









Progression of Curriculum and Skills Map (2022-2023)

Subject area: Science

Curriculum Leader: Katie Russell








Enquiry Types

To ensure complete coverage of the working scientifically skills and that children gain experience in all five types of scientific enquiry, there are a variety of big questions suggested for each topic. These can be adapted to suit, as long as the same enquiry coverage is achieved. In addition, there is a problem-solving task linked to a famous scientist for each year group. Links to scientists are identified in yellow.

<p>Comparative and fair testing (CT) FT - fair testing KS2 only</p> 	<p>Research (R)</p> 	<p>Observations over time (OT)</p> 	<p>Pattern seeking (PS)</p> 	<p>Identifying, grouping and classifying (IGC)</p> 	<p>Problem solving (PSO) An additional enquiry type, as suggested by the PSTT</p> 
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Enquiry Skills

There are 7 enquiry skills. Each of the 7 enquiry skills must be covered as part of the science content coverage. Use of the suggested big questions should ensure full coverage of these skills. It is not expected that every skill will be covered in every enquiry. Instead, teachers should identify skill/s they wish to assess within that enquiry. These should be identified in the planning. Any expectations for key equipment to be used has also been identified.

Asking questions 	Making predictions 	Setting up tests 	Observing and measuring 	Recording data 	Interpreting and communicating results 	Evaluating (KS2 only) 
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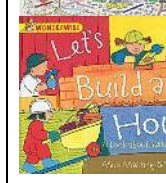
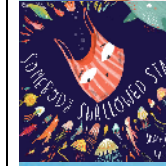
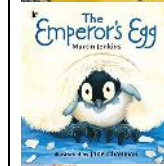
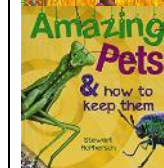
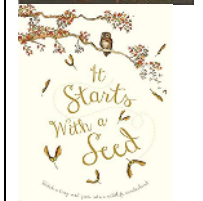
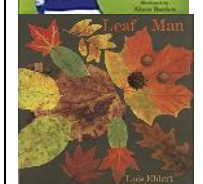
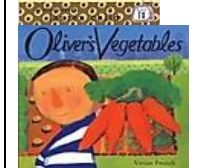
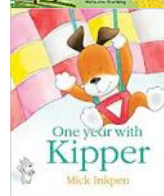
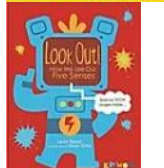
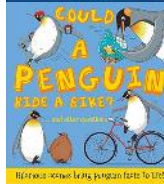
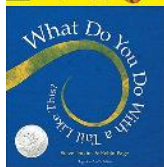
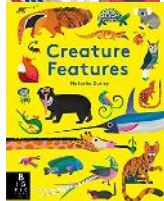
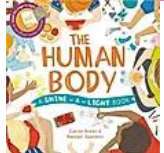
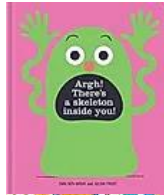
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The progression of these skills for each key stage is outlined in the PLAN Progression in Working Scientifically document (on the website). A more detailed breakdown of expectations for each year group is provided to teachers. The progression of knowledge for each content area is broken down in the PLAN Progression in Knowledge Document. Further detailed breakdown of each topic is provided in the PLAN knowledge matrices for each year group, including the key learning required for each year group.

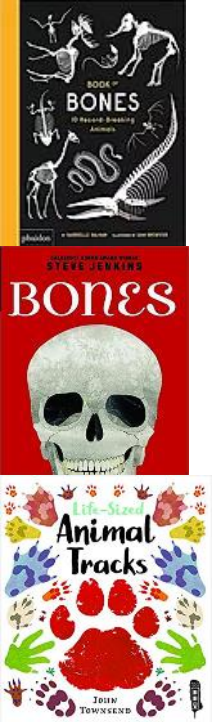
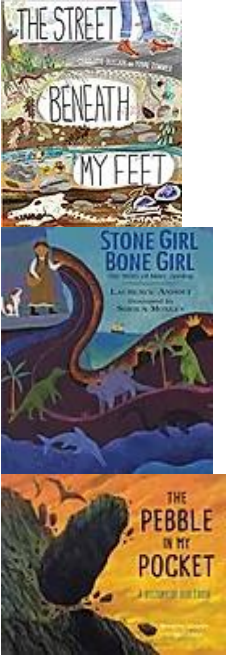

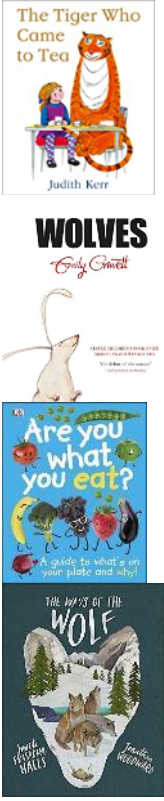
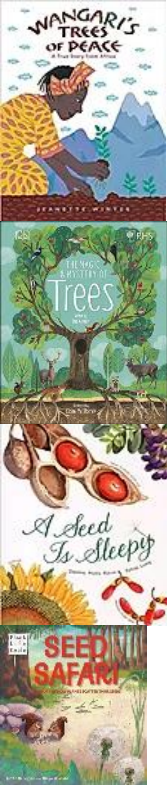
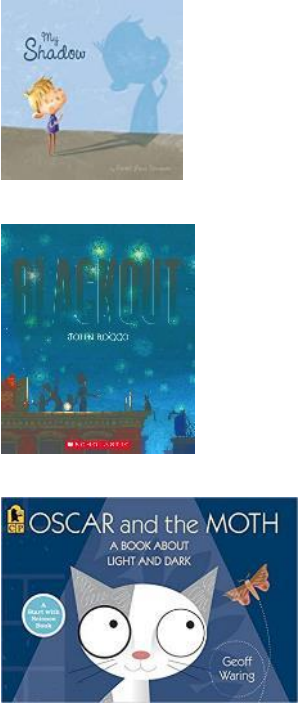
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<p>YEAR 1/2 (2022-2023 only)</p> <p><i>Some of the questions will be covered as part of the continuous provision activities in KS1.</i></p>	<p>Awesome Animals Animals, inc humans</p> <p>Is our sense of smell better when we can't see? (CT)</p> <p><i>How does my height change over the year?</i> (OT)</p> <p>How can we organise all the zoo animals? (link to animal groups) (IGC)</p> <p>How are the animals in Africa different from</p>	<p>Changing colours Seasonal changes and weather</p> <p>Bertie's diary: what time does it get dark? (OT)</p> <p>Does the wind always blow the same way? (PS)</p> <p><i>How does the colour of a UV bead change over the day?</i> (OT)</p> <p>In which season does it rain the most? (CT)</p>	<p>Habitats and homes Living things & their habitats</p> <p>Which habitat do worms/ woodlice prefer - where can we find the most worms/ woodlice? (PS)</p> <p>How would you group things to show which are living, dead, or have never been alive? (IGC)</p> <p>Would a meerkat prefer to live in the Arctic or a</p>	<p>Planting and growing Plants</p> <p>Which tree has the biggest leaves? (CT)</p> <p>What are the most common British plants and where can we find them? (R)</p> <p>What happens to my bean seed after I have planted it? (OT)</p>	<p>Changing and growing Animals, inc humans</p> <p>How does a butterfly/ tadpole change over time? (OT)</p> <p><i>Which offspring belongs to which animal?</i> (IGC)</p> <p>Do year 2 children have bigger handspans than y1 children? (PS)</p> <p>What does an astronaut need to survive in space? (R) OR</p>	<p>Incredible inventions Materials</p> <p>Which materials are the most flexible (or absorbent)? (CT)</p> <p>How can I make a material waterproof? (PSO) Charles Macintosh</p> <p>Which material would be best for the roof of the three little pigs' houses? (CT)</p> <p><i>Which materials are shiny and which are dull</i> (IGC)</p>

	<p>the ones in Britain? (R)</p> <p>Do all animals lay eggs? (PS)</p>		<p>desert? Why? (R)</p> <p>How would you group these plants and animals based on what habitat you find them in? (IGC)</p>		<p>What do you need to do to look after a pet dog/cat/lizard and keep it healthy? (R)</p>	
<p>Key equipment and resources to be used</p>	<p>Non standard measuring tools.</p>	<p>Simple ID keys</p>	<p>Sorting hoops Simple ID keys</p>	<p>Simple ID keys Hand lenses and microscopes</p>	<p>Simple ID keys Simple measuring equipment Simple timers Opportunity to observe an animal life cycle first hand.</p>	<p>Sorting hoops Simple measuring equipment</p>
<p>The following big questions will be covered throughout the year as part of the children's outdoor learning session.</p> <p>How does an oak tree change over the year? (OT) How can we sort the leaves we have collected on our walk? (IGC)</p> <p>How can we identify the trees we observed on our tree hunt? (IGC) How does the school pond change over the year? (OT)</p> <p>What wildlife do we have in our school pond? (IGC)</p>						


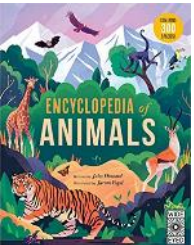

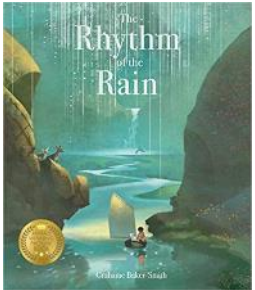
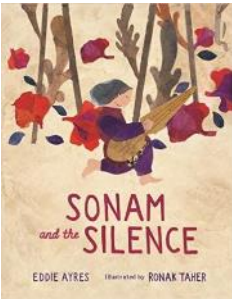
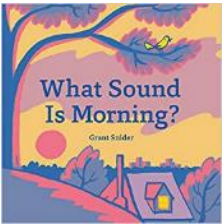

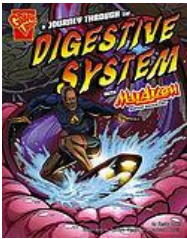
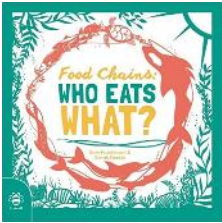
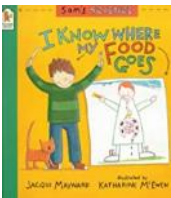
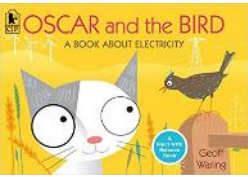
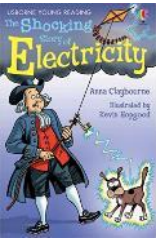
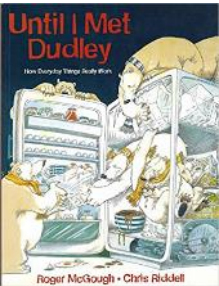

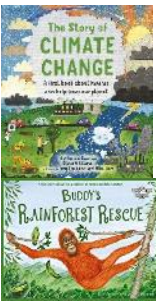
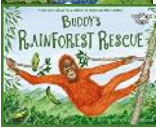


**YEAR 1/2
SUGGESTED
TEXTS TO
SUPPORT
TEACHING**



<p>YEAR 3</p>	<p>Sensational skeletons Animals, inc humans</p> <p>How does the skull circumference of a girl compare with that of a boy? (CT)</p> <p>Do male humans have larger hands than female humans? (PS)</p> <p>How do the skeletons of different animals compare? (IGC)</p>	<p>Rocks and fossils Rocks</p> <p>Can you use the ID key to name each of the rocks in your collection? (IGC)</p> <p>Is there a pattern in where we find volcanoes on planet Earth? (PS)</p> <p>Which soil grows the tallest grass? (CT)</p> <p>Who was Mary Anning and what did she discover? (R)</p>	<p>Marvellous magnets Forces and magnets</p> <p>Which materials are magnetic? (IGC)</p> <p>Which magnet is strongest? (CT)</p> <p>Which surface makes the car travel fastest? (CT)</p> <p>How can I make a road that is smooth, hard and won't get muddy? (PSO - John Macadam)</p>	<p>Nutrition Animals, inc humans</p> <p>How can we group the food we eat? (IGC)</p> <p>Which different types of vitamins keep us healthy and which foods can we find them in? (R)</p> <p>How can we group animals according to the types of food they eat? (IGC)</p>	<p>Brilliant bees Plants</p> <p>What happens to celery when it is left in a glass of coloured water? (OT)</p> <p>Which conditions help seeds germinate faster? (CT)</p> <p>What are all the different ways that seeds disperse? (R)</p> <p>What colour flowers do pollinating insects prefer? (PS)</p>	<p>Light and Dark Light</p> <p>When is our classroom darkest? (OT)</p> <p>How would organise these light sources into natural and artificial sources? (IGC)</p> <p>How does the Sun make light? (R)</p> <p>How does the distance between the shadow puppet and the screen affect the size of the shadow? (CFT)</p>
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<p>Key equipment and resources to be used</p>	<p>Measuring tapes and rulers Skeleton</p>	<p>Variety of different rocks. Magnifying glasses. Rulers and measuring tapes</p>	<p>Data loggers (friction ramp) Magnets</p>	<p>Simple classification keys</p>	<p>Identification keys microscopes</p>	<p>Data loggers (light sensors) Torches</p>
<p>YEAR 3 TEXTS TO SUPPORT TEACHING</p>						

<p>YEAR 4</p>	<p>Similarities and differences Living things and their habitats</p> <p>Can we use the classification keys to identify all the animals that we caught pond dipping? (IGC)</p> <p>How does the variety of invertebrates on the school field change over the year? (OT)</p> <p>Does the amount of light affect how many woodlice move around? (FT)</p>	<p>Solids, liquids and gases Solids, liquids and gases</p> <p>Is there a pattern in how long it takes different sized ice lollies to melt? (PS)</p> <p>How does the level of water in a glass change when left on the windowsill? (OT)</p> <p>Can you group these materials and objects into solids, liquids, and gases? (IGC)</p>	<p>Hear the vibrations Sound</p> <p>Do all animals have the same hearing range? (R)</p> <p>How does the volume of a drum change as you move further away from it? (FT)</p> <p>Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school? (PS)</p>	<p>The journey of food Animals, including humans.</p> <p>What are the names for all the organs involved in the digestive system? (IGC)</p> <p>How can we organise teeth into groups? (IGC)</p> <p>Are foods that are high in energy always high in sugar? (PS)</p> <p>How does an eggshell change when it is left in cola? (OT)</p>	<p>Electric Energy Electricity</p> <p>Which metal is the best conductor of electricity? (CT)</p> <p>How does the thickness of a conducting material affect how bright the lamp is? (FT)</p> <p>How would you group these devices based on where the electricity comes from? (IGC)</p> <p>How can I generate electricity from the wind? (PSO) Michael Faraday</p>	<p>Environmental Change Living things and their habitats</p> <p>Why are people cutting down the rainforests and what effect does that have? (R)</p> <p>How does the average temperature of the pond water change in each season? (CT)</p> <p>How did Jane Goodall learn about the habits and behaviours of chimpanzees and why does she still need to work to protect their habitat? R</p>
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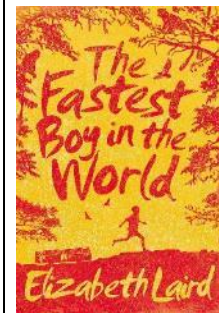
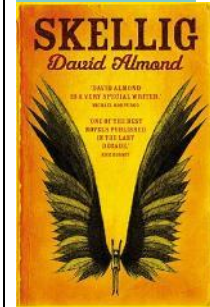
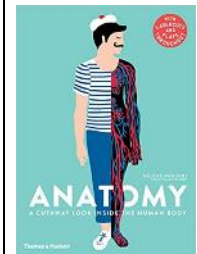
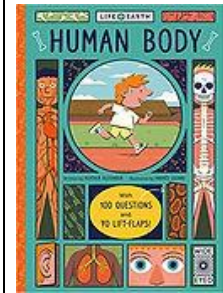
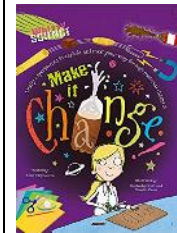
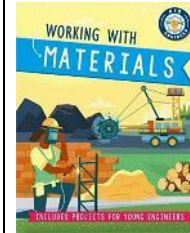
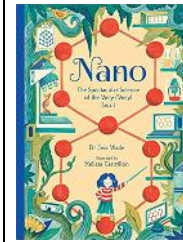
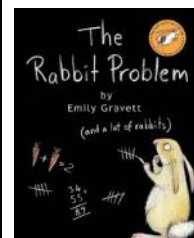
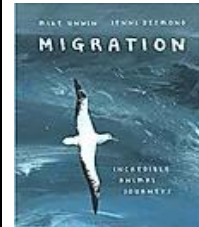
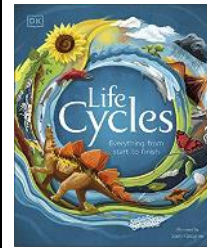
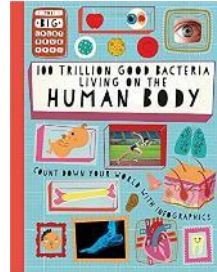
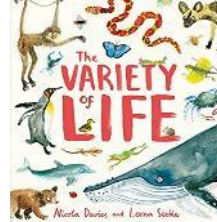
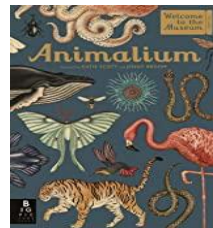
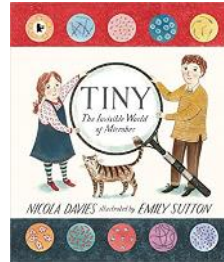
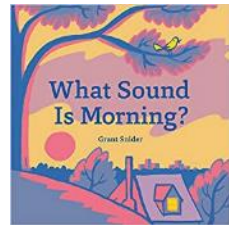
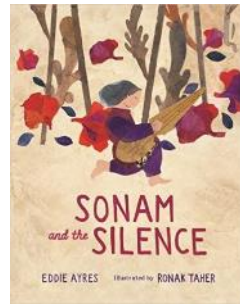
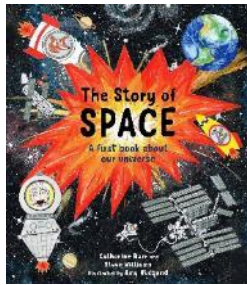
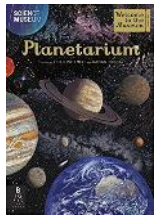
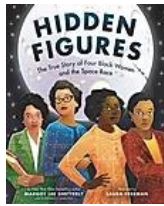
Key equipment & resources to be used	Classification keys	Thermometers and data loggers (temp) Heating stands	Data loggers (sound sensors)	Human Torso Model	Circuit equipment	Thermometers Data loggers (temperature)
<p>YEAR 4</p> <p>SUGGESTED TEXTS TO SUPPORT TEACHING</p>	 	 	  	  	  	    

<p>YEAR 5</p>	<p>Changing materials</p> <p>How does a container of salt water change over time? (OT)</p> <p>Which type of sugar dissolves the fastest? (CT)</p> <p>What are microplastics and why are they harming the planet? (R)</p>	<p>Properties and uses of materials</p> <p>Can you group these materials based on whether they are transparent or not? (IGC)</p> <p>Do all stretchy materials stretch in the same way? (PS)</p> <p>How can we make a reusable glue? (PSO) Spencer & Fry</p> <p>How can you stop the egg breaking? (PSO) Stephanie Kwolek</p>	<p>Earth and Space</p> <p>Can you observe and identify all the phases in the moon's cycle? (IGC)</p> <p>Is there a pattern between the size of a planet and the time it takes to travel around the Sun? (PS)</p> <p>How have our ideas about the solar system changed over time? (R)</p> <p>How did Mary Sherman Morgan help America win the space race? (R)</p>	<p>Forces</p> <p>Which shape parachute takes the longest to fall? (CT)</p> <p>Does the size of a meteor affect the size of the crater? (PS)</p> <p>How can we use a pendulum to create a clock? (PSO) Galileo</p> <p>How does the surface area of a container affect the time it takes to sink? (FT)</p>	<p>Animal Lifecycles</p> <p>Living things and their habitats</p> <p>Is there a relationship between a mammal's size and its gestation period? (PS)</p> <p>What are the differences between the lifecycle of an insect and the life cycle of a mammal? (R)</p> <p>How do brine shrimp change over their lifetime? (OT)</p>	<p>Changing and growing</p> <p>Animals, including humans</p> <p>Are the oldest children in our school the tallest? (PS)</p> <p>Can you identify all the stages in the human life cycle? (IGC)</p> <p>How does age affect a human's reaction time? (FT)</p> <p>Who grows the fastest, girls or boys? (CT)</p>
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Key equipment and resources to be used	Filtering, sieving, evaporation equipment	Precise measuring equipment	Planet Models	Force meters Precise measuring equipment	First hand observation of animal lifecycle: brine shrimp	Measuring tapes. Timers
Year 5 SUGGESTED TEXTS	 <p>DAVID WISNER FLOTSAM Michael Patrick's Cruise</p> <p>Darcy Pattison BURN Illustrated by Peter Walzer</p> <p><i>On a Beam of Light</i> A Story of Albert Einstein, who led the way to space travel</p> <p><i>Changes</i> Scholastic</p>	 <p>WORKING WITH MATERIALS INCLUDES PROJECTS FOR YOUNG ENGINEERS</p> <p>Nano The Small World of the Future of Today</p> <p>IGGY PECK, ARCHITECT Illustrated by David Roberts</p>	 <p>HIDDEN FIGURES The Untold Story of Three African American Women Who Helped Win the Space Race</p> <p>GALAXY OF HER OWN TWO OF THE WOMEN OF SPACE Illustrated by MARGARET WATSON</p> <p>Planetarium Illustrated by MARGARET WATSON</p> <p>CHRISTOPHER EDGE THE JAMIE DRAKE EQUATION</p> <p>The Story of SPACE A Hard Book about the Universe</p>	 <p>STEM QUEST: FANTASTIC FORCES, INCREDIBLE MACHINES</p> <p><i>Newton's Rainbow</i> The Revolutionary Experiment of Young Isaac</p> <p>THE BIG SCIENCE IDEAS Illustrated by MARGARET WATSON</p> <p>LEONARDO and the Flying Boy</p>	 <p>Life Cycles Everything you need to know about life</p> <p>E.B. WHITE Charlotte's Web</p> <p>MILL WHIM JENNI BERMON MIGRATION INCREDIBLE ANIMAL JOURNEYS</p> <p>The Rabbit Problem by Emily Gravett (and a lot of rabbits)</p>	 <p>HAIR in FUNNY PLACES Babette Cole</p> <p>I KNOW HOW TO MAKE MY CELLS GROW Illustrated by KATE DINIEN</p> <p><i>If all the world were...</i> Illustrated by David Roberts</p> <p>Nine Months Before a Baby Is Born Illustrated by Miranda Paul and Jason Chin</p>

<p>YEAR 6</p> <p>(2022-2023 only to address gaps in learning and ensure full coverage of curriculum)</p>	<p>Earth and Space</p> <p>Can you observe and identify all the phases in the moon's cycle? (IGC)</p> <p>Is there a pattern between the size of a planet and the time it takes to travel around the Sun? (PS)</p> <p>How have our ideas about the solar system changed over time? (R)</p> <p>How did Mary Sherman Morgan help</p>	<p>Hear the vibrations</p> <p>Sound</p> <p>Do all animals have the same hearing range? (R)</p> <p>How does the volume of a drum change as you move further away from it? (FT)</p> <p>Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school? (PS)</p>	<p>Classification</p> <p>Living things and their habitats</p> <p>What happens to a piece of bread when you leave it on the windowsill for two weeks? (OT)</p> <p>Why are some animals nocturnal? Are all nocturnal animals mammals? (R)</p> <p>How would you make a classification key for trees? (IGC)</p> <p>How can we find out more about</p>	<p>Animal Lifecycles</p> <p>Animals, including humans</p> <p>Is there a relationship between a mammal's size and its gestation period? (PS)</p> <p>What are the differences between the lifecycle of an insect and the life cycle of a mammal? (R)</p> <p>How do brine shrimp change over their lifetime? (OT)</p>	<p>Marvellous Materials</p> <p>Can you group these materials based on whether they are transparent or not? (IGC)</p> <p>How can we make a reusable glue? (PSO) Spencer & Fry</p> <p>How does a nail in salt water change over a week? (OT)</p> <p>How does the temperature of a cup of tea affect how long it takes for a sugar cube to dissolve? (FT)</p>	<p>Healthy Living</p> <p>Animals, including humans</p> <p>How does the length of time we exercise for affect our heart rate? (FT)</p> <p>How can you change the period of a pendulum so it matches a pulse? (PSO) Scientist: Santario</p> <p>Are all drugs bad for us? (R) (difference between medicine and harmful drugs)</p> <p>How much exercise do I do over a week? (OT)</p>
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	America win the space race? (R)		the wildlife in Devon and Cornwall? (PSO) David Attenborough/ Eden Project (Tim Smitt)			
Key equipment and resources to be used	Planet models	Data loggers (sound sensors)	Classification keys SAPS plant classification	First hand observation of animal lifecycle: brine shrimp	Precise measuring equipment	Data loggers and pulse meters



<p>YEAR 6 (2023-2024 onwards)</p> <p>NOT to be used 2022-23</p>	<p>Microorganisms Living things and their habitats</p> <p>What do different types of microorganisms do? Are they always harmful? (R)</p> <p>What happens to a piece of bread when you leave it on the windowsill for two weeks? (OT)</p>	<p>Evolution Evolution and Inheritance</p> <p>Is there a pattern between the size and shape of a bird's beak and the food it will eat? PS</p> <p>Compare the skeletons of apes, humans, and Neanderthals - how are they similar, and how are they different? IGC</p> <p>What happened when Charles Darwin visited</p>	<p>The Human Body Animals, including humans</p> <p>Which organs of the body make up the circulatory system and where are they found? (IGC)</p> <p>How does the length of time we exercise for affect our heart rate? (FT)</p> <p>How can you change the period of a pendulum so it matches a pulse? (PSO)</p>	<p>Wonderful Wildlife Living things and their habitats</p> <p>Which is the most common invertebrate in our forest school area? (CT)</p> <p>How would you make a classification key for UK mammals? (IGC)</p> <p>Do all flowers have the same number of petals? (PS)</p>	<p>Rays of light Light</p> <p>Why do some people need to wear glasses to see clearly? (R)</p> <p>How does my shadow change over the day? (OT)</p> <p>Is there a pattern to how bright it is in school over the day? And, if there is a pattern, is it the same in every classroom? (PS)</p>	<p>Circuits Electricity</p> <p>Does the temperature of a lightbulb go up the longer it is on? (PS)</p> <p>How has our understanding of electricity changed over time? (R)</p> <p>How would you group electrical components and appliances based on what electricity makes them do? (IGC)</p> <p>Which type of fruit makes the best fruity battery? (CT)</p>
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<p>NOT to be used 2022-23</p>	<p>How have our ideas about medicine and disease changed over time? (R)</p>	<p>the Galapagos islands? (R) Is there a pattern between the size of people's hands and the size of their feet? (PS)</p>	<p>Scientist: Santario</p>	<p>Why are some animals nocturnal? Are all nocturnal animals mammals? (R)</p> <p>How can we find out more about the wildlife in Devon and Cornwall? (PSO) Scientists: Jane Goodall & David Attenborough Eden Project (Tim Smitt)</p>	<p>Can you identify all the colours of light that make white light when mixed together? What colours do you get if you mix different colours of light together? (IGC)</p> <p>How can we find out about things we cannot see? (PSO) Scientist: Marie Curie</p>	
<p>Key equipment & resources to be used</p>	<p>Classification keys</p>	<p>Skeleton Fossils</p>	<p>Data loggers (pulse meters) Human torso model</p>	<p>Classification keys Heart dissection (optional)</p>	<p>Data loggers Torches Prisms</p>	<p>Circuits (inc symbols) Data loggers (temperature)</p>

YEAR 6
TEXTS TO
SUPPORT
TEACHING

NOT to be
used 2022-
23

