

Science curriculum at Easton CE Academy

Whole school topic overview:

5 x topic units yearly (plus 1 x working scientifically unit) - minimum 6 lessons per unit.

Working scientifically and enquiry skills based on the scientific method are embedded throughout our topics. Once per year, we teach a specific working scientifically unit to revisit, embed or explore subject knowledge whilst focusing in depth on working scientifically skills. Outcomes from this unit are presented in the whole school STEM fair in Term 3.

Year	Term 1	Term 2	Term 3 STEM FAIR	Term 4	Term 5	Term 6
Y1	Who am I? Celebrations		Holiday (working scientifically)	Polar adventures	Treasure Island	On Safari
Y2	Healthy Me	Material Monsters	Little Masterchefs (working scientifically)	Squash me, bend me, squeeze me, twist me	Young Gardeners	Mini Worlds
Y3	Opposites attract	Mirror, mirror	Nappy challenge (working scientifically)	Food and our bodies	How does your garden grow?	Earth rocks
Y4	States of matter	Power it up	The Big Build (working scientifically)	Teeth and Eating	Living Things	What's that sound
Y5	Amazing Changes	Material World	Let's get moving (working scientifically unit)	Solar system – Out of this World!	Circle of Life	Growing up and getting old
Y6	Electricity	Evolution and inheritance (Into University)	Floating and sinking (working scientifically unit)	Classifying living things	Healthy bodies	Light - let it shine

Overview of units broken down by science strand:

	BIOLOGY				EARTH, SPACE SCIENCE			PHYSICS				CHEMISTRY	
	Plants	Animal including humans	Living things and their habitats	Evolution and inheritance	Seasonal changes	Earth and space	Rocks	Forces and magnets	Electricity	Light	Sound	Materials and their properties	States of matter
Y1	Plants and animals where we live	Who am I? Polar adventures On safari	Polar adventures On safari		On holiday							Polar adventure Squash, bend, squeeze, twist	
Y2	Young gardeners	Healthy me Little Masterchefs	Mini worlds									Material monsters	
Y3	How does your garden grow?	Food and our bodies				Earth rocks	Earth rocks	Opposites attract		Mirror, mirror		Nappy challenge	
Y4		Teeth and eating Living things and humans	Classifying living thing						Power it up		What's that sound?	States of matter The big build	States of matter
Y5		Circle of life Growing old and growing up				Solar system – out of this world		Let's get moving				Material world	Amazing changes
Y6	Classifying living thing	Healthy bodies	Classifying living things	Evolution and inheritance					Electricity	Light			

Working scientifically vocabulary progression			
EYFS			
Year 1	observe, change, describe, name, identify, label, record, measure, pattern, notice, predict, equipment, collect/gather, results, test,		
Year 2	recognise, investigate, fair, evidence, research, observations, predictions, changes over time, data		
Year 3	similarities, differences, source, process, cycle, measurements, conclude, evaluate, plan, vary, keep the same, bar graph, table, tally, scientific enquiry		
Year 4	classify, interpret, relationship between, prediction, analyse, conclude, evaluate, variable, repeat, control, key, line graph, database, constant, comparative tests, fair tests, accurate, increase, decrease		
Year 5	hypothesis, plan, conclude, enquiry, repeat, support, degree of trust, scatter graph, independent variable, dependent variable, controlled variable, accuracy,		
Year 6	opinion, fact, refute (as well as revising previously taught vocabulary)		
Disciplinary knowledge progression (working scientifically):			
EYFS	PLANNING	DOING	REVIEWING
Year 1	PLANNING ASK SIMPLE QUESTIONS, WHEN PROMPTED RECOGNISE SIMPLE QUESTIONS CAN BE ANSWED IN DIFFERENT WAYS	DOING USING SIMPLE EQUIPMENT OBSERVE CLOSELY PERFORM SIMPLE TESTS IDENTIFY AND CLASSIFY	REVIEWING GATHER AND RECORD DATA TO SUPPORT ANSWERING QUESTIONS USE OBSERVATIONS TO SUGGEST ANSWERS TO QUESTIONS
Year 2	PLANNING ASK SIMPLE QUESTIONS RECOGNISE SIMPLE QUESTIONS CAN BE ANSWED IN DIFFERENT WAYS	DOING USING SIMPLE EQUIPMENT OBSERVE CLOSELY PERFORM SIMPLE TESTS IDENTIFY AND CLASSIFY	REVIEWING GATHER AND RECORD DATA TO SUPPORT ANSWERING QUESTIONS RECORD AND COMMUNICATE FINDINGS IN A RANGE OF WAYS USING SIMPLE SCIENTIFIC LANGUAGE USE OBSERVATIONS TO SUGGEST ANSWERS TO QUESTIONS
Year 3	PLANNING ASK RELEVANT QUESTIONS SET UP SIMPLE AND PRACTICAL ENQUIRIES, COMPARATIVE AND FAIR TESTS	DOING MAKE SYSTEMATIC OBSERVATIONS USING SOMPLE EQUIPMENT USE STANDARD UNITS WHEN TAKING MEASUREMENTS RECORD FINDINGS IN A VARIETY OF WAYS	REVIEWING SUGGEST CONCLUSIONS THAT CAN BE DRAWN FROM DATA SUGGEST HOW FINDINGS COULD BE REPORTED GATHER AND RECORD DATA ABOUT SIMILARITIES, DIFFERENCES AND CHANGES SUGGEST POSSIBLE IMPROVEMENTS OR FURTHER QUESTIONS TO INVESTIGATE
Year 4	PLANNING ASK RELEVANT QUESTIONS PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESTIONS SET UP SIMPLE AND PRACTICAL ENQUIRIES, COMPARATIVE AND FAIR TESTS	DOING MAKE SYSTEMATIC AND CAREFUL OBSERVATIONS USING SIMPLE EQUIPMENT, INCLUDING THERMOMETERS AND DATA LOGGERS TAKE ACCURATE MEASUREMENTS USING STANDARD UNITS RECORD FINDINGS USING SIMPLE SCIENTIFIC LANGUAGE, DRAWINGS AND LABELLED DIAGRAMS RECORD FINDINGS USING KES, BAR CHARTS AND TABLES	REVIEWING REPORTS ON FINDINGS FROM ENQUIRIES, INCLUDING ORAL AND WRITTEN EXPLANATIONS OF RESULTS AND CONCLUSIONS REPORTS ON FINDINGS FROM ENQUIRIES USING DISPLAYS OR PRESENTATIONS

		GATHER, RECORD, CLASSIFY AND PRESENT DATA IN A VARIETY OF WAYS TO HELP ANSWER QUESTIONS	IDENTIFY DIFFERENCES, SIMILIARITES OR CHANGES RELATED TO SIMPLE SCIENTIFIC IDEAS AND PROCESSES USE STRAIGHTFORWARD SCIENTIFIC EVIDENCE TO ANSWER QUESTIONS OR SUPPORT THEIR FINDINGS USE RESULTS TO DRAW SIMPLE CONCLUSIONS, MAKE PREDICTIONS, SUGGEST IMPROVEMENTS AND RAISE FURTHER QUESTIONS
Year 5	PLANNING With prompting, PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESTIONS RECOGNISE AND CONTROL VARIABLES (WHERE NECESSARY)	DOING SELECT AND USE APPROPRIATE EQUIPMENT TO TAKE READINGS TAKE PRECISE MEASUREMENTS USING STANDARD UNITS TAKE AND PROCESS REPEAT READINGS RECORD DATA AND RESULTS USING LABELLED DIAGRAMS, KEYS, TABLES AND CHARTS USE LINE GRAPHS TO RECORD DATA	REVIEWING REPORT AND PRESENT FINDINGS FROM ENQUIRIES, INCLUDING CONCLUSIONS AND (WITH SUPPORT) SUGGEST CAUSAL RELATIONSHIPS PRESENT FINDINGS FROM ENQUIRIES ORALLY AND IN WRITING IDENTIFY THAT NOT ALL RESULTS MAY BE TRUSTWORTHY (WITH PROMPTING) SUGGEST HOW EVIDENCE CAN SUPPORT CONCLUSIONS SUGGEST FURTHER COMPRATIVE OR FAIR TESTS
Year 6	PLANNING PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESITONS RECOGNISE AND CONTROL VARIABLES WHEN NECESSARY	DOING TAKE MEASUREMENTS USING A RANGE OF SCIENTIFIC EQUIPMENT, WITH INCREASING ACCURACY AND PRECISION TAKE REPEAT READINGS WHEN APPROPRIATE RECORD DATA AND RESULTS OF INCRESING COMPLEXITY USING SCIENTIFIC DIAGRAMS AND LABELS, CLASSIFICIATION KEYS, TABLES AND BAR CHARTS RECORD DATA AND RESULTS OF INCREASING COMPLEXIITY USING LINE GRAPHS	REVIEWING REPORT AND PRESENT FINDINGS FROM ENQUIRIES, INCLUDING: <ul style="list-style-type: none"> - CONCLUSIONS AND CAUSAL RELATIONSHIPS; - IN ORAL AND WRITTEN FORMS SUCH AS DISPLAY AND PRESENTATIONS; - EXPLANATIONS OF, AND DEGREE OF, TRUST IN REULTS. IDENTIFY SCIENTIFIC EVIDENCE THAT HAS BEEN USED TO SUPPORT OR REFUTE IDEAS OR ARGUMENTS USE TEST REULTS TO MAKE PREDICTIONS AND SET UP FURTHER COMPARATIVE AND FAIR TESTS

Science in Year 1

Disciplinary knowledge (working scientifically) Year 1	PLANNING ASK SIMPLE QUESTIONS, WHEN PROMPTED RECOGNISE SIMPLE QUESTIONS CAN BE ANSWED IN DIFFERENT WAYS	DOING USING SIMPLE EQUIPMENT OBSERVE CLOSELY PERFORM SIMPLE TESTS IDENTIFY AND CLASSIFY	REVIEWING GATHER AND RECORD DATA TO SUPPORT ANSWERING QUESTIONS USE OBSERVATIONS TO SUGGEST ANSWERS TO QUESTIONS
---	--	---	---

Working scientifically vocabulary	observe, change, describe, name, identify, label, record, measure, pattern, notice, predict, equipment, collect/gather, results, test,			
YEAR 1 Topics	Key knowledge	Learning objectives (linked to NC objectives)	Subject specific vocabulary (bold on knowledge organiser)	Common misconceptions to address. Some children may think...
Who am I? (Discovery unit)	The human body has a number of systems, each with its own function.	Identify, name, draw and label the basic human body and say which part of the body is associated with each sense.	Backbone, ear lobe, elbow, eye socket, hips, joints, ribs, thigh, tongue, vertebra, nail head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knees, toes, teeth, elbow Senses, taste, touch, smell, sight, hearing	-only four legged mammals such as pets are animals -humans are not animals
Celebrations	Materials have physical properties which can be investigated and compared.	Say which part of the boy is associated with each sense. Distinguish between an object and the material from which It is made. Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rocks. Describe the simple physical properties of a variety of everyday materials. Identify and describe the basic structure of a variety of common plants, including trees.	illuminate, light source, opaque, reflect, translucent, transparent, shadow, sound, vibration, fabrics, absorbent brick, paper, fabrics, elastic, foil, hard/soft, stretchy/stiff, shiny/dull, rough/smooth, waterproof, absorbent, opaque/transparent	-only fabrics are materials -only building materials are materials -the word 'rock' describes an object rather than a material -solid is another word for hard
Polar adventures	Life exists in a variety of forms and goes through cycles	Identify and name a variety of animals including fish, amphibians, reptiles, birds and mammals. Identify and name common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals. Describe the simple properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple properties.	Arctic, Antarctic, carnivore, flexible, habitat, herbivore, omnivore, waterproof, amphibians, birds, fish, mammals, reptiles, sight, hearing, taste, smell, touch,	-only four legged mammals such as pets are animals -humans are not animals -amphibians and reptiles are the same
On holiday (working scientifically unit) This unit gives further opportunity to apply / revisit subject specific knowledge through enquiry. STEM fair	Day, night, month, seasonal changes and year are caused by the position and movement of the Earth (also taught through morning work regularly throughout the year). Life exists in a variety of forms and goes through cycles	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how the day length varies. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores or omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock. Describe the simple physical properties of a variety of everyday materials.	Habitat, pollution, sunburn, carnivore, herbivore, omnivore, vertebrate, invertebrate weather, sunny, rainy, shower, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, autumn, winter, spring, summer, sunrise, sunset, day length, beach, rock pool, sunglasses, sunscreen	-it always snows in winter -it is always sunny in summer -there are only flowers in spring and summer -it rains most in the winter

Plants and animals where we live	Life exists in a variety of forms and goes through cycles	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Amphibians, animal, birds, fish, flowers, habitat, identify, mammal, plant, reptile, stem, tree, deciduous, evergreen leaves, trunk, branch, root, seed, bulb, flower, wild, garden, carnivores, herbivores, omnivore, sight, hearing, taste, smell, touch, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knees, toes, teeth, elbow	-plants are flowering plant grown in pots with coloured petals, leaves and a stem -trees are not plants -all leaves are green -all stems are green -a tree trunk is not a stem -blossom is not a flower -Only four legged mammals such as pets are animals -humans are not animals -insects are not animals -all 'bugs' or 'creepy crawlies' such as spiders are part of the insect group -amphibians and reptiles are the same
On safari	Life exists in a variety of forms and goes through cycles	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	Abdomen, antennae, detritivore, exoskeleton, food chain, habitat, head, insect, invertebrate, thorax, vertebrate Legs, Eyes, Ant, Spider, Slug, Snail, Worm, Ladybird, Fly, Wasp, Butterfly, Beetle, Slug, Millipede, Centipede,	-insects are not animals -all 'bugs' or 'creepy crawlies' such as spiders are part of the insect group

Science in Year 2

Disciplinary knowledge (working scientifically) Year 2	PLANNING ASK SIMPLE QUESTIONS RECOGNISE SIMPLE QUESTIONS CAN BE ANSWERED IN DIFFERENT WAYS	DOING USING SIMPLE EQUIPMENT OBSERVE CLOSELY PERFORM SIMPLE TESTS IDENTIFY AND CLASSIFY	REVIEWING GATHER AND RECORD DATA TO SUPPORT ANSWERING QUESTIONS RECORD AND COMMUNICATE FINDINGS IN A RANGE OF WAYS USING SIMPLE SCIENTIFIC LANGUAGE USE OBSERVATIONS TO SUGGEST ANSWERS TO QUESTIONS	
Working scientifically vocabulary	recognise, investigate, fair, evidence, research, observations, predictions, changes over time, data			
YEAR 2 Topics	Key knowledge	Learning objectives (linked to NC objectives)	Subject specific vocabulary	Common misconceptions to address. Some children may think...
Healthy Me	The human body has a number of systems, each with its own function Materials have different properties which can be	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	hygiene, exercise, healthy, germ, balance, muscle, survive, diet, spread Calm, calves, cough, feed, fitness, food, fruit, happiness, health, hygienic, muscle, needs, sneeze, stomach, thighs, vegetables	

	<p>investigated and compared.</p> <p>The physical properties of materials determine their uses.</p>			
Material Monsters	<p>Materials have different properties which can be investigated and compared.</p> <p>The physical properties of materials determine their uses.</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.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>environment, material, bend, brittle, elastic, flexible, natural, made, rigid, waterproof, transparent, opaque, absorbent, rough, recycle</p> <p>bumpy, card, change, concrete, dull, fabric, glass, hard, metal, natural materials, paper, plastic, rough, rubber, shiny, smooth</p>	<p>-only fabrics are materials</p> <p>-only building materials are man-made</p> <p>-only writing materials are materials</p> <p>-the word rock describes an object rather than a material</p> <p>-solid is another word for hard</p>
Young gardeners	<p>Life exists in a variety of forms and goes through cycles</p>	<p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out about and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Bulb, germinate, properties, root, stem, tuber, characteristic, germinate, seedling, compost, annual light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling, leaf, root, seed, healthy, flower, fruit</p>	<p>-plants are not alive as they cannot be seen to move</p> <p>-seeds are not alive</p> <p>-all plants start out as seeds</p> <p>-seeds and bulbs need sunlight to germinate</p>
Squash me, bend me, squeeze me, twist me	<p>Materials have different properties which can be investigated and compared.</p> <p>The physical properties of materials determine their uses.</p>	<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Bend, squash, stretch, twist, force, push, pull, elastic, dough</p>	
Mini worlds	<p>Life exists in a variety of forms and goes through cycles</p>	<p>Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>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.</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, and identify and name different sources of food.</p>	<p>Alive, dead, never been alive, food chain, habitat, micro-habitat, predator, prey</p> <p>suited, suitable, basic needs, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and microhabitats studied, omnivore, carnivore, herbivore</p>	<p>-an animal's habitat is like its 'home'</p> <p>-plants and seeds are not alive as they cannot be seen to move</p> <p>-fire is living</p> <p>-arrows in a food chain mean 'eats' rather than a transfer of energy</p>
Little Masterchefs (working scientifically unit)	<p>The human body has a number of systems, each with its own function.</p> <p>The physical properties of materials determine their uses.</p>	<p>Find out about and describe the basic needs of humans for survival (water, food and air).</p> <p>Describe the importance for humans of eating the right amounts of different types of food, and hygiene.</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.</p>	<p>Hygiene, energy, dehydrate, refrigerate, temperature, digest, ingredients, utensils</p>	

<p>This unit gives further opportunity to apply / revisit subject specific knowledge through enquiry</p> <p>STEM FAIR</p>				
--	--	--	--	--

Science in Year 3

Disciplinary knowledge (working scientifically) Year 3	<p>PLANNING</p> <p>ASK RELEVANT QUESTIONS</p> <p>SET UP SIMPLE AND PRACTICAL ENQUIRIES, COMPARATIVE AND FAIR TESTS</p>	<p>DOING</p> <p>MAKE SYSTEMATIC OBSERVATIONS USING SIMPLE EQUIPMENT</p> <p>USE STANDARD UNITS WHEN TAKING MEASUREMENTS</p> <p>RECORD FINDINGS IN A VARIETY OF WAYS</p>	<p>REVIEWING</p> <p>SUGGEST CONCLUSIONS THAT CAN BE DRAWN FROM DATA</p> <p>SUGGEST HOW FINDINGS COULD BE REPORTED</p> <p>GATHER AND RECORD DATA ABOUT SIMILARITIES, DIFFERENCES AND CHANGES</p> <p>SUGGEST POSSIBLE IMPROVEMENTS OR FURTHER QUESTIONS TO INVESTIGATE</p>	
Working scientifically vocabulary	Similarities, differences, source, process, cycle, measurements, conclude, evaluate, plan, vary, keep the same, bar graph, table, tally, scientific enquiry			
YEAR 3 Topics	Key knowledge	Learning objectives (linked to NC objectives)	Subject specific vocabulary	Common misconceptions to address. Some children may think...
Rocks, soils and fossils	<p>Different rocks have different properties and the formation of soils and rocks can be explained</p> <p>Materials have physical properties which can be investigated and compared</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.</p>	<p>Mineral, permeable, impermeable, crystals, magma, sediment, humus, fossil, extinct, granite, igneous, metamorphic, soil</p> <p>Rock, sedimentary, palaeontology, granite, marble, sand, clay, limestone</p>	<p>-that all rocks are large, heavy and jagged. that rocks are made of one substance: in fact, some rocks contain crystals and are made of more than one mineral. that concrete is a rock.</p> <p>-that fossils are actual animals and plants.</p> <p>-that only bones can be fossils.</p> <p>-that humans can make rocks: in fact, rocks are naturally occurring.</p> <p>-that rocks form when pebbles stick together: in fact, pebbles are fragments of rock.</p> <p>-that all sedimentary rocks form under water: in fact, they can be formed on land, e.g. desert sandstone.</p>

Food and our bodies	<p>The human body has a number of systems, each with its own function</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition and that they cannot make their own food: they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Balanced diet, biceps, carbohydrates, carnivore, contract, endoskeleton, exoskeleton, fats, herbivore, humerus joint, muscle, nutrients, omnivore, protein, skeleton, relax</p>	<ul style="list-style-type: none"> - that we only eat food to give us energy: in fact, food does much more, including providing the vitamins and nutrients we need to keep our bodies healthy. -that all fats are bad for us: we need a certain amount of fat in our diet for many different reasons including building cells, helping nerves carry messages, protecting our organs and heat insulation to keep us warm. -that bone is not living and cannot grow: in fact, it is made from living cells. That is why bone can heal itself if it is broken or fractured. -that only arms and legs have muscles. -that muscles are not found all over the body. -that muscles can push: in fact, they can only pull, but our bodies can push things because of the way the muscles pull on different bones
Light and shadows	<p>Light and sounds can be reflected and absorbed and enable us to see and hear</p>	<p>Recognise that we need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the Sun can be dangerous and that there are ways to protect the eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the sizes of shadows change.</p>	<p>Dull, light source, mirror, opaque, reflect, shadow, shiny, translucent, transparent, dark, reflection</p>	<ul style="list-style-type: none"> -that light is only found when a light is switched on. -that they can see things because light comes out of their eyes and hits an object. -that shadows are not related to the object that causes them: in fact, every shadow must be cast by an object. - that shadows are the reflections of objects: in fact, they are caused when light is blocked. -that shadows are dark light: in fact, they form because of the absence of light. No light is dark. -that only mirrors make reflections: in fact, you can see your reflection in many shiny materials.
How does your garden grow?	<p>Habitats provide living things with what they need. Life exists in a variety of forms and goes through cycles</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem / trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Disperse, flower, function, germinate, leaves, life cycle, nutrients, petal, photosynthesis, pollen, pollination, root, seed dispersal stem, veins</p> <p>Seed dispersal, comparative test, fair test, carpel, ovary, ovule, sepals, stamen, style, stigma, root hairs</p>	<ul style="list-style-type: none"> -that plants get their food through their roots: in fact, they take in water and some minerals through the roots, but make their food in their leaves. that trees are not plants: they are. -that mushrooms are plants: they are not; they are fungi. -that plants get their food from the soil: plants make their own food, but the roots help them get water, minerals and nutrients that help them grow. -that seeds need light to germinate: this is not true as, they just need water and warmth. There's enough food stored inside the seed to provide the energy it needs to produce a shoot and roots
Forces and Magnets	<p>There are contact and non-contact forces, these affect the notion of objects</p>	<p>Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>Force, magnet, contact, non-contact, attract, repel, magnetic, non-magnetic, pole, friction</p> <p>north, south, compass, iron</p>	<ul style="list-style-type: none"> -that magnets stick to objects because they have magical properties. -that you can make a magnet out of all metals: in fact, they can only be made from iron, cobalt or nickel. -that all metals are magnetic materials. -that all silver-coloured items are attracted to a magnet: this is false, aluminium is silver but is not attracted. -that larger magnets are stronger than smaller ones: this is also false, the size is not directly related. -that magnetic field and gravity are somehow linked: they are not. that the Earth's magnetic pole is fixed: in fact, it is constantly moving.

<p>The Nappy Challenge (working scientifically unit) This unit gives further opportunity to apply / revisit subject specific knowledge through enquiry STEM FAIR</p>	<p>Materials have physical properties which can be investigated and compared</p> <p>The physical properties of materials determine their uses</p>	<p>Revisiting (Year 2 objectives) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Absorb, elastic, disposable, faeces, liquid, urine, material, properties, waterproof</p> <p>plastic, bamboo, wood pulp, velcro, cotton, cloth, nappy</p>	<p>-that only babies wear nappies.</p>
--	---	--	--	--

Science in Year 4

<p>Disciplinary knowledge (working scientifically) Year 4</p>	<p>PLANNING</p> <p>ASK RELEVANT QUESTIONS</p> <p>PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESTIONS</p> <p>SET UP SIMPLE AND PRACTICAL ENQUIRIES, COMPARATIVE AND FAIR TESTS</p>	<p>DOING</p> <p>MAKE SYSTEMATIC AND CAREFUL OBSERVATIONS USING SIMPLE EQUIPMENT, INCLUDING THERMOMETERS AND DATA LOGGERS</p> <p>TAKE ACCURATE MEASUREMENTS USING STANDARD UNITS</p> <p>RECORD FINDINGS USING SIMPLE SCIENTIFIC LANGUAGE, DRAWINGS AND LABELLED DIAGRAMS</p> <p>RECORD FINDINGS USING KES, BAR CHARTS AND TABLES GATHER, RECORD, CLASSIFY AND PRESENT DATA IN A VARIETY OF WAYS TO HELP ANSWER QUESTIONS</p>	<p>REVIEWING</p> <p>REPORTS ON FINDINGS FROM ENQUIRIES, INCLUDING ORAL AND WRITTEN EXPLANATIONS OF RESULTS AND CONCLUSIONS</p> <p>REPORTS ON FINDINGS FROM ENQUIRIES USING DISPLAYS OR PRESENTATIONS</p> <p>IDENTIFY DIFFERENCES, SIMILIARITES OR CHANGES RELATED TO SIMPLE SCIENTIFIC IDEAS AND PROCESSES</p> <p>USE STRAIGHTFORWARD SCIENTIFIC EVIDENCE TO ANSWER QUESTIONS OR SUPPORT THEIR FINDINGS</p> <p>USE RESULTS TO DRAW SIMPLE CONCLUSIONS, MAKE PREDICTIONS, SUGGEST IMPROVEMENTS AND RAISE FURTHER QUESTIONS</p>	
<p>Working scientifically vocabulary</p>	<p>Classify, interpret, relationship between, prediction, analyse, conclude, evaluate, variable, repeat, control, key, line graph, database, constant, comparative tests, fair tests, accurate, increase, decrease</p>			
<p>YEAR 4 Topics</p>	<p>Key knowledge</p>	<p>Learning objectives (linked to NC objectives)</p>	<p>Subject specific vocabulary</p>	<p>Common misconceptions to address. Some children may think...</p>
<p>What's that sound?</p>	<p>Light & sound can be reflected & absorbed and enable us to see & hear</p>	<p>Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it.</p>	<p>Vibration, volume, sound source, pitch, fainter, larynx, decibel (db), insulator, medium, travel</p>	<p>-that 'noise' and 'sound' are the same. -that 'volume' means how much liquid is there. It has two meanings, and this needs to be clarified with the children. - that 'pitch' is related to a football playing field, or even a road covering. -that 'volume' and 'pitch' are the same thing. C with our ears. How to make loud noises.</p>

		Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.		
Living things	Living things can be classified according to observable features. Habitats provide living things with what they need	Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	Amphibian, sensitivity, invertebrate, mammal, organism, reptile, vertebrate, antennae, abdomen, thorax, exoskeleton, respiration, excretion, nutrition,	-that trees aren't plants. -that insects aren't animals. -that there are only two groups of living things: animals and plants. -that all 'bugs' are insects. -that all 'bugs' are small.
States of Matter	Materials have physical properties which can be investigated and compared Materials can exist in different states and that these states can sometimes be changed	Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	boiling point, boiling, condensing, gas, liquid, matter, material, melting point, precipitation, reversible, solid temperature, thermometer, water cycle, evaporation, freezing	-that materials always exist in just one state. -that ice is a different material from steam or liquid water, not water in different states. -that soft things are not solids. Powders are not solids because they can be poured and take the shape of their container, e.g. sand and flour. -that only water boils. -that there aren't temperatures below zero or above 100°C. - that everything freezes at 0°C.
Teeth and eating	The human body has a number of systems, each with its own function	Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.	anus, canines, carnivores, decay, digestion, enamel, energy, herbivore, incisor, large intestine, molar, mouth, nutrients, oesophagus, omnivore, small intestine, stomach	-that teeth grow continually. -that there are two tubes, one for food and another for drink. - that the tube from the mouth stops at the stomach. -that the digestive system covers every part of our bodies, with bits of food going directly to the legs to make you run, for example. T -that a predator can't be prey. -that only herbivores are prey. That humans aren't predators or are not part of food chains.
Power it up	Electricity can make circuits work and can be controlled to perform useful functions	Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators and associate metals with being good conductors.	Appliance, battery, bulb, cell, circuit, components, current, electricity, insulator, mains, plug, rechargeable, switch, terminals, wires, socket	-that electricity from batteries is not dangerous. -that wires are made of plastic (as they are coated in it). -that all metals conduct electricity. -that a bulb uses the electricity. -that both ends of the battery produce electricity. -that the first bulb in a circuit will be brighter than the second in a circuit.
The Big Build (working scientifically unit) This unit gives further opportunity to apply / revisit	Materials have physical properties which can be investigated and compared The physical properties of materials determine their uses	Identify different types of bridges and how they function by weight distribution. Identify features of bridges and efficiency. Look at animals as builders and engage in researching famous engineers, architects and the structures that they built. Construct a bridge that will hold the most weight using the knowledge they gain throughout the unit.	Build, bridge, construction, structure, distribution, tension, force, compression, load, deck, design, materials, engineer	-that a green building is the colour green where in fact it refers to the building being environmentally friendly

subject specific knowledge through enquiry STEM FAIR				
--	--	--	--	--

Science in Year 5

Disciplinary knowledge (working scientifically) Year 5	PLANNING	DOING	REVIEWING
	<p>With prompting,</p> <p>PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESTIONS</p> <p>RECOGNISE AND CONTROL VARIABLES (WHERE NECESSARY)</p>	<p>SELECT AND USE APPROPRIATE EQUIPMENT TO TAKE READINGS</p> <p>TAKE PRECISE MEASUREMENTS USING STANDARD UNITS</p> <p>TAKE AND PROCESS REPEAT READINGS</p> <p>RECORD DATA AND RESULTS USING LABELLED DIAGRAMS, KEYS, TABLES AND CHARTS</p>	<p>REPORT AND PRESENT FINDINGS FROM ENQUIRIES, INCLUDING CONCLUSIONS AND (WITH SUPPORT) SUGGEST CAUSAL RELATIONSHIPS</p> <p>PRESENT FINDINGS FROM ENQUIRIES ORALLY AND IN WRITING</p> <p>IDENTIFY THAT NOT ALL RESULTS MAY BE TRUSTWORTHY (WITH PROMPTING)</p>

		USE LINE GRAPHS TO RECORD DATA	SUGGEST HOW EVIDENCE CAN SUPPORT CONCLUSIONS SUGGEST FURTHER COMPRATIVE OR FAIR TESTS	
Working scientifically vocabulary	Hypothesis, plan, conclude, enquiry, repeat, support, degree of trust, scatter graph, independent variable, dependent variable, controlled variable, accuracy,			
YEAR 5 Topics	Key knowledge	Learning objectives (linked to NC objectives)	Subject specific vocabulary	Common misconceptions to address. Some children may think...
Out of this world	Day, night, month, seasonal change & year are caused by the position and movement of the Earth	Describe the movement of the Earth and other planets relative to the Sun in the Solar System. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	Planet, solar system, space, milky way, Sun, star, Moon, Earth, spherical, orbit, rotate, axis, asteroid, crater, astronaut	-that there is only one Solar System – there are lots. -that the Earth is at the centre of our Solar System. -that there are stars in our Solar System other than the Sun. In fact, the Sun is the only star in our Solar System. -that all planets have rocky surfaces. Some do, but the outer planets are gas giants. -that planets can only be seen with a telescope. In fact, you can see Mercury, Venus, Mars, Jupiter and Saturn without a telescope. -the Sun moves around the Earth and causes day and night (the spinning Earth causes it). -that night-time is caused because the Sun goes to the back of the Earth. In fact, it is the Earth that moves.
Material world	Materials have physical properties which can be investigated and compared The physical properties of materials determine their uses	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes.	dissolve, elastic, electrical conductor, evaporate, filter, flexible, hard, insoluble, mixture, plastic, rigid, soluble, solute, solution, solvent, strong, thermal conductor, thermal insulator, tough	-that 'material' just means 'fabric'. In fact, a 'science material' means any kind of matter in the world around us. -that 'everyday materials' are single substances. Actually, they can be mixtures or compounds, e.g. brick, glass. They are comparing properties when they are comparing objects. Sometimes children confuse the following properties: Tough and hard: a diamond is very hard, but if hit with a hammer it will shatter because it is brittle. Tough and strong: polythene does not break when dropped but is not strong because it is easy to tear apart. -that dissolving means that the substance has disappeared. - that if the liquid is evaporated the substance is still there but just cannot be seen.
Circle of life	The human body has a number of systems, each with its own function Life exists in a variety of forms and goes through cycles	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. Describe the changes as human develop to old age	asexual reproduction, external fertilisation, gestation, internal fertilisation, metamorphosis, pollination, sexual reproduction, sperm gestation adolescence	-that sex is not something plants do, or that it takes two plants to produce seeds to make a new plant. -that the life cycle begins at the baby / larval stage when in fact it begins at the egg stage (or embryo in mammals). -that a sperm or egg contains a tiny baby inside it, and that fertilisation causes it to start growing. In fact, sperm and eggs each contain half the genetic information needed to make a whole new animal. -they may also not know that it is possible to make new plants by growing runners or through taking cuttings. Length of how long an egg takes to grow or be ready e.g. humans has 9 months gestational period compare to elephants and draw own timeline

<p>Growing up and growing old</p>	<p>Life exists in a variety of forms and goes through cycles (Taught through opt in PHSE lessons)</p>	<p>Describe the changes as humans develop to old age</p>	<p>adolescence, adolescent, adult, arthritis, gestation period, life expectancy, menstruation, pregnant, puberty, teenager</p>	<p>-that they know about pregnancy, especially if they have baby brothers or sisters, but they may not know exactly what happens. Have general misconceptions about puberty based on playground rumours. General misconceptions about what it's like to be old, based on limited observations of their elderly relatives or from the media. Sometimes everyone over about 21 is classed as 'old'</p>
<p>Amazing changes</p>	<p>Materials have physical properties which can be investigated and compared</p> <p>The physical properties of materials determine their uses</p>	<p>Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>burning, irreversible / chemical change, reversible / physical change, rust</p>	<p>-that burning and melting are similar. -that burning and heating are the same. -that smoke and steam are the same thing. -When something burns it disappears for ever, it no longer exists. -that rusting is a physical change; in fact it is a chemical reaction of iron with air and water: rust does not conduct electricity.</p>
<p>Let's get moving (working scientifically unit)</p> <p>This unit gives further opportunity to apply / revisit subject specific knowledge through enquiry</p> <p>STEM FAIR</p>	<p>There are contact and non-contact forces; these affect the motion of objects</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p>	<p>Force, gravity, friction, surface area, air resistance, exert, water resistance, stream lined, lever, incline, fulcrum</p>	<p>-that heavy objects fall faster than lighter objects. In fact, they both fall at the same speed. -that objects come to a stop when there is no friction. In fact, they'll keep on moving forever if they're left alone. -that friction only occurs between solids and surfaces. Water and air resistance are examples of friction that involves a liquid and a gas.</p>

Science in Year 6

Disciplinary knowledge (working scientifically) Year 6	PLANNING		DOING	REVIEWING	
	PLAN DIFFERENT TYPES OF SCIENTIFIC ENQUIRIES TO ANSWER QUESTIONS RECOGNISE AND CONTROL VARIABLES WHEN NECESSARY			REPORT AND PRESENT FINDINGS FROM ENQUIRIES, INCLUDING: - CONCLUSIONS AND CAUSAL RELATIONSHIPS; - IN ORAL AND WRITTEN FORMS SUCH AS DISPLAY AND PRESENTATIONS; - EXPLANATIONS OF, AND DEGREE OF, TRUST IN RESULTS. IDENTIFY SCIENTIFIC EVIDENCE THAT HAS BEEN USED TO SUPPORT OR REFUTE IDEAS OR ARGUMENTS USE TEST RESULTS TO MAKE PREDICTIONS AND SET UP FURTHER COMPARATIVE AND FAIR TESTS	
Working scientifically vocabulary	Opinion, fact, refute (as well as Year 5 vocabulary)				
YEAR 6 Topics	Key knowledge	Learning objectives (linked to NC objectives)	Subject specific vocabulary	Common misconceptions Some children may think...	
Classifying living things	Living things can be classified according to observable features Living things exhibit variation and adaptation	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. Give reasons for classifying plants and animals based on specific characteristics	Classify, genus, species, organism, fungi, mushroom, bacteria (microbes), protists (single celled organisms), adaptation, invertebrate, vertebrates, trait, monera	-that there are only two groups of living things – animals and plants. -that plants are green and ‘traditionally plant-like’. - that coral is a plant. -that fungi aren’t alive. -that mushrooms and other fungi are plants.	

	and these may lead to evolution		amphibian, fauna, fermentation, fish, flora, insect, mammal, microbe, organisms, reptile, species, toadstool	-that microbes are always bad. -that all animals move and have legs.
Healthy bodies	The human body has a number of systems, each with its own function	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.	Pulse, beats per minute, malnutrition, artery, blood vessels, circulatory system, addiction, aorta, artery, atrium, blood, capillaries, carbon dioxide, circulatory system, de-oxygenated, exercise, heart, lungs, nicotine, oxygen, oxygenated, pulse, respiration, vein, ventricles	-that blood only reaches some parts of the body. -that the structure of the heart is how they imagine, e.g. romantic heart shaped. -that the word diet means slimming and reduced calorie intake, rather than the idea that a person's diet is what they eat and drink. -that you can't get addicted to alcohol. -that just trying one cigarette is OK. -that the heart lies on the left side of the chest.
Evolution and inheritance	Living things can be classified according to observable features Living things exhibit variation and adaptation and these may lead to evolution	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	adaptation, dinosaur, evolution, fossil, inherited, natural selection, prehistoric, variety	-that boys will look like the father's side of the family and girls like their mother's side. -that particular features are identical, such as mother's nose and father's eyes, rather than them being a blend of the two. -that evolution can only happen over millions of years. -that fossils are very large and only of dinosaurs.
Light	Light & sound can be reflected & absorbed and enable us to see & hear	Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	cornea, iris, lens, light ray, pupil, rainbow, reflection, shadow, light. The Sun, mirror, opaque, refraction, transparent, translucent,	-that light comes out of our eyes. -that we can see the features on shadows. -that light bounces from our eyes to the object -that light is made up of a single colour. -that they can see round corners.
Electricity	Electricity can make circuits work and can be controlled to perform useful functions	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on / off position of switches. Use recognised symbols when representing a simple circuit in a diagram	battery, cell, circuit, complete, current, electrons, filament, fuse, resistors, voltage, solar, terminal, renewal, mains	-that a wire isn't a component. -that if a bulb isn't working, it is a flat battery, but sometimes it is the voltage of the bulb compared to the battery that is wrong, or the blub that is blown.
Floating and sinking (working scientifically unit)	There are contact and non-contact forces; these affect the motion of objects		buoyancy, density, floating, sink, up-thrust Hypothermia, thermal insulation	-that heavy objects sink and light objects float. -that only something that is above the surface can be said to be floating.