Waverley Abbey Scientist

All things are possible for one who believes – Mark 9:23.

At Waverley Abbey we wish our children to develop their natural curiosity about the world around us. To ask questions, to explore and discover, and to draw their own conclusions from their enquiries and observations. Children need to understand not only how things work, but also develop their knowledge of how to discover things for themselves; designing investigations to test theories and adapting their understanding in light of their findings.

We encourage children to use scientific vocabulary in lessons, both in relation to knowledge and to working scientifically skills in order to demonstrate and explain their thinking and understanding of the topic being studied. We aim to do this through practical learning, fostering excitement and wonder at this amazing world we live in. This practical element of science is essential in helping children to realise that science is all around them – it is what makes up everything we see, explains how things work and it is still leaving us with further questions to be answered.

We want children to leave Waverley Abbey as scientists: continually questioning, enquiring, investigating and adapting their understanding of the world, having been encouraged and equipped to do so, during their time here.

Curriculum enrichment – Trips and internal workshops also form a part of our science curriculum here at Waverley Abbey. In Year 6, we make links with secondary schools, such as Weyden, and also have a visit from 'zoolab'. Further down the school, in Year 4, a trip is taken to Winchester Science centre. STEM Week is an exciting time for all at Waverley Abbey, as we invite some specialists in to deliver a range of workshops for the children each year. We also have a focus on scientific experiments and activities during this week, encouraging pupils to think about everyday discoveries and to get 'hands-on'.

Diverse Scientists Suggestions	Year 3	Year 4	Year 5	Year 6
Autumn 1	Animals including Humans (Skeleton)	States of Matter Pearle Agyakwa	Earth and Space Chichester Planetarium Trip Mae Johnson / Maggie Adeon-Pocock / Christina Koch / Margaret Gellar / Sheila Kanani	Living things and their habitats (Classification) Chris Nelson / Carl Linnaeus Electricity (though Fairgrounds Project) + Y5 Pulleys Peter Rawlinson / Edison / Tesla
Autumn 2	Animals including Humans (Nutrition) Adelle Davis	Teeth / Digestive System	Forces Pulleys – Y6 Fairground project Emma England / Isaac Newton	
Spring 1	Rocks and Fossils Holly Betts / Anjana Khatwa	Living things and their habitats (Classification) David Attenborough / Sarah Fowler	Properties and Changes of materials	
Spring 2	STEM Week - Forces (Magnets)	Sound – STEM week	Properties and Changes of materials Jyoti Sehdev / Joe Keddie / Spencer Silver Water Cycle – STEM week / Global Citizen Lesson	Evolution & Inheritance Mary Annin/Alfred Wallace / Charles Darwin / Nazneen Rahman / Kelsey Byers STEM week – Light including refraction if time
Summer 1	Living things and their habitats (Plants) Wisley Trip Alistair Griffiths / Agnes Arber / Angie Burnett	Electricity Benjamin Franklin / Alessandro Volta		Animals including Humans (Circulatory & Respiratory Systems)
Summer 2	Light Colin Webb		Living things and their habitats Sarah Fowler OBE - Marine Biologist Rachael Carson	

	David Attenborough	
	(Life processes)	

Vocabulary Progression

Animals Including Humans				
Year 3	Year 4	Year 6		
healthy	molar	offspring		
nutrients	incisor	inheritance		
energy	canine	variations		
Saturated fats	Pre-molar	adaptation		
Unsaturated fats		evolution		
Bulanced diet		natural selection		
Food groups		adaptive traits		
vertebrate		Inherited traits		
invertebrate	5			
Endoskeleton		Circulatory system		
Hydrostatic skeleton		heart		
Exoskeleton		Blood vessels		
musdes		Oxygenuted blood		
tendons		Deoxygenuted blood		
joints		Plasma		
		platelets		
9 4		Red blood cells		
		White blood cells		

States of Matter	r / Properties of Materials	Flectricity		
Year 4 Year 5			Licenteing	
Solid	evaporate	Year 4	Year O	
Liquid	condense	electricity	aurrent	
Gus	dissolve	drauit	amps	
particles	soluble	cell	voltage	
melt	insoluble	battery	resistance	
freeze	conductor	component	electrons	
Vater vapour	insulator	Electrical conductor		
evaporate	reversible	Electrical insulator		
condense	innevensible	mains		

Year 3		Year 6
dark		reflection
UV light		incident ray
reflect		reflected ray
ubsorb		Law of reflection
opuque		refraction
transluce	nt	visible spectrum
transpare	ent	
Light sou	un ce	
Shaabw	Plants	
	Flants	Sound
	Year 3	Year 4
	germination	vibration
	reproduce	sound wave
	photosynthesis	volume
	seed dispersal	amplitude s
	pollination	pitch
	botanist	purticles

Light

_		Lava
Sound	Space	Sol
Year 4	Year 5	Erosion
vibration	Sun	Possilisation
sound wave	star	- anacorritorogy
volume	planet	Living
amplitude	satellite	Year 4
pitch	spherical	organisms
purticles	orbit	l i fa processas
absorb	rotate	Lojo processes
vucuum	axis	respiration
ear drum	geocentric	reproduction
	heliocentric	expretion
	Astronomer	nutrition
		habitat
		environment
		endangered species
		extinct
		dassification
		specimen

Rocks and Fossils	Is Forces		
Year 3	Year 3	Year 5	
aneous rock	forces	force	
Sadimantany nach	magnet	gravity	
Seamentary rock	magnetic	Gravitational pu	
Maa Mada	attract	weight	
Dermende	repel	mass	
mermeable	Magnetic field	friction	
Sadiment	poles	Air resistance	
Magna		Water resistance	
Lava		streamlined	
C		upthrust	
501		bouyunay	
Fossilisation Palacontology			
Fossilisation Palacontology Living th	nings and their	habitats	
Fossilisation Palacontology Living th Year 4	nings and their Year 5	habitats Year O	
Fossilisation Palacontology Living th Year 4 Orgunisms	nings and their Year 5 Movement	habitats Year O Characteristics	
Fossilisation Palaeontology Living th Year 4 organisms Life processes	Year 5 Movement Respiration	habitats Year O Churacteristics Micro-organism	
Fossilisation Palaeontology Living th Year 4- orgunisms Life processes respiration	Novement Respiration Sensitivity	habitats Year 6 Characteristics Micro-organism species	
Fossilisation Palaeontology Living th Year 4 organisms Life processes respiration reproduction	Movement Respiration Growth	habitats Year 6 Characteristics Micro-organism species Key	
Fossilisation Palaeontology Living th Year 4 Organisms Life processes respiration reproduction excretion	ings and their Year 5 Movement Respiration Sensitivity Growth Reproduction	habitats Year O Churucteristics Micro-organism species Key microscope	
Fossilisation Palacontology Living th Year 4 Organisms Life processes respiration reproduction excretion nutrition	Novement Novement Respiration Sensitivity Growth Reproduction Extretion	habitats Year 6 Characteristics Micro-organism species Key microscope Taxonomer	
Fossilisation Palaeontology Living th Year 4- organisms Life processes respiration reproduction excretion nutrition habitat	ings and their Year 5 Movement Respiration Sensitivity Growth Reproduction Extretion Nutrition	habitats Year O Characteristics Micro-organism species Key microscope Taxonomer bucteria	
Fossilisation Palaeontology Living th Year 4- organisms Life processes respiration reproduction excretion nutrition habitat environment	ings and their Year 5 Movement Respiration Sensitivity Growth Reproduction Extretion Nutrition	habitats Year O Characteristics Micro-organism species Key microscope Taxonomer bacteria Classify	
Fossilisation Palaeontology Living th Year 4- organisms Life processes respiration reproduction excretion nutrition habitat environment endangered species	ings and their Year 5 Movement Respiration Sensitivity Growth Reproduction Extretion Nutrition	habitats Year O Characteristics Micro-organism species Key microscope Taxonomer bacteria Classify	
Fossilisation Palaeontology Living th Year 4- organisms Life processes respiration reproduction excretion nutrition habitat environment endangered species extinct	ings and their Year 5 Movement Respiration Sensitivity Growth Reproduction Extretion Nutrition	habitats Year 6 Characteristics Micro-organism species Key microscope Taxonomer bacteria Classify	

		Year 3	Year 4	Year 5	Year 6
Topics studied Chemistry Biology Physics Planning Support: Explorify	Aut 1	 ANIMALS, INCLUDING HUMANS - Skeleton 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 Identify how plants and animals, including humans resemble their parents in many features. 	 STATES OF MATTER 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) 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 (Y5) 	EARTH & SPACE • 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 Observe Research / Use secondary sources – History link	 LIVING THINGS, HABITATS describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics Relate knowledge of plants to studies of all living things Research / Use secondary sources – History link Classify
Hamilton Trust units – saved on system TigTag		Ask questions Observe & Classify Research / Use secondary sources - History link Current affairs link: what we eat – meat, processed food – effect on our health and the environment	Ask questions Make predictions & draw conclusions Set up tests Observe Research / Use secondary sources – History link Present findings	The Solar System https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00316 Sun and Earth https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00317 The Moon https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00318	Why Classify? https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00353 Classifying Living Things https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00354 Microorganisms https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00360
		Diet and Exercise https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00362 The Human Skeleton https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00331 Joints and Muscles https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00332	Solids https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00254 Liquids https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00255 Gases https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00256 Changes of State https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00256 Living THINGS & HABITATS • 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		 ELECTRICITY (2022) - All covered by D&T Fairgrounds project 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 Ask questions Make predictions & draw conclusions Set up tests – to solve a problem Interpret and explain results Observe Explore Classify Link to DT – design circuits that can be controlled – Fairground project Electrical Circuits

			 Identify how animals and plants are suited to 		https://www.tigtagworld.co.uk/mindmap/#/lesso
			and adapt to their environment in different		ns/CLASS00290
			ways.		
			Observe & Classify		
			Research / Use secondary sources –		
			History link		
			Classification Kevs		
			https://www.tigtagworld.co.uk/mindmap/#/less		
			ons/CLASS00357		
			Role of the Environment		
			https://www.tigtagworld.co.uk/mindmap/#/less		
			ons/CLASS00346		
			Invertebrates		
			https://www.tigtagworld.co.uk/mindmap/#/less		
			Ons/CLASS00355		
			https://www.tigtagworld.co.uk/mindman/tt/loss		
			ons/CLASS00356		
t t	Aut 2	ANIMALS, INCLUDING HUMANS -		FORCES	
		Nutrition		 explain that unsupported objects fall towards 	
		 identify that animals, including 		the Earth because of the force of gravity	
		humans, need the right types and		acting between the Earth and the falling	
		amount of nutrition, and that they		object	
		cannot make their own food; they get		identify the effects of air resistance, water	
		nutrition from what they eat		resistance and friction, that act between	
		 Identify that humans and some other animals have skeletons and muscles for 		Introving surfaces recognise that some mechanisms including	
		support protection and movement		levers nulleys and gears allow a smaller	
		 Identify how plants and animals. 		force to have a greater effect (Y6)	
		including humans resemble their		 Describe, in terms of drag forces, why 	
		parents in many features.		moving objects that are not driven tend to	
				slow down.	
		Ask questions		 Understand that force and motion can be 	
		Observe & Classify		transferred through mechanical devices such	
		Research / Use secondary sources –		as gears, pulleys, leavers and springs. (Y6)	
		History link			
		DOT the base statistics and a solution of the s		Ask questions	
		ווחג – nutrition healthy dips		Make predictions	
		Current affairs link: what we gat most		Set up tests	
		processed food – effect on our health and		Observe	
		the environment		Record data - Maths link (stats)	
				Interpret & communicate results – English	
		Diet and Exercise		link	
		https://www.tigtagworld.co.uk/mindmap		Evaluate	
		/#/lessons/CLASS00362		Research	
		The Human Skeleton		Link to DT – Making timers / products with	
				levers etc Pulleys – Y6 fairground project	
				· · · · · · · · · · · · · · · · · · ·	

	https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00331 Joints and Muscles https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00332		Gravity https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00298 Action and Reaction https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00299 Gears and Pulleys https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00300	
Spring 1	 ROCKS compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter relate simple physical properties of some rocks to their formation (igneous or sedimentary) Recognise that living things have changed over time and that fossils provide information about living things that have inhabited the Earth millions of years ago. Observe & classify Research / Use secondary sources History link Explore Comparing Rocks https://www.tigtagworld.co.uk/mindmap (#/lessons/CLASS00271 Soil https://www.tigtagworld.co.uk/mindmap (#/lessons/CLASS00272 	 ANIMALS, INCLUDING HUMANS describe the simple functions of the basic parts of the digestive system in humans construct and interpret a variety of food chains, identifying producers, predators and prey (Cover in living things?) identify the different types of teeth in humans and their simple functions Observe Research / Use secondary sources Explore Classify The Digestive System https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00348 Food Webs https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00349 Teeth https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00364 	 PROPERTIES & CHANGES of MATERIALS 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 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, oxidation and the action of acid on bicarbonate of soda. Ask questions Make predictions Set up tests Observe Explore Record data – Maths link (stats) Interpret, Evaluate& communicate results - English link 	

			Research Properties of Materials https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00268 Characteristics of Water https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00258 Characteristics of Air https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00259 Separation by Evaporation https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00276	
Spring 2	MAGNETS (Forces and Magnets) STEM week • 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 • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance Ask questions Make predictions & draw conclusions Set up tests Observe & measure – Maths link Classify Explore Record data - Maths link (stats) Interpret & communicate/present results – English link Magnetism https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00292	 SOUND Spring – STEM week identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases Classify Explore Observe Measure – Maths link What is sound? https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00309 How does sound travel? https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00310 How do we hear? https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00311 Volume https://www.tigtagworld.co.uk/mindmap/#/less ons/CLASS00313 	 PROPERTIES & CHANGES of MATERIALS 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 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, oxidation and the action of acid on bicarbonate of soda. Ask questions Make predictions Set up tests Observe Explore Record data – Maths link (stats) Interpret, Evaluate& communicate results - English link Research 	 LIGHT – STEM week Spring 2 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 and to predict the size of shadows when the position of the light source changes. Observe Explore Record data - Maths link (stats) Longer term study – how the length of shadows changes at different times of the year Reflection https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00306 Shadows https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00307

	Using Magnetism https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00293 What is Force? https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00295 Friction https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00296 Reducing Friction https://www.tigtagworld.co.uk/mindmap /#/lessons/CLASS00297		Properties of Materials https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00268 Characteristics of Water https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00258 Characteristics of Air https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00259 Separation by Evaporation https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00276	 EVOLUTION and INHERITANCE 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 how and why the human skeleton has changed over time, since we separated from other primates 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 Relate knowledge of plants to studies of evolution and inheritance Observe Compare Classify Research / Use secondary sources – History link Current Affairs Link: global warming – are animals/plants adapting fast enough to survive in the changing climate? Adaptation https://www.tigtagworld.co.uk/mindmap/#/lesso ns/CLASS00347 Evolution
Su	 IM 1 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 	 ELECTRICITY - Summer 1 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 	 THE WATER CYCLE - SPRING STEM Week identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Observe Research / Use secondary sources – History link Current affairs link: global warming – how has this changed the water cycle over time? Characteristics of Water https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00258 Characteristics of Air 	 ANIMALS INCLUDING HUMANS identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (including the pulse and clotting) 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 Ask questions Make predictions Set up tests

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	explore the part that flowers	Ask questions	https://www.tigtagworld.co.uk/mindmap/#/lesson	Observe / Notice patterns
	play in the life cycle of	Make predictions	<u>S/ULASSUU259</u>	Record data - Maths link (stats)
	flowering plants, including	Set up tests	Separation by Evaporation	Interpret, explain & communicate/
	pollination, seed formation	Observe	nttps://www.tigtagworid.co.uk/mindmap/#/lesson	present results - English link
	and seed dispersal	Explore	<u>S/CLASS00270</u>	present results – English link
		Classify		Set up further comparative, fair tests
	Ask questions	Link to DT – design circuits		Evaluate
	Make predictions			Research
	Set un tests	Series and Parallel Circuits		The Circulatory System
	Observe & Classify	https://www.tigtagworld.co.uk/mindmap/#/less		https://www.tigtagworld.co.uk/mindmap/#/lesso
		ons/CLASS00291		ns/CLASS00335
	Record data –Maths link (stats)	Conductors and Dangers of Electricity		The Respiratory System
	Interpret & communicate results	https://www.tigtagworld.co.uk/mindmap/#/less		https://www.tigtagworld.co.uk/mindmap/#/lesso
	– English link	ons/CLASS00289		ns/CLASS00334
				brug Awareness
	Current Affairs link: how can we grow			nc/CLASS00363
	enough food to feed the growing			
	population of the world?			
	Parts of a Plant			
	https://www.tigtagworld.co.uk/mindman			
	/#/lessons/CLASS00338			
	Reproduction			
	https://www.tigtagworld.co.uk/mindmap			
	/#/lessons/CLASS00339			
	Fertilisation and Dispersal			
	https://www.tigtagworld.co.uk/mindmap			
	/#/lessons/CLASS00340			
Sum 2	<u>LIGHT</u>		LIVING THINGS AND THEIR HABITATS	
			 describe the differences in the life cycles of a mean much an amphibien on incest and a hird 	
	 recognise that they need light in order 		mammal, an amphibian, an insect and a bird	
	to see things and that dark is the		 describe the file process of reproduction in some plants and animals 	
	absence of light		Life Cycles	
	 notice that light is reflected from 		https://www.tigtagworld.co.uk/mindmap/#/lesson	
	surfaces		s/CLASS00328	
	 recognise that light from the sun can 		Reproduction	
	to protoct their eves		https://www.tigtagworld.co.uk/mindmap/#/lesson	
	 recognise that shadows are formed 		<u>s/CLASS00329</u>	
	when the light from a light source is			
	blocked by a solid object		ANIMALS INCLUDING HUMANS (PSHE)	
	find patterns in the way that the size		describe the changes as humans develop to old	
	of shadows change		age	
			Puberty - Taught alongside / within	
	Ask questions		PSHE	
	Ask questions			
	Explore		Observe	
	Observe & measure		Research / Use secondary sources –	
			History link	
			ΠΙΣΙΟΙ Υ ΙΙΙΙΚ	

	Longer term study: investigate how the size of shadows changes at different times of year. What is light? <u>https://www.tigtagworld.co.uk/mind</u> <u>map/#/lessons/CLASS00302</u> The Sun as a light source <u>https://www.tigtagworld.co.uk/mind</u> <u>map/#/lessons/CLASS00305</u> Light Sources <u>https://www.tigtagworld.co.uk/mind</u> <u>map/#/lessons/CLASS00303</u>		Comparing / Noticing patterns Life Cycles https://www.tigtagworld.co.uk/mindmap/#/lesson s/CLASS00328 Mrs Gren	
Key skills to progress – To work scientifically	Year 3Year 4• ask relevant scientific questions• use observations and knowledge to answer scientific questions• set up a simple enquiry to explore a scientific question• set up a test to compare two things• set up a fair test and explain why it is fair• make careful and accurate observations, including the use of standard units• use equipment, including thermometers and data loggers to make accurate measurements• gather, record, classify and present data in different ways to answer scientific questions• use diagrams, keys, bar chats and tables using scientific language• use findings to report in different ways including oral and written explanations, presentation• draw conclusions and suggest improvements• make a prediction with a reason• identify differences, similarities and changes related to an enquiry		Year 5 Year 6 • plan different types of scientific enquiry • control variables in an enquiry • measure accurate and precisely using a range of equipment • record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • use the outcome of test results to make predictions and set up a further comparative fair test • report and present findings from an enquiry • explain a conclusion from an enquiry • explain casual relationships in an enquiry • relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory • Read, spell and pronounce scientific vocabulary accurately.	

Links to school values	Growth – children learn through wonder and intrigue
	Compassion – compassionate and knowledgeable about the world in which we live.
	Honesty – To admit mistakes and suggest ways of rectifying them through investigations.
	Courage – Take risks when predicting and investigating through a variety of scientific enquiry.
	Hope – To find ways to save the planet and improve life whilst living sustainable lives.
	Love - compassionate and knowledgeable about the world in which we live.

The Learning Journey through Science topic areas to aid understanding of progression.

The learning journey: Animals including humans

Year group	Statutory Requirements from the Programme of Study
1	 Identify and name a variety of common animals that are birds, fish, amphibians, reptiles 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 (birds, fish, amphibians, reptiles and mammals, and including pets). Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense.
2	Notice that animals, including humans, have offspring which grow into adults
	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
	• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
3	 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 animals have skeletons and muscles for support, protection and movement.
4	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, producers, and prov.
	• Construct and interpret a variety of food chains, identifying producers, predators and prey.
5	Describe the changes as humans develop from birth to old age.
6	Identify and name the main parts of the human circulatory system, and explain 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.

The learning journey – 'Materials'

Year group	Statutory Requirements from the Programme of Study
1	 Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their physical properties.

2	 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.
3	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
	 Describe in simple terms how fossils are formed when things that have lived are trapped within rock
	 Recognise that soils are made from rocks and organic matter.
4	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.
5	• 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
	Understand 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
	• 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.

The learning journey: Plants

Year group		Statutory Requirements from the Programme of Study
1	•	Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and
		evergreen
	•	Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.

2	Observe and describe how seeds and bulbs grow into mature plants
	 Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
3	 Identify and describe the functions of different parts of plants; roots, stem, 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 ways in which water is transported within plants.
	• Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

The learning journey: Living Things and Their Habitats

Year group	Statutory Requirements from the Programme of Study
2	Explore and compare the differences between things that are living, dead, and things that have never been alive
	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of
	different kinds of animals and plants, and how they depend on each other.
	 Identify and name a variety of plants and animals in their habitats, including micro-habitats
	• 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.
4	 recognise that living things can be grouped in a variety of ways
	• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
	 recognise that environments can change and that this can sometimes pose dangers to living things
5	 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.
6	 Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and
	differences, including micro-organisms, plants and animals
	Give reasons for classifying plants and animals based on specific characteristics

<u>The learning journey – 'Forces'</u>

Year group	Statutory Requirements from the Programme of Study
3	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.
5	• 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.

The learning journey – 'Light'

Year group	Statutory Requirements from the Programme of Study
3	Recognise that they 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 their 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.
6	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

The learning journey – 'Electricity'

Year group	Statutory Requirements from the Programme of Study
4	 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.
6	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.

Year 1 Seasonal Change Reference to the Programme of Study 2014

Pupils should be taught to:

- Observe changes across the four seasons
- Observe and describe weather associated with the seasons and how day length varies.

Year 4 Sound Reference to the Programme of Study 2014

Pupils should be taught to:

- Identify how sounds are made, associating some of them with something vibrating
- Recognise that vibrations from a sound travel through a medium to the ear.
- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it.
- Recognise that sounds get fainter as the distance from the sound source increases.

Year 5 Space Reference to the Programme of Study 2014

Pupils should be taught to:

- 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

Year 6 Evolution Reference to the Programme of Study 2014

Pupils should be taught to:

- 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.