








































EYFS LTP SCIENCE

SCIENCE	Autumn			Spring			Summer		
<div>Animals BIOLOGY</div> <div></div> <div>Do bears live in Totley?</div> <div>Which comes first the chicken or the egg?</div> <div>What is a minibeast?</div>	What animals live in the UK?	Explore the natural world around them, making observations and drawing pictures of animals and plants.		Animal habitats- Where do animals live?	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.		Which animals live under the sea?	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.	
	Which animals hibernate?	Explore the natural world around them, making observations and drawing pictures of animals and plants.		Animal life cycles- How do animals grow up?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.		How has my body changed?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	
				What minibeasts live in the UK?	Explore the natural world around them, making observations and drawing pictures of animals and plants.		How do we care for our teeth?		
<div>Plants BIOLOGY</div> <div></div> <div>What is harvest?</div>	What crops do we grow?	Explore the natural world around them, making observations and drawing pictures of animals and plants.		How do we plant herb and flowers?	Explore the natural world around them, making observations and drawing pictures of animals and plants.				
				Plant life cycles How do plants grow?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.				
<div>Materials CHEMISTRY</div> <div></div> <div>?</div>							Which things sink and which things float? How do I make a shadow? How do materials change? Is it magnetic?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	
<div>Seasonal changes PHYSICS</div> <div></div> <div>What are the signs of the seasons?</div>	Signs of autumn – What is happening? What do you see? What do we wear?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.		Signs of spring – What is happening? What do you see? What do we wear?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.		Signs of summer – What is happening? What do you see? What do we wear?	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	
	Signs of winter – What is happening? What do you see? What do we wear?								




	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
	<p>Show curiosity about objects, events and people.</p> <p>Question why things happen.</p> <p>Ask questions about aspects of their familiar world such as the place where they live or the natural world.</p> <p>Ask how and why questions about their experiences.</p>	<p>Children should be encouraged to think about what might happen. Their responses will be based on experience or may simply be a guess.</p>	<p>Participate in guided investigations.</p> <p>Engage in open ended activities.</p> <p>Find ways to solve problems/find new ways to do things/ test their ideas.</p> <p>Take a risk, engage in new experiences and learn by trial and error.</p> <p>Handle equipment and tools effectively. Choose resources they need for a chosen activity.</p>	<p>Show curiosity about objects, events and people.</p> <p>Closely observe what animals, people and vehicles do.</p> <p>Use sense to explore the world around them.</p> <p>Use equipment to measure.</p> <p>Make observations of animals and plants.</p>	<p>Record their observations by drawing, taking photographs, using sorting rings or boxes and, on simple tick sheets.</p> <p>Comments about aspects of their familiar world.</p> <p>Answer how and why questions about their experiences.</p> <p>Create simple representations of events, people and objects.</p>	<p>Identify, sort and group.</p> <p>Recognise similarities and differences.</p> <p>Make links and notice patterns in their experiences.</p> <p>Develop ideas of grouping sequencing and cause and effect.</p> <p>Use their observations to help them to answer their questions.</p> <p>Develop their own narratives and explanations by connection ideas or events.</p> <p>Build up vocabulary that reflects the breath of their experience.</p>	<p>Share what they have discovered with others.</p>
Vocabulary 	Questions	think because might won't will 	<i>Investigate</i> <i>Solve problems</i> <i>Test ideas</i> <i>Equipment</i> <i>Resources</i> Magnifying glass	Explore Observe Senses Equipment Measure Curiosity	Comment Answer Record Measure Draw photograph Sorting rings Sorting boxes Tick sheet Represent	name sort group sequence patterns links 	same different change 
Oracy 	The language of questioning <p>Why ... ? How ...? I wonder if ...?</p> <p>Why do you think this is a? What can you see? Why did.....happen? happened because...</p>	The Language of Conjecture <p>It will....because... I think I will..... I think...because... It is...because It has.....because.....</p>		The language of observation <p>It looks... It feels... It tastes... It sounds ... It smells ...</p>		The Language of Deduction - Making an assumption based on prior knowledge <p>It will....because..... I think I will..... I think.....because..... It is.....because..... It has....because..... Why do you think this is a? What can you see? Why did...happen? ...happened because.....</p>	The Language of Comparison – Comparing and Contrasting <p>It is the same because... It is different because... The change is that....</p>













YEAR 1 LTP SCIENCE

SCIENCE	Autumn			Spring			Summer		
<div>Animals BIOLOGY</div> <div></div> <div>How do animals grow and change?</div>	What is a living thing?	<i>Recognise that living things can be grouped in a variety of ways.</i>					What do you know about living things?		
	How can we group living things?						What do you know about non-living things?		
	What are the parts of the human body called?	<i>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</i>		What are our sense?	<i>Say which part of the body is associated with each sense.</i>				
	How do humans grow and change?	<i>Notice that animals, including humans, have offspring which grow into adults</i>		How do birds grow up?	<i>Notice that animals, including humans, have offspring which grow into adults.</i>		How do amphibians grow up?	<i>Notice that animals, including humans, have offspring which grow into adults.</i>	
	What are the parts of different animals called?	<i>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</i>		What are the differences between fish, amphibians, reptiles, birds and mammals?	<i>Identify and name a of common animals including fish, amphibians, reptiles, birds and mammals.</i>		What do animals eat?	<i>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</i>	
<div>Plants BIOLOGY</div> <div></div> <div>What do plants need to thrive?</div>	What are the parts of a flowering plant called?	<i>Identify and describe the basic structure of a variety of common flowering plants, including trees.</i>		What are the parts of a tree?	<i>Identify and describe the basic structure of a variety of common trees.</i>		How can we sort plants into groups?	<i>Recognise that living things can be grouped in a variety of ways.</i>	
	What plants do we have in school?	<i>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</i>		What are deciduous and evergreen trees?	<i>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</i>		What trees grow in each season?	<i>Observe changes across the four seasons.</i>	
	What grows in Autumn?	<i>Observe changes across the four seasons.</i>		How does a plant grow and change?	<i>Notice that plants grow from seeds into full grown plants.</i>		What do plants need to thrive?		
<div>Materials CHEMISTRY</div> <div></div> <div>What are toys made from?</div>	What is a material?	<i>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</i>		How can I describe the materials objects are made from?	<i>Describe the simple physical properties of a variety of everyday materials.</i>		Which material is best for the job?	<i>Describe the simple physical properties of materials. Compare and group everyday material on the basis of their simple physical properties. Carry out simple tests.</i>	
	What are objects made from?	<i>Distinguish between an object and the material from which it is made.</i>		How are materials the same and how are they different?	<i>Compare and group a variety of everyday material on the basis of their simple physical properties.</i>		Which materials float and which materials sink?		
							Which surface can a car travel faster on?		
<div>Seasonal changes PHYSICS</div> <div></div> <div>What changes in each season?</div>	What are the seasons?	<i>Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</i>		What is the weather like in Winter?	<i>Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</i>		What is the weather like in Summer?	<i>Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</i>	



	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
	Ask simple questions and recognise that they can be answered in different ways.	Children should be encouraged to think about what might happen. Their responses will be based on experience or may simply be a guess.	Perform simple tests. Experience different types of scientific enquiry, including practical activities.	Observe closely using simple equipment.	Gather and record simple data to help in answering questions	Identifying and classifying. Using their observations and ideas suggest answers to questions.	Compare observations with those of others.
Vocabulary 	questions sources information	think because predict 	equipment test investigate experiment (v) enquiry	explore observe look closely notice describe changes time features structure	gather record measure hand lens magnifying glass egg timer diagram label table chart	pattern sort group identify name  classify relationship	compare contrast distinguish discuss same different alike similar unlike match 
Oracy 	The language of questioning	The Language of Conjecture I think..... I think.....because..... (prior knowledge) I predict.....will happen. I think that.... might.... I think that.... won't.... I think that.... will....		The language of observation0 I explored ... and found ... I observed ... and saw ... I looked closely at ... and noticed looks/feels/sounds/smells It was ... but now it is is /has ...(features) ... is/has .. (structure) First/the/next/ after/finally		The Language of Deduction - Making an assumption based on prior knowledge I think that..... I think thatbecause..... It is.....because.....happened because..... What do you think happened? My reason for thinking..... is that..... Because of the information, I think that..... The facts tell me that....	The Language of Comparison – Comparing and Contrasting They are the same because..... They are different because.....is.....and.....is..... They are alike because they are both..... If I compare ... to.... They are unlike because.... They are similar.... There have some similarities.... They match because....


YEAR 2 LTP SCIENCE













SCIENCE	Autumn			Spring			Summer		
<div>BIOLOGY</div> <div>Animals</div> <div>Plants</div> <div></div> <div>How do animals survive in their habitats?</div> <div>What makes a healthy human?</div> <div>How do plants grow?</div>	Is it alive?	Explore and compare the differences between things that are living, dead, and things that have never been alive. Recognise that living things can be grouped in a variety of ways		How do animals including humans grow and change?	notice that animals, including humans, have offspring which grow into adults		How can we take care of our habitat?	Earth day	
	What are the characteristics of living things?	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)		Why do we exercise?	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.				
	What is a habitat?	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.		What should we eat?	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		What helps a plant grow best?	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	
	What is a food chain?	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.		Why do we need to keep clean?	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		What happens when a plant dies?	Observe what happens when plants die and decompose in order to reinforce the life cycle of flora.	
	What is a microhabitat?	Identify and name a variety of plants and animals in their habitats, including microhabitats.					Where are our plants growing best?		
	What lives in a desert habitat?	Identify and name a variety of plants and animals in their habitats, including microhabitats.					Do all plants come from seeds?	Observe and describe how seeds and bulbs grow into mature plants.	
	What lives in a rainforest?	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.							
	Can an urban area be a habitat?								
	What lives in an ocean habitat?								
<div>Materials</div> <div>CHEMISTRY</div> <div></div> <div>Which is the best material for the job?</div>				How can the shape of solid materials be changed?	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.				
				Which material is the stretchiest?					
				Which material is most absorbent?					
				Which material is best for the job?	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses				
<div>Forces</div> <div>PHYSICS</div> <div></div> <div>How can we make a car go the furthest and the fastest?</div>							How does a car move across different surfaces?	Compare how things move on different surfaces (explore with vehicles on a ramp)	
							How far can a car travel by changing the steepness of a ramp?		
							What happens when we change the wheels of a car?		
							What happens when we change the weight of a car?		
							What is the best design for a car to travel further?		

	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
	Ask simple questions and recognise that they can be answered in different ways.	Children should be encouraged to think about what might happen. Their responses will be based on experience or may simply be a guess.	Perform simple tests. Experience different types of scientific enquiry, including practical activities.	Observe closely using simple equipment.	Gather and record simple data to help in answering questions	Identifying and classifying. Using their observations and ideas suggest answers to questions.	Compare observations with those of others.
Vocabulary 	questions sources information study	think predict hypothesise 	enquiry equipment test experiment (v) comparative test suitability	explore observe look closely notice describe changes changes over time features structure characteristics process	gather record measure hand lens magnifying glass egg timer diagram label table chart accuracy	pattern relationship sort group identify name classify describe construct 	compare contrast distinguish discuss 
Oracy 	The language of questioning Where...? Why ...? What ...? When ...? How ...?	The Language of Conjecture I think this.....because..... I know this, so I think This will happen because.....I think.....because..... I predict that.....because..... I think they will be alike because they are both..... Because I know that....., I know that..... I hypothesise that.....	The language of observation I explored ... and found ... I observed ... and saw ... I looked closely at ... and noticed looks/feels/sounds/smells ... It was ... but now it is is /has ...(features) ... is/has .. (structure) ... is/has .. (characteristics) First/the/next/ after/finally		The Language of Deduction - Making an assumption based on prior knowledge I think that..... because Happened because..... I know this.....suggests that..... I found that.....because..... tells me that.....		
						The Language of Comparison – Comparing and Contrasting and.....are alike in that..... ...and ... are similar/different because...is.....while.....is.....and.....are bothand.....have the following points in common: One similarity between....and....is that... One difference is..... A further difference..... When comparing..... and..... it seems that..... and contrast in that they..... Contrasting points are that..... On comparison..... There is variation in..... They are comparable They relate by.....	





YEAR 3 LTP SCIENCE


SCIENCE	Autumn			Spring			Summer		
<div>BIOLOGY</div> <div></div> <div>How do plants survive and thrive?</div> <div>What makes a healthy human?</div>	What makes a healthy human?	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.					Space to Grow: what does a plant need to thrive?	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.	
							Roots, shoots and so much more: what are the parts and function of a plant?	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	
	How does a skeleton help us to stand straight?	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.					The circle of life: what are the parts of a plant’s life cycle?	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	
							Water for life: how does a plant transport water?	Investigate the way in which water is transported within plants.	
	How do our muscles make us move?	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.					How do plants pollinate?	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	
							Spreading the seed: what dispersal methods are there to spread pollinated seed?	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	
							Thriving or surviving: how do plants adapt to different environments?	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.	
<div>CHEMISTRY</div> <div></div> <div>What does a petrologist need to know?</div>				Are all rocks the same?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.				
				How are rocks created?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.				
				What types of rocks are out there?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.				













				How are fossils formed?	Describe in simple terms how fossils are formed when things that have lived are trapped within rock			
				Are all soils the same?	Recognise that soils are made from rocks and organic matter			
PHYSICS  How are shadows formed? How do magnets work?	What is light?	Recognise that they need light in order to see things and that dark is the absence of light.		Do magnets always work?	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 Predict whether two magnets will attract or repel each other, depending on which poles are facing.			
	Which materials are reflective?	Notice that light is reflected from surfaces.		How can we see a magnetic field?	Describe magnets as having two poles			
	How can we use light safely?	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.		How do magnets affects how things move on different surfaces?	Notice that some forces need contact between two objects, but magnetic forces can act at a distances			
	How are shadows formed?	Recognise that shadows are formed when the light from a light source is blocked by an opaque object						
	How do you create a shadow puppet show?	Find patterns in the way that the size of shadows change.						

Scientific Enquiry in Year 3	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best way to answer them.</p> <p>With guidance, identify questions in familiar contexts that can be investigated scientifically.</p>	<p>Make predictions based on prior knowledge.</p> <p>Make predictions about scientific investigations.</p>	<p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Recognise when a simple fair test is necessary and help to decide how to set it up.</p> <p>They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</p>	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p>	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.</p>	<p>Draw simple conclusions and report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (what they have found out and how they found it out).</p> <p>Identifying differences, similarities or changes related to scientific ideas and processes they explore.</p> <p>Using one point of scientific evidence to answer questions or to support their findings.</p> <p>Talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.</p> <p>With help, children should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</p> <p>Use scientific language, drawings, labelled diagrams, bar charts and tables.</p>	<p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Children should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.</p> <p>Reflect on investigations, including whether a test was fair or not.</p>
Vocabulary 	questions sources information study observe	think predict hypothesise 	enquiry equipment test experiment (v) comparative test suitability fair test observation	explore observe look closely notice describe changes changes over time features structure characteristics process systematic measurement thermometer data logger	gather record measure hand lens magnifying glass egg timer diagram label table chart accuracy bar charts microscope analyse	pattern relationship sort group identify name classify describe construct evidence conclusion relationship 	compare contrast distinguish discuss secondary source fair test 
Oracy 	The language of questioning Where...? Why ...? What ...? When ...? How ...?	The Language of Conjecture I predict that...because....however/mean while /therefore I predict that.....after..... I predict that.....as a result of..... This is probable because... Because I know that.....I know that.....		The language of observation During the experiment, I saw... Over time, I noticed... Initially,..., then..., but/and now....		The Language of Deduction - Making an assumption based on prior knowledge I conclude that.....because..... After looking at the data/information/results I conclude that..... On observing, I found that..... My results make me think that.....because.....	The Language of Comparison – Comparing and Contrasting When comparing..... and..... it seems that..... and contrast in that they..... The Language of Evaluation – Evaluative Talk Having examined..... I think that..... was effective due to the fact that.....



YEAR 4 LTP SCIENCE


SCIENCE	 	Autumn	Spring	Summer
<div>BIOLOGY</div> 			<div>How are teeth perfectly made?</div> identify the different types of teeth in humans and their simple functions	<div>What is an ecosystem?</div> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
			<div>What happens to our food after we swallow?</div> describe the simple functions of the basic parts of the digestive system in humans	<div>How are living things classified?</div> recognise that living things can be grouped in a variety of ways
			<div>What is a food chain?</div> construct and interpret a variety of food chains, identifying producers, predators and prey	<div>How do we construct a food chain?</div> construct and interpret a variety of food chains, identifying producers, predators and prey
			<div>How are the teeth of herbivores different to those of carnivores?</div> 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	<div>Why are producers so important?</div> construct and interpret a variety of food chains, identifying producers, predators and prey
			<div>How can we care for our teeth?</div> identify the different types of teeth in humans and their simple functions	<div>What is our local habitat like?</div> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
				<div>How can we help our habitat?</div> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
<div>CHEMISTRY</div> 	<div>What are the properties of solids and liquids?</div> compare and group materials together, according to whether they are solids, liquids or gases			
	<div>Does everything melt?</div> 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)			
	<div>What happens when you heat or cool each state of matter?</div> compare and group materials together, according to whether they are solids, liquids or gases			
	<div>How can we keep warm?</div> 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)			
	<div>Is evaporation always the same?</div> identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature			










	Where does each change of state happen in the water cycle?	identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature				
PHYSICS 	What is that sound?	identify how sounds are made, associating some of them with something vibrating		What is static electricity?		
	How are different sounds produced?			What are the different components of an electrical circuit?	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	
	How does sound travel?	recognise that vibrations from sounds travel through a medium to the ear		What are insulators and conductors?	recognise some common conductors and insulators, and associate metals with being good conductors	
	What are pitch and volume?	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		What happens in a circuit when we change the components?	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	
	How can we muffle sound?	recognise that sounds get fainter as the distance from the sound source increases		How can we make a wire buzz game that is safe and fun?	recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	

	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
	Ask relevant questions and use different types of scientific enquiries to answer them. Ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best way to answer them. With guidance, identify questions in familiar contexts that can be investigated scientifically.	Make predictions based on prior knowledge. Make predictions about scientific investigations.	Setting up simple practical enquiries, comparative and fair tests. Recognise when a simple fair test is necessary and help to decide how to set it up. They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.	Draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identifying differences, similarities or changes related to simple scientific ideas and processes Using straight forward scientific evidence to answer questions or to support their findings. Talk about criteria for grouping, sorting and classifying; and use simple keys. They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences. Use scientific language, drawings, labelled diagrams, bar charts and tables.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences. Reflect on investigations, including whether a test was fair or not.
Scientific Enquiry in Year 4							
Vocabulary 	questions sources information study observe	think predict hypothesise 	enquiry equipment test experiment (v) comparative test suitability fair test observation	explore observe look closely notice describe changes changes over time features structure characteristics process systematic measurement thermometer data logger	gather record measure hand lens magnifying glass egg timer diagram label table chart accuracy bar charts microscope analyse	pattern relationship sort group identify name classify describe construct evidence conclusion relationship 	compare contrast distinguish discuss secondary source fair test 
Oracy 	The language of questioning Where...? Why ...? What ...? When ...? How ...?	The Language of Conjecture I predict that...because.....however/mean while /therefore I predict that.....after..... I predict that.....as a result of..... This is probable because... Because I know that.....I know that.....		The language of observation During the experiment, I saw... Over time, I noticed... Initially,...., then...., but/and now....		The Language of Deduction - Making an assumption based on prior knowledge I conclude that.....because..... After looking at the data/information/results I conclude that..... On observing, I found that..... My results make me think that.....because.....	The Language of Comparison – Comparing and Contrasting When comparing..... and..... it seems that..... and contrast in that they..... The Language of Evaluation – Evaluative Talk Having examined..... I think that..... was effective due to the fact that.....




YEAR 5 LTP SCIENCE









SCIENCE	Autumn			Spring			Summer		
<div>BIOLOGY</div> <div></div>	<p>Why do plants have flowers?</p> <p>How do you clone a potato?</p> <p>How does the life cycle of an insect compare to an amphibian?</p> <p>Why do birds lay eggs?</p>	<p>describe the life process of reproduction in some plants and animals</p> <p>describe the life process of reproduction in some plants and animals</p> <p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p>					<p>What are the stages of a human life cycle?</p> <p>How do babies grow?</p> <p>What is puberty?</p> <p>What changes in a human in old age?</p> <p>What are gestation periods?</p> <p>What is life expectancy and what affects it?</p>	<p>describe the life process of reproduction in some plants and animals</p> <p>describe the changes as humans develop to old age</p> <p>Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p>	
<div>CHEMISTRY</div> <div></div>			<p>How would a scientist describe materials?</p> <p>Which materials suit different purposes?</p> <p>What makes a mixture?</p> <p>How can we separate mixtures into pure substances?</p> <p>Which changes are irreversible?</p>	<p>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</p> <p>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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>					

<div>PHYSICS</div> <div></div>	What are forces?	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object		What is the solar system?	describe the movement of the Earth and other planets relative to the sun in the solar system			
	How can we measure the size of a force?	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object		How do the planets in the solar system differ?	describe the sun, Earth and moon as approximately spherical bodies			
	What are contact forces?	identify the effects of air resistance, water resistance and friction, that act between moving surfaces		What causes the phases of the moon?	describe the movement of the moon relative to the Earth			
	What are non-contact forces?			What are the solar and lunar eclipses?	use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky			
	Which forces affect an object's ability to float?			What do astronomers do?				
	DT special project:	recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect						

Scientific Enquiry in Year 5	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
Vocabulary 	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Ask their own questions about scientific phenomena.</p> <p>Raise different kinds of questions.</p> <p>Select the most appropriate ways to answer science questions using different types of scientific enquiry.</p> <p>Find things out using a wide range of secondary sources of information.</p> <p>With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences.</p>	<p>Make predictions based on scientific knowledge</p> <p>Using test results to make predictions to set up further comparative and fair</p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.</p> <p>Make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately.</p> <p>Use equipment and materials safely and identifying potential risks</p>	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Explain why they have chosen specific equipment.</p> <p>Decide which units of measurement they need to use.</p> <p>Make precise measurements.</p> <p>Read measurements systematically.</p> <p>Explain why a measurement needs to be repeated.</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Decide how to record data from a choice of familiar approaches.</p> <p>Record measurements systematically.</p>	<p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Analyse functions, relationships and interactions more systematically.</p> <p>Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.</p> <p>Look for different causal relationships in their data and identify evidence that refutes or supports their ideas.</p> <p>They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time</p> <p>Compare data with predictions and use as evidence in developing explanations.</p> <p>Make links to other areas of science.</p>	<p>Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.</p> <p>They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.</p> <p>Reflect on and suggest improvements to scientific investigations.</p>
Oracy 	<p>The language of questioning</p> <p>Where...? Why ...? What ...? When ...? How ...?</p>	<p>I believe / I think / predictmight / or..... My speculation is that.....</p>		<p>The language of observation</p> <p>During the experiment, I saw... Over time, I noticed... Initially,..., then...., but/and now....</p>		<p>I am convinced that... Analysis of the tells me that..... Based on the evidence I have been presented with, I can conclude.....</p>	<p>The similarities/differences seem more significant than the similarities/differences because..... The fundamental differences are that..... The principal similarity is.... On balance, the..... My view is that.....because.....This is supported by the fact that..... Upon review, I would suggest that.....</p>

YEAR 6 LTP SCIENCE

SCIENCE	Autumn			Spring			Summer		
BIOLOGY 	What is the Theory of Evolution?			Blood: How does blood work?			Discovery: What did Karl Linnaeus discover?		
	How do fossils provide evidence of evolution?			What's in a heartbeat?			What are the animal kingdoms?		
	What impact are humans likely to have on life in the future?			The circulatory system: How does water and nutrients get to where we need them?			Odd one out: How can we classify animals?		
	Why do plants and animals change over time?			A healthy body: which drugs help us?			What's so special about <u>arthropods</u> ?		
	What evidence is there of natural selection?			A healthy body: why do people need different diets, exercise and lifestyles?			What botanical beauties are in our backyard?		
				What are the effects of smoking?			Can even the most unusual animals be classified?		
CHEMISTRY 									
PHYSICS 	What makes a successful circuit?			What is light and where does it come from?					
	How bright is the bulb?			What is reflection and how can we use it?					
	How loud is the buzzer?			What is refraction?					
	Create a dimmer switch: How do components function?			How do we see light?					
	Project prototype: How do you make a set of traffic lights?			How do we see different colours? How does a periscope work?					

	Ask		Enquire		Communicate		
	 Asking questions	 Making predictions	 Setting up tests	 Observing and measuring	 Recording data	 Interpreting and communicating	 Evaluating
Scientific Enquiry in Year 6	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p><i>Ask their own questions about scientific phenomena.</i></p> <p><i>Raise different kinds of questions.</i></p> <p><i>Select the most appropriate ways to answer science questions using different types of scientific enquiry.</i></p> <p><i>Find things out using a wide range of secondary sources of information.</i></p> <p>With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences.</p>	<p>Formulate questions or hypotheses that can be investigated scientifically</p> <p><i>Using test results to make predictions to set up further comparative and</i></p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p><i>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.</i></p> <p><i>Make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately.</i></p> <p>Use equipment and materials safely and identifying potential risks</p>	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Explain why they have chosen specific equipment.</p> <p>Decide which units of measurement they need to use.</p> <p>Make precise measurements.</p> <p>Read measurements systematically.</p> <p>Explain why a measurement needs to be repeated.</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p><i>Decide how to record data from a choice of familiar approaches.</i></p> <p><i>Record measurements systematically.</i></p>	<p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p><i>Analyse functions, relationships and interactions more systematically.</i></p> <p><i>Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.</i></p> <p><i>Look for different causal relationships in their data and identify evidence that refutes or supports their ideas.</i></p> <p><i>They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time</i></p> <p>Compare data with predictions and use as evidence in developing explanations.</p> <p><i>Make links to other areas of science.</i></p>	<p>Reflect on and suggest improvements to scientific investigations.</p>
Oracy 	The language of questioning Where...? Why ...? What ...? When ...? How ...?	I believe / I think / predictmight / or..... My speculation is that.....		The language of observation During the experiment, I saw... Over time, I noticed... Initially,..., then....., but/and now....		I am convinced that... Analysis of the tells me that..... Based on the evidence I have been presented with, I can conclude.....	The similarities/differences seem more significant than the similarities/differences because..... The fundamental differences are that..... The principal similarity is.... On balance, the..... My view is that.....because.....This is supported by the fact that..... Upon review, I would suggest that.....