil to the leaves. A trunk is the stem of a tree.</p>	<p>Photosynthesis</p>
<p>Understand animals and humans and Investigate living things</p>		
<p>Birds – animal with feathers and wings.</p> <p>Fish – animal with gills and lives in water.</p> <p>Amphibians – animals that can live in the water or land.</p> <p>Reptiles – animal with scaly/rough skin that is cold blooded.</p> <p>mammals – animals with fur or hair that give birth to live offspring.</p> <p>Invertebrates – animal without a backbone</p> <p>Food chain – order that animals depend on their food.</p> <p>Carnivores - An animal that feeds on other animals.</p>	<p>Carnivore- An animal that feeds on other animals.</p> <p>Digest- Break down food so it can be used by the body.</p> <p>Herbivore- An animal that eats plants.</p> <p>Large intestine- Part of the intestine where water is absorbed from remaining waste food. Stools are formed in the large intestine</p> <p>Oesophagus- A muscular tube which moves food from the mouth to the stomach.</p> <p>Omnivore- e An animal that eats plants and animals.</p> <p>Rectum- Part of the digestive system where stools are stored before leaving the body through the anus.</p> <p>Stomach-An organ in the digestive system where food is broken down with stomach acid and by being churned around</p> <p>Small intestine- Part of the intestine where nutrients are absorbed into the body.</p>	<p>,biomes, ecosystems, Linnaean Carl Linnaeus,classification, domain,kingdom, phylum, class, order, family genus, species, characteristics, microorganisms o flowering non- flowering</p> <p>puberty life cycle gestation growth reproduce foetus baby fertilisation toddler child teenager adult old age life expectancy</p>

Herbivores - An animal that eats plants.

Omnivores – An animal that eats plants and animals.

Habitat – the place where an animal lives.

Natural – God created.

man-made – made by people.

MRS GREN

Offspring – the young of animals.

Diet – the food animals eat.

Exercise	Physical exercise to keep our body fit.
Diet	Correct food and water a living thing needs.
Hygiene	How clean something is to stop things spreading.
Nutrition	Food we need to live.
Energy	The power needed to carry out a task.

Body parts (hand, nose, mouth, eyes)

Dead, alive, habitats, dependence, MRS GREN, suitability, micro-habitats, environment, natural

Habitat	The place where an animal lives.
Microhabitat	The place within the habitat where the animal lives. E.g. under a rock.
Alive	A living thing that is have all the life processes.
Dead	Something that was once living.
Never Alive	Something that has never had any life processes.

enamel	Hard white outer layer of the tooth
root	Anchors the permanent tooth into the gum
calcium	A chemical that helps keep your teeth strong
incisor	Front teeth for ripping food
canine	Sharp, pointed teeth for tearing food
molars	Have 3 roots and used for chewing and mashing food before it passes down the oesophagus
saliva	Chemical in the mouth that helps to soften the food before being swallowed.

Nutrition - the food we eat

Omnivore - a living thing that eats both plants and meat

Reproduce - to create more of the same species

Reptiles - a type of animal that is cold-blooded and has scaly skin

Respiration - taking in gas and giving out another (breathing in humans)

Sensitivity - using your senses (see, smell, hear, touch, taste)

Vertebrate - an animal with a backbone

Amphibians – an animal that is orn in water but develops lungs and lives on land later in its life.

Birds- a type of animal that has wings and is born from a hard-shelled egg.

Carnivore – a living thing that just eats meat.

Characerisitic- a feature or quality.

Excretion- to dispose of waste.

Fish- a type of animal that lives in water and has scales, gills and fins.

Group- sorting things based on their similarities

adolescence
adulthood early
adulthood middle
adulthood late
adulthood childhood

Arteries – Muscular-walled tubes that transport blood from the heart to other parts of the body
Blood – Red liquid that circulates in arteries and veins, carrying oxygen to and carbon dioxide from tissues of the body

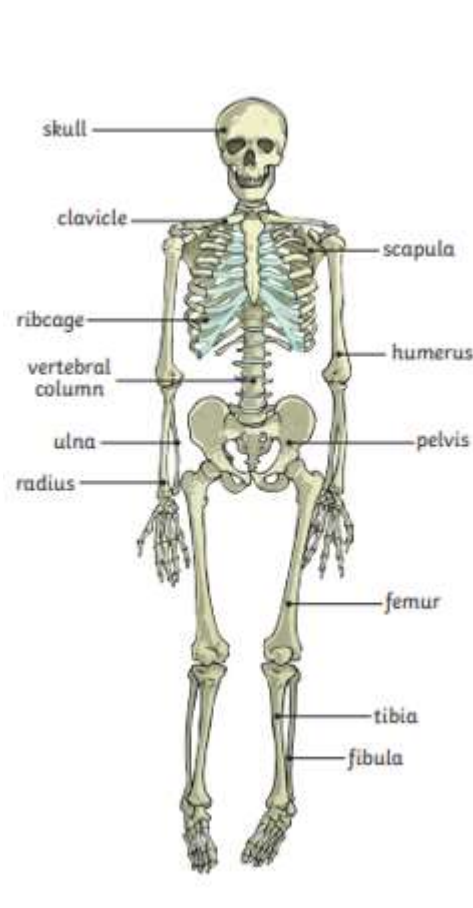
Blood vessel – A tubular structure carrying blood through the tissues and organs
Bones – Hard whitish tissue making up the skeleton in humans and other vertebrates

Circulatory system – The system that circulates blood through the body, including the heart, blood vessels and blood

Herbivore- a living thing that eats just plants.

Invertebrate- an animal that does not have a back bone.

Mammal- a type of animal that has hair on its body and usually drinks milk from its mother as a baby.



Heart – A hollow muscular organ that pumps the blood through the circulatory system

Lungs – Pair of organs situated within the ribcage where oxygen can pass into the blood and carbon dioxide be removed

Muscles – A band or bundle of fibrous tissues that have the ability to contract, producing movement in or maintaining positions of parts of the body

Nutrients – A substance that provides nourishment essential for the maintenance of life and for growth

Organs – Part of an organism that is typically self-contained and has a specific vital function (e.g. the heart and lungs)

		<p>Veins – Tubes forming part of the blood circulation system of the body, carrying mainly oxygen-depleted blood towards the heart</p> <p>Vitamins – Organic compounds essential for normal growth and</p> <p>Annelid – A segmented worm</p> <p>Arachnid – An animal that has eight legs and a body formed of two parts</p> <p>Crustaceans – Mostly live in water with a hard shell and segmented body</p> <p>Habitat – The natural home or environment of an animal, plant or other organism</p> <p>Insect – A small animal that has six legs and generally</p>
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		<p>one or two pairs of wings</p> <p>Microorganism – A microscopic organism, especially a bacteria, virus or fungus</p>
Understand evolution and inheritance		
	<p>Adaptation – The process of change so that an organism or species can become better suited to their environment</p> <p>Fossil – The remains or impression of a prehistoric plant or animal embedded in rock and preserved</p> <p>Inherit – To gain a quality, characteristic or predisposition genetically from a parent or ancestor</p> <p>Offspring – A person's child or children/ an animal's young</p> <p>Variations- The differences between individuals within a species.</p> <p>Characteristics- The distinguishing features or qualities that are specific to a species.</p> <p>Breeding – The mating and production of offspring by animals</p> <p>Habitat- Refers to a specific area or place in which particular animals and plants can live.</p> <p>Environment- An environment contains many habitats and includes areas where there are both living and non- living things.</p> <p>Adaptation- the process of change by which an organism or species becomes better suited to its environment</p> <p>Palaeontologist- an expert in or student of palaeontology</p> <p>Palaeontology - the branch of science concerned with fossil animals and plants</p>	<p>Scientists- Charles Darwin and Alfred Wallace</p> <p>Body fossil – Preserved remains of the body of the actual animal or plant itself</p> <p>Environment – The surroundings or conditions in which a person, animal, or plant lives</p> <p>Evolution – The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth</p>

		<p>Reproduction – The production of offspring by a sexual or asexual process</p> <p>Selective breeding – The process by which humans use animal breeding and plant breeding to develop selective characteristics by choosing particular animals and plants</p> <p>Metamorphosis – The process of transformation from an immature form to an adult form in two or more distinct stages</p> <p>Sexual reproduction – Offspring get genes from both mum and dad, inheriting a mix of features from both.</p> <p>Trace fossil – Indirect evidence of life in the past such as the footprints, tracks, burrows, borings and waste left behind by</p> <p>Natural selection- The process where organisms that are better adapted to</p>
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		<p>their environment tend to survive and produce more offspring.</p> <p>Adaptive traits- Genetic features that help a living thing to survive.</p> <p>Inherited traits- These are traits you get from your parents. Within a family, you will often see similar traits, e.g. curly hair.</p>
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Investigate materials

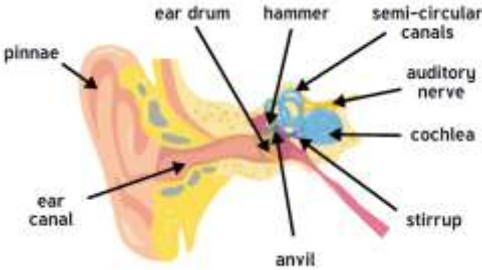
Material, wood, plastic, glass, metal, water and rock. brick/rock, and paper/cardboard		Rocks and Soils Crust –the outer layer of the Earth Decay- to rot or decompose Fossil- the preserved remains of dead organism. Geologist- a person who studies rocks Igneous Rock- rock formed from cooled magma. Impermeable- doesn't allow liquid to pass through Inner core- the very centre of the Earth. Mantle- the part of the Earth between the crust and the core. Metamorphic rock – rock formed from changes of heat or pressure. Microbe- a small living thing. Mine- to dig into the Earth for rocks and minerals. Permeable- allows liquid to pass Rock- any naturally occurring solid mineral material. Sedimentary rock- rock formed by layers of sediment. Soil- made up of pieces of rock, minerals, decaying plant material, microbes and water.	Chemists- Spencer Silver and Ruth Benerito Thermal conductor – A material or device which allows heat or electricity to carry through Dissolve – When something solid mixes with a liquid and becomes part of the liquid Flexible – Capable of bending easily without breaking Insulator – A substance which does not readily
Transparent	You can see through it.		
Suitability	Having the right material for the specific purpose.		
Properties	What a material is like and how it behaves.		
Materials	Are what an object is made from.		

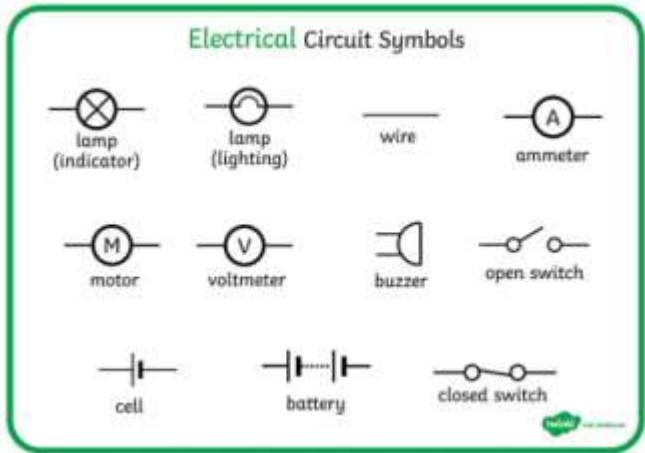
	<p>change - to make different</p> <p>collection - when water flows back into rivers, streams and lakes and gets carried back to sea</p> <p>condensation - when water vapour cools and turns back into water</p> <p>evaporation - when water is heated and turns into water vapour</p> <p>freeze - when something is put at a very low temperature</p> <p>gas - a state of matter that has no defined shape or volume</p> <p>heat - when something is put at a hot temperature</p> <p>liquid - a state of matter that flows freely but keeps the same volume</p> <p>precipitation - when water falls from the clouds in the sky</p> <p>property - a characteristic</p> <p>solid - a state of matter that is firm and stable</p> <p>temperature - how hot or cold something is</p> <p>thermometer - an instrument used for measuring temperature</p> <p>Gas – An air-like fluid substance which expands freely to fill any space available</p> <p>Material – The matter from which a thing is or can be made from</p>	<p>allow the passage of heat or sound</p> <p>Irreversible – Cannot be reversed back to its original state</p> <p>Reversible – Able to be reversed back to its original state</p> <p>Soluble – Able to be dissolved, especially in water</p> <p>Thermal – Relating to heat</p>
Understand movement, forces and magnets		
<p>magnets Pull- to move something towards</p> <p>Push- to move something away.</p>	<p>Attract- to pull towards</p> <p>Contact- when objects touch.</p> <p>Different- not the same.</p> <p>Distance- the length between two objects.</p> <p>Force- a push or a pull that acts upon an object that can.</p>	<p>Air resistance – A force that is caused by air with the force acting in the opposite direction to an object moving through the air</p> <p>Friction – The resistance that one surface or object encounters when moving over another</p> <p>Gears – A toothed wheel that works with others to alter the relation between the speed of a driving mechanism (e.g. engine) and the speed of the driven parts (e.g. the wheels)</p> <p>Gravity – The force that attracts a body towards the centre of the earth</p>

	<p>Friction- the force that acts upon one surface when it moves against another.</p> <p>Magnet- a piece of iron that attracts and repels.</p> <p>Magnetic force- when a magnet pulls objects towards it or pushes objects away.</p> <p>Repel- to push away.</p> <p>Push force – To move something in a specific way by exerting force</p>	<p>Levers – A rigid bar resting on a pivot that is used to move a heavy or firmly fixed load</p> <p>Mass – The weight measured by an objects acceleration under a given force or by the force exerted on it by gravity</p> <p>Pulleys – A wheel with a grooved rim around that changes the direction of a force applied to the cord</p> <p>Water resistance - A force that is caused by water with the force acting in the opposite direction to</p>
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Understand light and seeing

Light, dark, see, sun, movement, travel, flames, seasons, light source.		<p>Dark- is the absense of light.</p> <p>Light- a form of energy that travels in a wave from a source.</p> <p>Light source – Something that provides light, whether it be a natural or artifical source of light (e.g. the sun, a torch)</p> <p>Ray- waves of light are called light rays. They can also be called beams.</p> <p>Reflection – The throwing back by a body or surface of light, heat or sound without absorbing it.</p> <p>Reflective – A word which describes something that reflects light well.</p> <p>Opaque – Not able to be seen through, not transparent</p> <p>Shadow – A dark area or shape produced by a body coming between rays of light and a surface</p> <p>Eyes – Globular organs of sight in the head of humans and vertebrate animals</p>	<p>Filter – Pass through a device to remove unwanted material (liquid, gas, light or sound)</p> <p>Periscope – An apparatus consisting of a tube of attached to a set of mirrors or prisms through which an observer can see things that are otherwise out of sight</p> <p>Rainbow – An arch of colours visible in the sky, caused by the refraction and dispersion of the sun’s light by rain or other water droplets in the atmosphere</p> <p>Refraction – The bending of light as it passes from one substance to another with the bending caused by the difference in density between two substances</p> <p>Spectrum – A band of colours, as seen in rainbows, produced by separation of the components of light by their different degrees of refraction</p>
Source	Where something (light) comes from.		
Artificial	Man made.		
Natural	God made.		
Reflected	Bounces off an object.		
Seasons	There are 4 throughout the year. See below.		
Daylight	Amount of light throughout a day.		

	GD- translucent, transparent, opaque.	
Investigate sound and hearing		
<i>Ear- senses - hearing</i>	<p>ear - the organ used to hear</p> <p>noise - a sound - usually unwanted or unpleasant</p> <p>pinnae - the outside flaps of the ear which help 'catch' the vibrations</p> <p>pitch - how high or low a sound is</p> <p>sound - vibrations that travel through the air and other mediums and can be heard</p> <p>vibration - very quick movements</p> <p>volume - how loud or quiet a sound is</p> 	
Understand electrical circuits		
<i>Appliance, battery, circuit, electricity</i> <p>Appliance- a device or piece of equipment that has been made to perform.</p> <p>Battery- a small item used to power small appliances.</p> <p>Circuit- a route through which electricity flows.</p>	<p>Circuit- A pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches or buzzers.</p> <p>Electrical- something that uses electricity to work.</p> <p>Mains power- electricity provided by power stations.</p> <p>Portable- can be easily carried around.</p> <p>Pylon- a tower used for keeping electricity wires above ground.</p> <p>Buzzer – an electrical device that makes a buzzing sound</p>	<p>Components- the parts of a circuit.</p> <p>Voltage- a force that makes electricity flow through a wire (it is measured in volts)</p>

Circuit	It conducts electricity flow around using wires.	<p>Bulb – an electrical device that lights up</p> <p>Motor – a device that makes movement</p> <p>Switch – a component that can turn the electrical device on or off.</p> <p>Cell – a device used to generate electricity, a battery is an example of this. Electrons – carry energy around the circuit</p> <p>Electrical Conductor – a material/device which allows electricity to pass through</p> <p>Electrical Insulator – a material/device which does not allow electricity to pass through</p>	
Battery operated	Something that works using a battery.		
Mains operated	Something that needs to be plugged in to work.		

Understand the Earth's movement in space

<p><i>Light – something that makes things visible</i></p> <p><i>sun, - body in the sky that produces light</i></p> <p><i>earth – the planet that we live on., Moon -</i></p>	<p>Axis – An imaginary line about which a body rotates</p> <p>Day – A twenty-four hour period, from one midnight to the next, corresponding to a rotation of the earth on its axis</p> <p>Solar system – The collection of eight planets and their moons in orbit round the sun</p> <p>Orbit – The regularly repeated oval course of a celestial object around a star or planet</p> <p>Moon – A natural satellite of any planet</p> <p>Night – The period from sunset to sunrise in each twenty-four hours</p> <p>Season – <i>each of the four divisions of the year marked by particular weather patterns and daylight hours, resulting from the Earth's changing position with regard to the Sun (winter, autumn, summer and spring).</i></p>	<p>Planet names- Mars, Jupiter, Uranus, Neptune, Venus, Saturn.</p> <p>Celestial – Positioned in or relating to the sky, or outer space as observed in the astronomy</p> <p>Dwarf planet – A celestial body resembling a small planet but lacking certain technical criteria to be classed as a planet e.g. Pluto</p> <p>Geocentric – Where people believed the earth was at the centre of the solar system</p> <p>Heliocentric – Representing the sun as the centre of the solar system, the modern view of the solar system</p> <p>Planet – A celestial body moving in orbit round a star</p> <p>Rotation – The action of rotating about an axis or centre</p> <p>Star – A fixed luminous point in the night sky which is a large, remote body like the sun</p> <p>Universe- all existing matter and space considered as a whole; the cosmos</p> <p>Solar-energy from the sun.</p> <p>Elliptical – <i>an oval shape (e.g. an <u>elliptical orbit</u>).</i></p> <p>Eclipse – <i>the obscuring of light from one celestial body by the passage of another.</i></p>
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	<p>Moon Phases – <i>different ways the Moon looks from Earth over approximately a month (see diagram.).</i></p>	<p>Lunar Eclipse – <i>an eclipse in which the moon appears darkened as it passes the Earth's shadow.</i></p> <p>Solar Eclipse - <i>an eclipse in which the sun is hidden by the moon</i></p>
Note		
Items in italics are not statutory in the English National Curriculum		
<u>How do we prepare children for KS3?</u>	Our feeder school Abbot Beyne will run a session with Upper juniors using microscopes.	<p>During Science networks we discuss transition and projects which may aid transition.</p> <p>Address misconceptions early before they reach secondary- these can be done through re-visits</p>
New EYFS ELG	<p>Development matters 3 and 4 year olds</p> <p>Communication and Language - Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</p> <p>Physical Development- Make healthy choices about food, drink, activity and toothbrushing.</p> <ul style="list-style-type: none"> • Understanding the world- Use all their senses in hands-on exploration of natural materials. 	<p>Development matters Reception</p> <p>Communication and Language –</p> <ul style="list-style-type: none"> • Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.

- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary.
- Begin to make sense of their own life-story and family's history.
- 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.

Use new vocabulary in different contexts.

Physical Development

- Know and talk about the different factors that support their overall health and wellbeing:
 - regular physical activity
 - healthy eating
 - toothbrushing
 - sensible amounts of 'screen time'
 - having a good sleep routine
 - being a safe pedestrian

Understanding the world-

- Explore the natural world around them.
- Describe what they see, hear and feel while they are 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

Communication and Language	Listening, Attention and Understanding	<ul style="list-style-type: none"> • Make comments about what they have heard and ask questions to clarify their understanding.
Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
Understanding the World	The Natural World	<ul style="list-style-type: none"> • 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.

