

Science Progression

	Biology	Chemistry	Physics
<b>Year 1</b>	Plants Animals, including humans	Everyday materials	Seasonal change
<b>Year 2</b>	Living things and their habitats Plants Animals, including humans	Uses of everyday materials	
<b>Year 3</b>	Plants Animals, including humans	Rocks	Light Forces and Magnets
<b>Year 4</b>	Living things and their habitats Animals, including humans	States of matter	Sound Electricity
<b>Year 5</b>	Living things and their habitats Animals, including humans	Properties and changes of materials	Earth and Space Forces
<b>Year 6</b>	Living things and their habitats Animals, including humans Evolution and inheritance		Light Electricity

Science progression

Science Progression		Substantive knowledge	Disciplinary knowledge- Working scientifically							
		Key scientific Knowledge	Scientific Questions and enquiry	Setting up practical enquiries and fair tests	Observing, recording data and measuring data	Identifying, sorting and classifying	Drawing Conclusions	Making predictions	Using Apparatus	Vocabulary
Reception	Let's Explore Build it up	<b>Natural World:</b> Explore the natural world around them, making observations and drawing pictures of animals and plants  Know some similarities between the natural world around them and contrasting environments?  Understanding seasons	<b>What's inside?</b> Who lives here? What makes the best hole?	<b>Science (natural world)</b> Holes and tunnels (NW1) testing which material makes best holes- using equipment to test question- linking to natural world- which material would be best for a mole to tunnel in? Why? Some animals live under the ground Build it up- talk about materials- questions- what material makes the best tower/building etc? Testing	ELG: Exploring world around them What's inside lesson? Nw 12 Feely boxes- children make observations about natural and manmade objects  Who lives here? Observations of animals and plants in school environment NW1 investigating and answering a simple question- pause at different spots around the walk for children to make suggestions to answer the question who lives here? Adult to record in floor book with pictures and jottings.(link to geography)	Enhanced provision- sorting and classifying objects into natural and manmade	Whole class what did happen?	Whole class predictions-what do we think will happen?	Which equipment is best for making holes? Spades Spoons Forks	Observe- look closely What might happen? What did happen? Test Questions
	Once upon a time Sparkle and shine	Understanding and recognising simple changes in state  Making observations and drawings  Sorting and classifying between 2 things shiny or not shiny?	Can we make Cinderella a bubbly bath for the ball?  Is it shiny or not shiny?	(NW3) <b>Royal baths-</b> (important processes and changes in states of matter)	(NW3) <b>Royal baths-</b> (important processes and changes in states of matter Observations about what happens to the water. How can we make bigger bubbles?  (NW3) <b>Magic apples/ pumpkins</b> Observing apples over time changes in state Follow investigation process  <b>How windy?</b> questions-where is the windiest place? (link to three little pigs)7Use streamers and wind socks/windchimes to find the windiest place in	shiny or not shiny- linked to sleeping dragons- children to sort shiny and not shiny materials	Whole class discussion- what did happen?	Whole class prediction- what might happen?	Items to make bubbles- sieve/ colander/hand mixer etc.  Bubble bath Petals etc	Shiny Testing Questions Changes Windy windiest Sorting

					Reception playground. (link to splendid skies for Y1) Record in floor book					
Long Ago Stories and rhymes	<b>NW1- understanding and observing changes in the world around them, drawing pictures of animals and plants</b>  <b>Ordering events</b>  <b>Designing a transportation device for Humpty-investigation-fair test</b>	<b>How do we keep Humpty safe?</b>  <b>How can we see the seasons?</b>	Helping Humpty test how to keep Humpty safe Design a container for a hard boiled egg Observe what happens to non-hardboiled egg from a height Begin to introduce fairness- is it fair to drop one from higher than the other?	Science: (linked to history) NW3 – Yearly changes - observations of school grounds through seasons Compare and order pictures -linked to history ordering events Understand cyclical nature of seasons Stories and Rhymes NW3 Changing state-		<b>What was the best material? Class discussion</b>	<b>Whole class prediction- what might happen when we drop humpty?</b>	<b>Junk modelling material</b> <b>Different fixing materials</b> <b>Eggs</b> <b>Camera for pictures of outside area</b> <b>Season sorting cards</b>	<b>Seasons Changes</b> <b>Testing</b> <b>Fair</b> <b>Material</b>	
Ready Steady Grow Signs of Spring	<b>NW 1 Understanding of the world around them</b>  <b>NW2 comparing environments with other environments</b>  <b>NW3- changes over time-</b>	<b>How do we look after plants?</b>  <b>What do plants need and not need?</b>	<b>Jasper’s Beanstalk Nw3/1</b>  <b>Grow cress so children can see growth quickly and other plants</b>  <b>Make simple observations over time Describe changes What do plants need?</b>  <b>Signs of Spring NW3</b>	<b>Science Nw2 On the farm – visit farm and compare to school grounds- annotate pictures as a class from observations and comparisons</b>  <b>Snack time NW1 observations and drawings over time fruits and fruit plants</b>	<b>Seed sort (Washingpool Farm visit)Sort and classify a range of different seeds by different criteria shape, colour, size plant Can you predict which seed is which? Record children’s thinking about which seed is which and grow some seeds to see if they are right.</b>	<b>What happened?</b>	<b>What do you think the seed is?</b>	<b>Seeds</b> <b>Soils</b>	<b>What do plants need?</b> <b>Soil</b> <b>Seed</b> <b>Growth</b> <b>Plant</b> <b>Roots</b> <b>stem</b>	
Big world Splash	<b>NW 1 Understanding of the world around them</b>  <b>NW2 comparing environments with other environments</b>  <b>NW3- changes over time- changes of state</b>  <b>Melting and freezing</b>	<b>What can help speed up melting?</b>  <b>What happens to ice over time?</b>	<b>Splash</b> Nw3 changes of state  melting and freezing Link to frozen planet- observations over time- how long does ice take to melt? What happens when we add food colouring? How can we release the character from the ice?	Draw and make observations of animals and environments where they live	<b>Wildlife explorers (Nw2)</b> Compare and contrast animals from the UK with animals from other countries across the big wide world Sort and classify animals	<b>What made the ice melt?</b>	<b>What do you think will happen?</b>	<b>Ice- character trapped inside</b> <b>Items to speed up ice melting</b> <b>Food colouring?</b> <b>Salt</b> <b>Stop watch</b> <b>ipad</b>	<b>Ice melting</b> <b>Water speed</b> <b>Predict</b>	
On the beach Move it	<b>NW 1 Understanding of the world around them</b>  <b>NW2 comparing environments with other environments</b>  <b>NW3- changes over time- changes of state</b>  <b>Floating and sinking</b>	<b>What floats?</b>  <b>What sinks?</b>  <b>What</b>	<b>Sea investigations Floating and sinking</b> Experiment with how many pebbles sink different sized boats. Experimenting with floating and sinking	Counting how many pebbles sink a boat  Observations about materials that float and sink.	<b>Recycling</b> Litter pick - protecting our coastline Sort and classify recyclable materials	<b>Was your prediction right?</b>	<b>What might happen to the boat? HOW many do you think it can hold?</b>	<b>Pebble boats</b> <b>A range of natural and man made materials to experiment with</b>  <b>Water tanks</b>	<b>Float</b> <b>Sink</b>  <b>Weight</b> <b>Natural</b> <b>Man made</b>	

				<p>Move it Does it bounce? A range of balls to sort, test and group</p> <p>NW1- shadows – How do we find the shade? Link to the classic summer problem of shade on the playground. Make dens and experiment with best material for making shade.</p>		<p>NW1&amp;3 classifying and observing the difference between man made and natural products will it float?</p>				
<p>Year 1 Ongoing science over the year: Start the year by introducing the class to a special tree- observe and photograph the tree over the year- for splendid skies. Talk about and label together the different parts of the tree.</p>	<p><b>Paws Claws and Whiskers (8 +2 LTI )</b></p> <p>Animals, including humans</p>	<p>-identifying 6 main types of animal -Structure of different animals/<b>plants</b> -identifying carnivores, omnivores and herbivore -identify body parts and senses</p>	<p>What makes us similar and different?</p>	<p><b>Comparing and contrasting pupils in the class – link what body parts</b> <b>To make it fair. Collect info about just one variable. E.g hair colour.</b></p> <p><b>Butterfly hunt- Setting up practical enquiries.</b></p>	<p>Make observations about humans and animals from photographs of animals- similarities and differences</p> <p>Use sorting circles- as pre-cursor to venn</p> <p>Tally chart to support butterfly hunt</p>	<p><b>Identifying and classifying animals based on their characteristics</b></p> <p><b>Comparing and contrasting animals</b></p> <p><b>Sort and classify animals into the different groups</b></p> <p><b>Label different parts of animal (simple)</b></p> <p><b>Label different parts of human</b></p> <p><b>Label different parts of a plant</b></p>	<p>Answer the question: <b>Which butterflies are less likely to be eaten?</b></p>			<p>Similar and different Identify Characteristic Sort</p>
	<p><b>Can you leap like a frog?</b></p>	<p>Features of animals and how they survive <b>Grouping animals</b></p>	<p>Key Can you leap like a frog?-</p>	<p>Set up a jumping experiment- Setting up practical enquiries.</p>	<p>Record measurements from jumping- class teacher to lead recording</p>	<p><b>Identify/ classification of animals and features</b></p>				
	<p><b>What can worms sense?</b></p>	<p>-comparison between human and animal senses?</p>		<p>Simple test with worms – humane- <b>To make it fair- Have same noise, touch, light and scent.</b></p>	<p>Tally chart –count worms</p>			<p>Verbal class prediction based on following questions: <b>Which senses do you think an earth worm has and why?</b></p>		<p>Senses Prediction</p>
	<p><b>Moon Zoom (9)</b> (10 with what keeps us dry?)</p>	<p>Describing/recognising and comparing group properties of a range of materials</p>	<p>What are the properties of materials?</p>		<p>Label objects with adjectives to be called properties Label objects with material and properties.</p>	<p><b>Identify and sort materials by their properties using concrete objects.</b></p>	<p>Use knowledge of properties to decide which material would be best for certain jobs,</p>		<p>metre stick (investigating rockets) Pipettes (how do we stay dry?)</p>	<p><b>Properties Material Liquid/solid Suitable Bendy/not bendy (rigid) Rough/smooth</b></p>

<p><b>Everyday Materials</b></p> <p>(AUTUMN LEAVES RELATED PLANT LESSONS ARE LEAVES THE SAME)</p>	<p>Understand the difference between what an object is and what it is made from (material)</p>	<p>Which materials are best for each job/object? What is the best material for model rocket?</p>	<p>How would we make the rocket test fair? Demonstrate to the children – am I going to stand here?--- why not? Because it isn't fair!</p>	<p>Measuring with a metre stick how far the rockets went</p> <p>Measuring with a metre stick how far the rockets went</p>		<p>Make a conclusion- which materials are best for a model rocket?</p>	<p>Whole class prediction which material would make the best model rocket-</p>		<p>transparent</p>
<p><b>Are all leaves the same (link to Autumn walk) LTI</b></p>	<p>-name and label all of the basic structure of plants including trees</p> <p>Seasonal changes – Observe changes across the four seasons</p>			<p>Use magnifying glasses to observe the similarities of leaves closely</p>	<p><i>Identify and sort a range of leaves from around the school</i> <i>Sort using simple sorting hoops</i></p>				
<p>What keeps us dry? (before rocket investigation)</p>		<p>What keeps us dry?</p>	<p>Design a test as a class to see which material would be best to make a coat? Children design a way to test the materials as a class. Choose the correct equipment and give their reasoning</p> <p>Should we use a huge piece of this material and a tiny piece of this- No "it's not fair."</p>			<p>Write a whole class conclusion about which material is best for a coat and why.</p>		<p>Measuring jug Have range of equipment for measuring and identify the one for liquid</p>	
<p><b>Dinosaur Planet (5)</b></p> <p>Animals, including humans</p>	<p>Compare the structure of different common animals</p> <p>Identifying herbivores, omnivores and carnivores by their teeth</p> <p>Identification of different plants</p>		<p>Testing foods and observing the teeth used</p>	<p>Make observations of fossils – detailed drawings and label</p> <p>Measuring length of different dinosaurs</p>	<p>Identifying and sorting animal or plant fossil</p> <p>Identifying lizards as reptiles</p> <p>Compare and contrast different size of dinosaurs</p> <p>Grouping dinosaurs by diet</p>	<p><b>Class Conclusion which teeth do which job- teeth have evolved for certain diets</b></p>	<p>Making verbal predictions about which teeth belong to which creature</p>	<p>Hand lenses Magnifying glasses Trundle wheels Tape measures</p>	
<p>Why do we have teeth? (3)</p>	<p>Understand about the human body- including teeth</p>		<p>Bite into different foods</p>	<p>Make observations about teeth</p>		<p><b>Class Conclusion which teeth do which job- teeth have evolved for certain diets</b></p>	<p>Making whole class verbal predictions about teeth of dinosaurs</p>		
<p>Why do we have tongue?</p>	<p>Label a diagram of body with key parts and senses</p>	<p>How do our senses work together?</p>	<p>Tasting foods with or without other senses</p>	<p>Make observations about senses- taste</p>	<p>Relate body parts and senses through drawings</p>				
<p><b>Childhood Human Senses (KRP) Currently being written</b></p> <p>Plant seeds to observe</p>									

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	throughout the year									
	What can we remember?	Perform simple tests to answer questions								
	Splendid Skies (observe a tree in the school grounds throughout the year with your class) 7	-Identify the seasonal changes to trees and plants-  Observe changes across the four seasons  Read a scale  Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	How do trees change over the year?  2 Generate questions about the wind- how can we measure? Which direction?	3&4 make a weather measuring instrument- to measure rain/sun/wind	Observe trees- at different times of the year- match pictures to the time of year.  1 observe and compare different types of clothing in seasonal suitcases  3 Collect data about temperature- measure using a thermometer  4Collect data about rainfall Children to read scales record in floor book as class table.	1)classify and sort clothing and weathers  ( May need more lessons Identify and sort the different types or weather and the seasons.)  5) use internet to compare an contrast current weather to previous year or months weather.	1Class conclusion about which suitcase suited which weather  5 Draw conclusions from data collected about which weather is most common in the season they are currently in.	2Ask questions about the wind	Measuring devices -beaker -ruler Thermometer	Temperature Guage Measure Scale Celsius Mm Weather Season Precipitation Summer Winter Spring Autumn
	How wild is the wind?									
	How do leaves change? _ link to plants knowledge				Label and explain the parts of plant (stem, root, bulb, trunk, stem)					
	Bright Lights Big City (1) +plants and seasons	-Identify seasonal change  Identification of flowers, garden plants, deciduous and evergreen  Identification of flowers, garden plants, deciduous and evergreen  Identify basic structure of common flowering plants including trees	Which clothes are best for each weather?  Investigate: Are there trees and plants in the London?		Make observations about clothes and the weather linked to trip to London in winter or summer- what would be in your suitcase?  Make observations from google map view of london- where is the woodland in London? Where are the plants? Use the woodland trust website to investigate green spaces in London  Research (Give simple information) a type of tree/flowering plant that lives in Dorset and London- different groups= different trees. Present and share with the class. Explain whether they are deciduous or evergreen	Classify and sort trees by type using simple sorting hoops (photo for floorbook)	Decide which clothing would be best based on the weather/season			Deciduous evergreen
Year 2 (5-6 lessons)	Muck Mess and Mixtures (6 including the LTIs)	<b>Different materials can be used for different objects</b> <b>Some materials are better suited than others for different jobs.</b>	What equipment can we use to measure liquid?  Which materials make the best bubbles?		Compare the size of different receptacles for liquid.			Lesson one-Stem sentence in book with some given: I predict that _____ will hold the most water because...	Use measuring cylinders and jugs to measure in mm Funnels, spoons, cups  Measuring spoons Measuring jugs Cups	Solid liquid Twist bend stretch squash Millilitres Kilograms

	<p><b>Use simple equipment for measuring liquid and solids accurately</b></p> <p>Some solids pour.</p>				<p><i>Identify and classify solids and liquids before measuring (noting that some solids can be poured)</i></p>			Scales	
	<p><b>Identify and compare the suitability of different materials for different jobs</b></p>		<p>Make bubble blowers from a selection of different materials Talk about what will need to stay the same and what will need to change in our bubble experiment to keep the test fair. IS it fair? Discussion.</p>	<p>Observation of bubbles- which are most successful?</p>					
	<p><b>Some solids can be changed by squashing, bending twisting and stretching</b></p>	<p>What are the properties of pizza dough?</p>	<p>Investigate the properties of pizza dough- using words stretch, bend, twist, squash and stretch</p>			<p>Conclusion stem sentence for pizza dough Pizza dough can be _____ _____ _____ _____ These are the properties of pizza dough.</p>			
<p>Which stuff is stickier?</p>	<p>Identify and compare the suitability of different materials for different jobs</p> <p>Perform simple tests</p>	<p>Which is stickier?</p>	<p>Is it fair? Show using different amounts of sticky substance- Is it fair?</p>			<p>Which was the best glue? The _____ was the best because _____</p>		<p>Glue spreaders Paper Range of sticky substance</p>	
<p>What shape is a bubble?</p>	<p><b>Use observations to answer simple questions</b></p> <p><b>Record data to answer questions?</b></p>	<p>What shape is a bubble?</p>		<p><b>Scientist notebook-jott down the shapes seen as the bubbles are blown. What shapes?</b></p>		<p>Stem sentence- I predict that the shape of my bubbles will be _____ because _____.</p>			
<p>Street Detectives (3)</p>	<p><b>Identify that most living things have a habitat which is suitable.</b></p> <p><b>Different habitats provide for the basic needs of different animals and plants.</b></p> <p>Identify and compare the suitability of different materials for different jobs</p>	<p>Which plants grow well in which habitats? (Floor book)</p>		<p>Observe plants and where they grow- record in drawings and HPA on plans of school. <b>Use secondary source to identify the plants.</b> (Lo individual book) <b>Use trundle wheels for 3 closest children to school- ask parents to time journeys on phone- use google maps to measure distances of journeys.</b> <b>Show in a bar chart the different length of journeys to school.</b></p>	<p><b>Two categories of natural and manmade Children to come up with their own ideas from things they see to sort into two categories –record in pictures or words</b></p> <p><b>(Floorbook)</b></p>				<p>Natural Manmade</p>
<p><b>Where do worms like to live?</b></p>	<p>Carry out simple tests</p>		<p>Set up practical experiment- discuss which equipment might be</p>	<p>Make written observations about the worms and their preferred habitat.</p>		<p>Stem sentence for concluding: The worms preferred the</p>			

			needed before providing equipment. Set up independent investigations into worms and their chosen habitat.	Tally chart to record the amount of worms		_____ because _____			
Magnificent Monarchs (Science covered through the LTI investigations below)									
Can you make a paper bridge? (2)	Materials suited for purpose Bending/twisting, Folding, rollings	Which paper makes the best bridge?	Is it fair? Show huge piece of paper and tiny piece. Discuss as class.	Measure with weights-g		Draw a conclusion- the paper bridge is strongest when.... because...			Grams Bending Material Twisting Strengthening Securing Rigid
Why should I exercise? (2) +++This is key as not covered elsewhere- needs repeating in PE+++++	Describe the importance of exercise for humans						Predictions about which exercise will cause the greatest rise in heart rate- I think _____ will cause---- because		
Wriggle and Crawl (12) <b>Animals, including humans</b>  <b>Living things and their habitats</b>	Living things- knowing that minibeasts are living things that are alive like animals.  -Identify mini-beasts in the UK -most animals live in a habitat -find out about basic needs of animals -Comparing and contrasting two habitats -create a simple food chain significance of arrows – identify and name different sorts of food -life cycle of honeybee/ caterpillar –understand that animals have offspring -camouflage and how it helps insects avoid being eaten -offspring can be different in appearance to their parents	What mini beasts/insects are in our school environment?  <b>Ask and answer simple questions about the world around them – different types of questions</b>	Perform a class Bug hunt  Design a simple test to answer a question about habitats  <b>Provoking questions- why are there such differences between life cycles?</b>	<b>Simple Observations through labelling</b>  <b>Compare and life cycle of butterfly and honeybee</b>	<i>Classifying and identifying the various mini beasts from the bug hunt</i>  <i>Classification by appearance and camouflage</i>  <i>Matching animals to their parents</i>  <b>Tally chart pictograms to record bug hunt finds/flying beast count</b> <b>Simple classification key with 2 animals</b>  <b>Complete a pre-made table introduce how to fill in a table</b>	Draw verbal conclusions from habitat experiment to answer scientific questions posed at the start.	Stem sentence modelled as class and written books Write a prediction in books about whether the butterflies prefer fruit or veg because ...	Nets , pooters, spoons, magnifying pots, hand lens Digital microscopes	Habitat Micro-habitat Compare and contrast Classification/sort



	Where do snails live?  Do snails have noses and favourite colours?	-Find out about the basic needs of animals -Basic needs of animals -Senses		Is it fair? Class discussion about how to make it fair test	<b>Observations</b> <b>Recording in a table- table given with headings –ticks and crosses</b>		Conclusion- written conclusion stem sentence - ___ snails travelled furthest because... We have found out that ... We think this because...	Verbal prediction discussion- which do we think as a class the snails will prefer		
Coastline (3)	Sinking and floating – suitability of materials <b>(enhanced provision- cornerstones)</b>	Which materials make best boats?	Is it fair to have different amounts of water?	Grams –understand weight measured in grams  Photographs to record	<i>Data collected in simple table- materials- float sink- pupils to tick and cross</i> Classify which materials float and which sink Physically sort in plenary	Verbal conclusion- the --- would make the best boat because	Written prediction: I predict that... will be the best boat because	Verbal conclusion- the --- would make the best boat because	Grams Float Sink Rigid Flexible  Needs Survival  Erosion Degrade I	
	<b>Human survival –the basic needs of humans to survive (extra lesson)</b>	What do humans need to survive?		Observations- what would Robinson Crusoe need to survive?						
	<b>understand living and dead and the differences between</b>	Will it erode? (use will it degrade LTI)	Is it fair? Choose the same amount of sea water and the same size of material	Observe what happens to materials in sea water.	<i>Simple table with ticks and crosses to yes it does degrade/erode or no</i>	Verbal conclusion as a class	Written prediction- I predict that ... because			Verbal conclusion as a class
Scented Garden (11)  Weekly observations needed to	<b>Living things- knowing that plants are living things that are alive like animals.</b>	How do we grow plants?	(repeat experiment from Reception with cress growing in different locations)	Observe, draw and measure the length of beans in a bean diary over time.	Sort and classify living and non-living things by their characteristics	I conclude that the ___ grew the best because...			Growth Healthy Germination Centimetre	

	check on plants growing over time and make observations	<p><b>Know that plants need light, water and a suitable temperature to grow and stay healthy</b>  <b>Not always light</b></p> <p><b>Observe and describe how seeds and bulbs grow into mature plants</b></p> <p><b>Grow plants from different sources</b></p>			Choose the equipment from a selection for growing a pizza garden. Include red herrings- things that don't grow in UK discuss as class.	<i>Data collected over time in drawings and measurements of length-independent recording and choice of layout within diary</i>		Prediction- like a check in task – I predict that the pizza garden will need.... to grow well.		
			Is it fair? What will we need to do to ensure all of the scraps have best chance of growing.  Talk about control- set one up without water/light/warmth to see difference	Observations of the scraps over time to record what happens- sketches and drawings- photographs						
		Identify the main parts of a plant and their jobs				<i>Draw and label the main parts of a plant roots, stem, flower</i>				
Year 3 Plants	Through the ages	<p><b>Look at Plants NC through LTI</b></p> <p><b>Investigate Transportation of water (Year 2 unit)</b></p>	How is water transported within plants?	Completing an investigation into water transportation Carnations and/or Celery Class discussion of how to make test fair				Make a prediction using I already know that ...	Use of carnations to see transportation of water and diary (see year 2 scented garden lesson)	

		<b>The function of flowering plants</b>			Observations and sketches of flowering plants and their functions		Written conclusion - explain how we know that the stem transports water.			
	Explore the part that flowers play in the life cycle – seed dispersal	<b>Do plants have legs? LTI</b>	Why and how do seeds need to disperse?		Collect seeds, identify what they are from and test how the seeds are dispersed			Plants travel and grow in different places because their seeds disperse.	Seed identification chart Hand lens	Seed dispersal through wind, water and animal
	<b>Identify the functions of different parts of flowering plants</b>	<b>What are flowers for? LTI</b>			Dissect a plant – discuss parts and their role- roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction Draw labelled diagram				Different plants to dissect Tweezers Scissors Hand lens	Root Stem Nutrition Support reproduction
	Urban Pioneers (2)  <b>Find patterns in the way shadows change</b>	<b>Dark= absence of light Light helps us to see</b>			Make observations about Bridport in the evening- talk about the xmas lights and street lighting.				Torches Measurements in CM (rulers/ metre sticks, tape measures) Light sensitive paper	Source Reflector Shadow Solid
		<b>Light is reflected from surfaces</b>				Have a range of images of light from reflections and from a source for the children to sort by their own criteria through discussion- Explain the difference between a reflector and source of light and have the children re-classify their ideas.		Discuss what will happen when light sources and reflectors are placed in dark box. Will there be light?		

		<p><b>Recognise that shadows are formed when light from source is blocked by solid object</b></p> <p><b>The length of a shadow is affected by the distance from a source of light.</b></p>	<p>LTI? What affects the length of a shadow?</p> <p>LTI? Sun and shadows</p>	<p>Fair testing: How will we make our shadow investigation a fair test? What will stay the same? What will change?</p> <p>What will we change and what will we keep the same?</p>	<p>Make observations about what impacts the length of shadow- using shadow puppets made. Note taking observations.</p>	<p>Collect data about the size and direction of shadows throughout a school day. Record measurements in table Bar chart?</p>	<p>Write and draw diagrams to show that distance from source impacted the length of shadow. The shadow was longer when... The shadow was shorter when...</p>			
		<p><b>Sunlight can be dangerous- how to protect our eyes.</b></p>	<p>Which sunglasses are most effective and why?</p> <p>Generate questions based on the knowledge of light.</p>	<p>What will we have to keep the same and change?</p>	<p>Record with photographs - Test sensitivity to light of different sunglasses- Which are best and why?</p> <p>Carry out an investigation to test one of the questions in the class.</p>	<p>Annotate photographs as a way of recording experiment results.</p> <p>Fill in a table as a class to record the data from the experiment.</p>				
	<p>Fantastic Forces (12)</p>	<p>-Some forces need contact between two objects and others do not</p> <p>-Identify the importance of forces and identify some in everyday life</p>	<p>(1)Engage Event-playground visit- Generate questions based on forces at the park.</p> <p>What keeps us on the roundabout? How do we slide?</p>							<p>Attract Repel Magnetic Poles</p> <p>Equipment</p>
					<p>(2)Grouping playground activities by whether they</p>					

		<p>-Notice and compare how objects move on different surfaces</p> <p>Observe how magnets attract and repel each other</p> <p>-describe magnets as having two poles</p> <p>Predict whether magnets will repel or attract depending on their position/poles</p>	<p>What attracts to a magnet?</p>	<p>(3) Experiment to compare how things move of different surfaces. Discuss what needs to stay the same and what needs to change to make the test fair?</p> <p>(4) Experiment to compare and contrast materials based on whether they are magnetic or non-magnetic. Provided table.(link to Y2 materials work)/ Another lesson in ICT suite might be needed here to ensure that children research and add to their list of magnetic and non-magnetic metals/materials.</p> <p>(5) Design an experiment to demonstrate the strength of different magnets. Equipment shown discussion around fair test- what will we keep the same in this experiment? Model how to use the force meter and use these paper clips</p>	<p>operate with contact or non-contact forces. (Introduce gravity/friction within discussion)</p> <p>5) provide table with headings- drawing of magnet/ force of magnet (n) to record the readings from newton meter</p>		<p>(4) A conclusion paragraph with more the results of our experiment showed... which demonstrates that...</p>	<p>(3) Children record a simple written prediction about which ramp material will make the car go furthest after class discussion. Shared write maybe needed.</p>	<p>Ramp Cars Different materials</p> <p>5 Introduce the newton/ forcemeter Powerpoint page 2 <a href="#">LKS2 Science Y3 4 A Autumn 1 Magnetic fun and games Session2 Resource2.pptx (live.com)</a></p> <p>Range of different magnets Bar magnets Iron filings</p>	
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				 <p>6) identify the north and south poles of a bar magnet using iron filings. Draw and label the poles/take photographs and annotate Compare patterns of different magnets</p>			<p>7) children conclude with a poster/rhyme/poem/ rap to explain that like poles repel and unlike attract-explain scientifically and link to poles of earth.</p>		<p>7) attract and repel: children to have a range of magnets to experiment with to see which will repel and attract</p>	<p>8) Show a range of images and make class predictions about whether they repel or attract. Children to then test. make predictions about which will repel and attract-</p>
				<p>(9/10) Express event-children to design and make a range of toys and games using the properties of magnets for the parents to come in and play with their children. Encourage them to design and evaluate their products to link to DT. They should use the ideas of repelling and attracting somewhere in their design.</p>						

	<p>Predator (14)</p> <p><b>Animals including humans</b></p>	<p><b>-Animals need nutrition from their food</b></p> <p><b>-Food chains</b></p> <p><b>Vocabulary of consumers</b></p> <p>Revision of herbivore, omnivore and carnivore</p> <p><b>Comparison of human and animal diet</b></p> <p>Five food groups</p> <p><b>Why do we have a skeleton?</b></p>	<p>Generate and ask relevant questions about predators</p> <p>What do owls eat?</p>	<p><b>Choose the correct equipment to dissect owl pellets</b></p>	<p>Observations written in order about how animals feed and about carnivorous plants and how they work (sentence sign posts- first, next then Falconry)</p> <p>Measure amounts of liquid accurately using a beaker (ml) to create a fair test</p>	<p>Classification of animals into groups by what they eat – herbivore/carnivore/ omnivore</p> <p><b>Create a whole class food chain and include producer, primary consumer, secondary consumer, tertiary consumer</b></p> <p><b>Venn diagram to compare and contrast animal and human diets</b></p> <p><b>Presentation to the class of the key facts about a favourite predator and cuckoo from homework</b></p>	<p>Recap what a conclusion is</p> <p><b>Conclusion written with stem sentence</b></p> <p><b>From our investigation, we found out...</b></p>	<p>Using scientific knowledge to make a class prediction about bird numbers and food.</p>	<p>Beakers</p> <p>pipettes</p> <p>Sieve</p> <p>Magnifying glasses</p> <p>Tongs/tweezers</p>	<p><b>Producer, primary consumer, secondary consumer, tertiary consumer</b></p> <p><b>Classification- introduce</b></p> <p><b>Endo skeleton and exo skeleton</b></p> <p>Vertebrae and invertebrae</p> <p>Parasite</p>
<p>LTI: What are our joints for? (link to PE)</p>			<p>Fair tests- <b>different balls/ or straight leg or bent knee to kick or the same with arm.</b></p> <p>What do you keep the same ball, what do you change joint angle.</p>	<p>Practical enquiry about how joints actually move. Using plastic straws and string.</p>						
	<p><b>Rocks Relics and Rumbles / link to geography lessons.</b></p> <p>Dorset Geologists' association group – Identify</p>	<p>Identify and group different types of rock- sedimentary, metamorphic, igneous</p> <p>Recognise the appearance and properties of rocks</p>	<p>Which rocks for which jobs?</p> <p>What are the properties of rocks?</p>	<p>Practical enquiry into how rocks and fossils are formed using edible rock investigation (STEM resources)</p>	<p>Observing- children to use magnifying glasses and different ways of testing the rocks to check the properties. Note taking their ideas in their geologist notebook. (sheet)</p> <p>Observe how rocks are formed through edible rock lesson on the STEM site.</p>	<p><i>Children to devise own categories of sorting rocks.</i></p> <p><i>Children to identify and sort rocks by their type.</i></p>		<p>Make predictions about the uses of certain rocks- which would be good for worktops? Which for rooves?</p>	<p>Pipettes</p> <p>Beakers</p> <p>Spades</p> <p>Microscopes</p> <p>Magnifying glasses</p> <p>Access to rock samples</p>	<p>Metamorphic</p> <p>Sedimentary</p> <p>Igneous</p> <p>Fossil</p> <p>Jurassic</p> <p>Soil</p> <p>Particles</p>

	<p>your favourite rock event.</p> <p><a href="#">Geology Rocks - Fun Kids - the UK's children's radio station (funkidslive.com)</a></p>	<p>Describe in simple terms how fossils are formed (LTI)</p> <p>Recognise that soils are made from organic matter</p>		<p>Soil testing kit – find out how soil is made what is soil made from? BBC bitesize Investigation into the different types of soil in school</p>	<p>(see MLT curriculum downloads)</p> <p>sorting/branching key to identify soil</p>	<p>Use a pre-populated table with headings for children to show what they have found out</p>	<p>Write a conclusion which summarises what the experiment found out. To conclude: We have found out that ... A possible explanation for this is...</p>			
	<p>How are fossils formed?</p>	<p>Describe in simple terms how fossils are formed (LTI)</p>		<p>Reflection about whether the test was fair and accurate afterwards- what impacted the experiment?</p>	<p>Make observations in note form about what is happening to the dinosaur between the bread.</p>	<p><i>Draw diagrams with labels to explain the process-link to the process of how fossils are formed.</i></p>		<p>What will happen to the jelly sweets in the bread?</p>		
	<p>Emperors and Empires (Did Romans use toilet roll? LTI)</p>	<p>Carry out an investigation- using scientific enquiry skills.</p>		<p>How to make a fair test- discussion?</p> <p>Reflection- was it fair?</p>		<p><i>Classify and order from most to least absorbent. (6 samples)</i></p> <p><i>Table recording their results- headings given but observations written.</i></p>	<p>Conclusion written as a class- explaining the findings</p>	<p>Written prediction after discussion.</p>		<p>Absorbency Durability sewer</p>
<p>Year 4 Sound</p> <p><b>(Identify common appliances/instruments which run on electricity)</b></p>	<p>Playlist (2)</p>	<p>Investigate the volume of a range of sounds, measuring the decibels with a sound meter.</p>	<p>What is sound? Is everything the same volume?</p>			<p>Compare and find patterns in volumes</p> <p>Record decibel levels of each sound and plot on a graph, table or chart.</p>			<ul style="list-style-type: none"> <li>• Range of sounds</li> <li>• Sound meters</li> <li>• Smartphones or tablets with decibel measuring apps</li> <li>• Data loggers</li> <li>• Sound sensors</li> </ul>	<p>Volume Decibel Intensity of sound</p>



		Identify how sounds are made through vibration	How do we create sound? Does it change with the amount of vibration?	Observe visible vibrations using different techniques ie rice grains on a drum skin					<ul style="list-style-type: none"> <li>Elastic bands</li> <li>Different instruments</li> <li>Videos of sounds vibrating through an object</li> </ul>	Vibration Sound waves
		Recognise that vibrations from sounds travel through a medium to the ear	How do we hear sound?		Draw labelled diagrams to explain how the different parts of the ear work. Talk about how the sound travels through the different parts				<ul style="list-style-type: none"> <li>Ear diagrams</li> </ul>	Ear canal, pinna, cochlea, outer ear and ossicles
		Find patterns between the pitch of a sound and the strength of the vibrations that produced it	Will all elastic bands create the same pitch? Amount of vibration	Set up an experiment with elastic bands of different lengths and thicknesses to explore pitch Fair test			Refer to predictions in our conclusions	Make predictions about the elastic bands using facts you already know ie I know that ...	<ul style="list-style-type: none"> <li>Elastic bands</li> </ul>	Pitch High Low Patterns
	<b>Combine this cornerstones lesson with LTI How far can sound travel?</b>	Recognise that sounds get fainter as the distance from the sound source increases	Is there a pattern between the distance and volume of a sound?	Reflection about whether the test was fair and accurate afterwards- what impacted the experiment?	Gather data about patterns between the volume of a sound and the distance walked. Do all class members have the same hearing ability?				<ul style="list-style-type: none"> <li>Metre sticks etc</li> </ul>	Volume Sound source Low and high pitch Ear vibration
	LTI How can we change a sound?		How can we change a sound?	Children carry out five tests to observe what changes the pitch of a sound In the planning include how the test will be fair when they write predictions			When writing conclusions children to answer for themselves how we change sound		<ul style="list-style-type: none"> <li>Straws</li> <li>Elastic bands</li> <li>Ruler</li> <li>balloons</li> </ul>	pattern pitch sound vibration
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	Misty Mountain Winding River (6)	Understand difference between solid, liquid and gas Identify evaporation and condensation in water cycle and impact on rate of evaporation (LTI- Where does water go?)			Independently Follow written instructions to set up fair/accurate test to show water cycle.	<i>Identify, sort and classify solid, liquids and gases- generating own examples</i>	Modelled by teacher but then Conclusion to be written about what their mini water cycle demonstrated and how by pupils. Pupils to relate their model to the real-life cycle.		Thermometer Beaker Millilitres Measure water left over time- check at various points	Solid, liquid <b>gas</b> Evaporation rate Impact/affect free <b>Reversible</b> <b>Irreversible</b> (mentioned by teacher but used by pupils in year 5)  Adaptation

			Can we speed up evaporation?	Design a fair test to test evaporation rates –use puddle idea and children to choose where t3 flannels in different placesto show evaporation.		<i>Line graph to show evaporation over time (make up data if necessary or use some collected) model creating line graph</i>		Written prediction about what will impact evaporation of puddles or water in different areas of class.		
		Changes in state when heated or cooled  (living things- Environments can change and this can pose dangers to living things.)	How can the state of matter be changed?  How and why do arctic hares have to adapt?		Children to make observations and take temperatures of water at different states compare to chocolate- make crispy cakes to see the process	<i>Children to record/present their observations in booklet/ leaflet or comic strip form including measurement of temperature Choose another method for presenting findings based on chocolate.  Children to present their findings about adaptation for environment changes.</i>				
	Where does water go? SEE ABOVE									
	Why does it flood?	Environments can change and pose a danger to living things	Why does it flood?  What causes flooding?	Experiment to see what causes flooding.			Conclusion to be written about what causes flooding comparison of experiment with real life		Timer- stopwatch measuring cylinder	Volume Capacity

<p>Could electricity be taught alongside sound in Playlist?</p>	<p><u>Gods and Mortals (Electricity discrete science) (8 lessons)</u></p>	<p><b>Identify appliances that run on electricity</b></p>			<p><a href="#">STEM</a> Video for starting discussion on appliances- notetaking- data collection Drama-electrons in a circuit (STEM)</p>	<p><i>Sort and classify electrical and non-electrical appliances using blank Carroll diagram –electric and battery</i></p>			<p>Crocodile clips Batteries Buzzers Propeller Light bulbs Switches</p>	<p>Component Circuit Series Electrons</p>
		<p><b>Predict when a light will work as part of series circuit</b></p>	<p>will the lamp light?</p>	<p>Have a range of circuit drawings for children to make</p>				<p>Predict which circuits will be successful</p>		
	<p>LTI –can you make a circuit from play dough?  How do plugs work?</p>	<p>LTI –can you make a circuit from play dough?  <b>sort and classify common conductors and insulators/ metals</b></p>			<p>Children design table to record which materials worked best</p>					

		<p><b>Recognise the role of an open and closed switch in a circuit</b></p>	<p>What material makes the best switch</p>	<p>Repeat the learning about materials Design a test to see which material is a conductor and would make a successful switch. What will we change and what will keep the same to make it fair? Children to list same and different</p>				<p>because I know that.... Using understanding of materials children to make a prediction about which switch material will be the best.</p>		
			<p>What parts of a circuit can you use in a moving picture?</p>	<p>Children to design and make a moving clown picture using a circuit diagram to design - it must include bulb, switch and one other moving part (STEM LESSON in curriculum sharepoint)</p>	<p>Observe what happens to brightness of bulb as more is added to circuit</p>		<p>Write a conclusion based on what happened when more components are added to the circuits</p>			
<p>Animals Including Humans</p>	<p>Burps Bottoms and Bile (11)</p>	<p>Teeth and their function 4 types of teeth Pulp, enamel and blood vessels within teeth Function of basic parts the digestive system -</p>	<p><b>What Food would create the best dental impression?</b></p> <p><b>How many stomachs does a cow have?</b></p>	<p><b>Variables ticked by children to show how test will be fair (egg shell)</b></p> <p>Select and choose correct equipment for scientific tests</p> <p>Groups make a working model of the digestive system with tights</p>	<p><b>To make detailed notes and observations independently from a talk or discussion assessing which are the key facts about teeth</b></p> <p><b>Draw a detailed cross section of a tooth - labelling it with scientific vocabulary</b></p>	<p><i>Which chart/graph is best to show the information?</i> <i>Create individual and independent tally charts for milk and adult teeth</i></p> <p><i>Homework: gather information about digestive systems</i> <i>Collect and present information to the class</i></p> <p><i>Individual tables to be completed showing comparative</i></p>	<p><b>Conclusion including a scientific explanation (stem sentence given)</b></p> <p><b>Draw conclusions from looking at organs/pictures /photographs of digestive system</b></p>	<p><b>Make a prediction using previous scientific understanding</b></p> <p>Make predictions based on observations using previous learning and images (teeth and their job)</p> <p>Make scientific predictions in partners using because and scientific</p>	<p>Dental mirrors Beakers</p>	<p>Incisor, canine, molar, pre-molar</p>

						<b>information about the animals digestive systems.</b>		vocabulary about organs and what their function could be		
	LTI- what is spit for?	-								
	LTI: how do smells get up your nose?	-								
	LTI: How does toothpaste protect your teeth?	-								
Covered through Love to investigate units below	Traders and Raiders (6)									
Link to mathematics and measuring accurately	LTI: How far can an arrow travel?	Independent application of skills to science investigation	What will affect the distance the arrow will travel?	Design and make arrows and bows (link to forest schools)	Come up with a way of measuring how far the bow string has been pulled back.  Measure accurately using the right equipment how far the arrow travels.		Write a conclusion which summarises what impacts the distance travelled by the arrow.			
Link to states of matter learning	LTI: How did the Vikings dye their clothes?	Independent application of skills to science investigation	Generate questions to question and investigate how Vikings dyed their clothing	Design and investigation to test how Vikings dyed their clothes.			Conclude which material was the best and why?	Predict which natural materials would be best for dyeing clothes	Beakers Natural materials	Absorb Dissolve Fabric
<b>Engage event to Sealife centre/Lyme Regis aquarium</b>	Blue Abyss (7)	-Understand that living things can be grouped and classified in different ways.  -Explore and use classification keys  Identify a range of living things in the local area and wider area	2&3 How can we classify sea creatures?  4 Can sea shrimps identify light and dark?	4As a class, design a question and investigation around the sea shrimps. What variables will be kept the same? (teacher uses variables)	4Set up an observation diary for a week to observe the sea shrimp  <a href="#">  STEM</a> use the STEM resource to explore the creatures in the pond- for	1 classification of animals using blank carroll and venn diagrams- children add own ideas 2Children to create their own classification key (could link to animals in our pond areaSTEM resource )	4 write an independent conclusion of findings surrounding sea shrimps.		4 Digital microscopes	Classification categories invertebrates and vertebrates  producer, primary, secondary, tertiary consumer

		Recognise that environments can change and that this can sometimes pose dangers to living things.			the local environment identification.	5. Food chains- revisit food chains- create independent food chains labelled with producer, primary, secondary, tertiary consumer Introduce food web as whole class  6)WWF, surfers against sewage resources- use a range of resources to explore the impact of changes on the environment-  7 Design a perfect environment for sea creatures to live in.  EXPRESS: Present to parents on environmental impact to sea.				
Pharaohs Forces	How do Levers help us? LTI	Recognise that levers allow a smaller force to have an effect	how does a lever work?	Using a hinged door investigate how levers work	Measure	gather data as a class				
	What do Pulleys do? LTI	A pulley is a mechanism that reduces the force needed to lift and move objects								Force Friction Mechanism pulley
	Why are zip wires so fast? LTI	Friction is a force that acts in the opposite direction to movement when two surfaces slide against each other	Which material is best for a zip wire? Which will create the most/ least friction?	Set up an experiment with zip wires made of different materials and test how long it takes the carriage to travel  Introduce the word variables through changing vocabulary what variables will stay the same and which variables will change	measure	gather data in groups	Conclusion is discussed and children write independently	Design own table and record	Stop watch	Force Friction Pulley Rough Slide Slower Smooth Speed zip- wire

	<p><b>Stargazers (11)</b></p>	<p>The moon is a reflector of light and not a source The sun is a source</p> <p>Describe the movement of the Earth and other planets</p> <p>Describe the movement of the moon relative to Earth</p> <p>Describe the sun, earth and moon as approximately spherical bodies</p> <p>Explain night and day with Earth's rotation</p> <p><b>The weight (W) of a body is the gravitational force exerted on it by Earth.</b></p>	<p>1) Generate questions about space based on research.</p> <p>3) Use a globe and torch to demonstrate day and night</p> <p>4) address misconceptions about the moon and generate a range of questions about the moon. Sort questions into those that can be tested and those that need researching.</p> <p>6) Secondary sources surrounding gravity on earth and on the moon Hypothesise if weight affects the speed at which objects, such as an orange or a grape, drop,</p>	<p>5)LTI: How does the moon move? set up an investigation to observe the phases of the moon/daytime moon viewing (use the STEM resources)</p> <p>6) investigation into the weight of an object and the impact on speed of falling to earth</p> <p>7) test insulation- beaker of water- space suit- how to make the test fair? Variables to keep the same and variables to change?</p>	<p>1) Research and gather information based on Space- present in own way</p> <p>2) Use different sized spherical objects to represent the size of planets in the solar system. Test the hypothesis: Do planets get smaller the further they are away from the sun?</p> <p>3)diagram in books to record how day and night formed- explanation text?</p>		<p>7) independent line graphs to show falling temperature of water</p>	<p>6) Write an independent prediction to the question – does weight affect the speed of the drop?</p>	<p>Spherical objects- Some fruit needed</p> <p>Newton meters</p>	<p>Spherical Solar system Jovian Terrestrial Gravity Gravitational pull</p> <ul style="list-style-type: none"> <li>• axis</li> <li>• day</li> <li>• Earth</li> <li>• lunar</li> <li>• month</li> <li>• Moon</li> <li>• orbit</li> <li>• rotation</li> <li>• Sun</li> <li>• year</li> </ul>
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						8) Research and find out about a planet- present to parents express event.				
	<b>LTI : How does the moon move?</b>	Describe the movements of the moon	How does the moon move?	Model in groups how the moon, earth and sun relate to each other. Have a range of resources for children to use to demonstrate		<i>Record with photographs for the floorbook</i>			Ipad. Range of spherical objects	
	<b>LTI Can we track the sun?</b>	Describe the earth's rotation to explain the sun's apparent movement across the sky			Observations over time investigation of the sun and how it appears to move throughout the day.	<i>Record information in jottings around the light sensitive paper.</i>			Protractor to record measurements.	
	1066 (4)	Analyse and present data in charts and tables independently			Collect data and produce charts and tables to display data.					
	Forces LTI catapult	Independent application: Impact of weight on distance travelled	Does the weight of an object affect the distance travelled?	Children to independently set up an investigation to test the question using their catapults			Independent conclusion	Independent prediction		
	Tudors (3)  LTI do we slow down as we get older? (NEW unit: Animals including humans will cover the changes to humans)	Understand the life cycle of a human being  Describe the changes as humans develop to old age	Test if reaction time is affected by age- dropping the same item from same height		<a href="https://www.cornerstoneseducation.co.uk">Human Reproduction and Ageing   Curriculum Maestro (cornerstoneseducation.co.uk)</a>	<i>Create a timeline to indicate the growth of humans and the data connected with this.</i>  <i>Record results using a scattergraph</i>				
Animals, including humans	Sow Grow Farm (6)	Compare and describe the life cycles of mammals, amphibians, insects and birds  Describe the life process of reproduction in some plants and animals	2 Create a food web for allotment habitat – label producers, consumers arrows as a transfer of energy	Beginning of topic- grow a range of seeds to observe over time- record in floorbook- various stages in life cycle of a plant	1 Engage: Visit an allotment to make observations of the life that grows there.  Ongoing: Observations over time of the meal worms- record as a class in floor book.  5) collection and observation of seeds-	<i>3 Create independent life cycles on amphibians, mammals, birds and insects- different groups work on each. Floorbook an example of all.</i>			Seeds Flower pots Meal worms	Lifecycle Adolescent Stigma stamen, filament, anther, pollen Seed dispersal



				4 Dissection of a flower- drawing and labelling the parts.	identification of seed dispersal method. - explanation in books of different methods of dispersal					
<b>Properties and changes of materials (8)</b>	Islands  Use LTI Can you clean dirty water? 1st	<b>Compare and group materials on basis of their properties</b>  <b>Do all solids dissolve?</b>				<i>&lt;Remind children about materials and properties- linked to their work in previous year groups&gt; Children to test the properties of different materials independently – using magnets, light, electricity etc.</i>			Filter paper Sieve Magnets Water beads/jelly	Solution Separation Filter Evaporate Solubility Soluble Insoluble Variables Irreversible
		<b>Know that some materials will dissolve in a liquid to form a solution</b>	What makes a solution?	Select and identify materials that will make a solution and those that won't - include explanation of how they will keep test fair. What variables will remain the same?	Temperature of water		Written predictions about which of the chosen materials will dissolve to make solution and those that won't- with reasons based on scientific understanding.			
		<b>Separation of solutions</b>	Can you separate solids and liquids?							
		<b>Planning and carrying out own scientific enquiry</b>	Can you clean dirty water?	Independently designing and problem solving Separate a range of materials using scientific understanding and skills			Children to write their own explanation concluding what they did and why to separate the mixture.			
		Reversible changes		Challenge to return substances from solutions.	Children to design own table to reflect findings.					

		<p><b>Planning an investigation independently to test a question</b></p>	<p>What changes are reversible?</p>	<p><b>Plan an investigation to test the impact of water on dehydrated jelly marbles. Introduce the term variables and ask the children which variables need to be kept the same. Encourage one group to test the impact of water on the hydrated jelly Could one group test different liquids to see the impact?</b></p>			<p>A conclusion which states whether the reaction is reversible or irreversible and how this can be achieved. Comparisons with other reactions to be made.</p>	<p>Written predictions about what might happen when the liquid is added to the crystals.</p>	
		<p><b>Understand that when a new product is produced the change is usually irreversible</b></p>	<p>Can you make plastic from milk?</p>	<p>Use STEM resources plastic from milk activity- children to follow instructions to make plastic from milk.</p>				<p><b>Make predictions after the test about similar investigations the children could do next to further test irreversible changes. (NC)</b></p>	
Year 6	A child's War (Light )	<p>Explain how shadows are formed</p> <p><b>Understand that light appears to travel in straight lines (2)</b></p>	<p>How does light travel?</p>		<p>Use scientific language to label diagrams which show that light travels in a straight line. Relate this to real life examples.</p>		<p>Conclusion: Write an explanation with scientific vocabulary which explains what shining a light into a fibre optic cable or prism demonstrates to us about light.</p>	<p>Sheathed fibre optic cable?? prism</p>	

		<p><b>Understand how our eyes use light to see.</b></p>		<p>Design and create periscopes using understanding of how we see.</p>	<p>Make a scientific model/diagram of the eye and how it uses light to see. <a href="#">All-About-Eyes-Primary-Resource-Page-1.pdf</a> (Use the link for information text- reading practice. GR link)</p>	<p><i>Write an explanation text about how a periscope works- using scientific language</i></p>	<p>Ask children to write a projected prediction based on changed variables- if we changed this what do you predict would happen?</p>		
<p>Tomorrow's World (Electricity )</p>	<p>Revisit circuits- find out what they know</p>	<p><b>Use recognised symbols in a circuit</b></p>		<p>Link to Alex Ryder Design and make a circuit to power a buzzer and light alarm</p>	<p>Record the circuit using the correct symbols.</p>		<p>P</p>		
	<p><b>Associate the brightness of a bulb with voltage</b></p> <p><b>Compare and give reasons for variations in circuit components</b></p>	<p>Generate a question to investigate how increased voltage impacts a circuit</p>	<p>Plan an investigation which tests the impact of increased voltage on the components of a circuit Which variables will be kept the same and which changed? What other things could hinder the reliability/accuratenes s of the experiment.</p>				<p>Conclusion which reflects the children's individual planned investigation.</p>		

		Working scientifically-independent application/planning		Plan a spy gadget using knowledge of circuits-	Use circuit symbols to plan the spy gadget and consider the voltage needed.			Predictions made on science knowledge-independent prediction matching the independent questions		
Building up a fact file about a particular arctic animal- writing voiceover for video images	Frozen Kingdom (7+)	<p>1) Consolidation/retrieval of changes of state (y4/5)</p> <p>Working scientifically to plan investigation</p> <p>2) Animals are adapted to their environments</p> <p>Adaptations may lead to evolution (polar bears)</p> <p>Offspring are not identical to their parents</p>	<p>1) What happens when you add salt to an iceberg? Which part melts quicker? How can you melt ice? What will speed up melting times? (floorbook lesson)</p> <p>2) How is an emperor penguin adapted to suit its environment?</p>	<p>1) Y6 to plan how to make a fair test- reintroduce the vocabulary of variables and how to make a fair test.</p>	<p>2) observations based on microscope images of feathers/models of penguin body shapes</p> <p>Observations on adaptations- diagrams of penguins with annotations of adaptations for environment (science books)</p>	<p>3&amp; 4</p> <p><i>Researching own animal and reporting on adaptations- recording Attenborough style voice over on own animal. Completing diagram independently (adaptations of polar bears adaptations= evolution)</i></p> <p>5) <i>classifying and sorting animals by their offspring and whether they look like their parents. Pupils choose best way for sorting and classifying animals based on offspring.</i></p> <p>6) <i>food chains/webs linked to previous learning based on chosen arctic animal.</i></p>	<p>1 Conclusion-group conclusions written together and added to floor book.</p> <p>2 Draw conclusions about adaptations of penguins based on observations.</p>	<p>1 Predictions about Ice and what would cause it to melt?</p>	<p>Digital recoding software for voice overs</p> <p>Apparatus for testing ice</p>	<p>Adaptation Environment Biome Biodiversity Habitat Carnivore, herbivore, omnivore (repeat from previous year groups)</p>

	<p>Darwin's Delights</p>	<p>Recognise that living things have changed over time.</p> <p>Fossils provide information about things which lived a long time ago</p> <p>Give reasons for classifying plants and animals based on specific characteristics – identify vertebrates and invertebrates</p> <p>Survival of the fittest</p> <p>Explain evolution</p>	<p>1)How have living things changed over time? (recap Mary Anning learning)</p> <p>3)Which species live in our school environment?</p> <p>6) How are the beaks of birds adapted for their diet?</p>	<p>3) Set up a quadrat to make observations about a key plants and creatures in school environment</p> <p>6)design a fair test (discuss variables/ variants) to test birds beak and their adaptations to different diets.</p> <p>7) in groups children design their own investigations based on Darwin's ideas</p> <p>8) strawberry DNA- carry out practical experiment to draw out strawberry DNA- link this to evolution- offspring (floorbook lesson)</p> <p>9) Gregor Medel's theory of inheritance- mixing paint experiment (annotations and</p>	<p>1) Observation of fossils and classification of fossils (Charmouth Hertiage centre) Link to how they looked when they lived.</p> <p>2) Observation and collections of specimens of plants and animals</p> <p>3 and 4) observations and detailed drawings about species in each quadrat Children to make charts and tables to display the data. (science books)</p> <p>5)Make observations- through photographs and observations of local seagull population</p> <p>7) research Darwin's investigations</p> <p>8 observations and annotations about DNA linking back to strawberry DNA</p>	<p>2)<i>Classification of plants and animals- independently sort and classify based on criteria (build on y4 work) Vertebrates and invertebrates) introduce latin names for key specimens</i></p> <p><i>5 classification guide to classify local seagull population. Make a page in class floor book on classifcation of seagulls. Link to Darwin's interest in pigeon variation. .</i></p> <p><i>9) children report on the difference in ideas between Gregor Mendel and Charles Darwin-</i></p>	<p>3&amp;4- conclusion about where most species live in school grounds (floorbook)</p> <p>6) conclusions about adaptations of birds and their beaks</p>	<p>6) write an individual prediction about which beaks suit which diets.</p>	<p>Choose apparatus for a quadrat</p> <p>Pots- tweezers Pooters</p>	<p>vertebrates and invertebrates</p> <p>Latin terminology for key plants</p> <p>Quadrat</p> <p>Variable</p> <p>Variation</p> <p>Species</p> <p>Adaptation</p> <p>Specimen</p>
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				photographs for floorbook)	10) research into artificial vs natural selection- dogs breed changing- leading to evolution- Is artificial selection a good thing? Discussion text link	written work in science book				
Blood heart(11)	-Functions of the heart, blood vessels and blood -parts of circulatory system -nutrients and water transportation in animals and humans -explore the work of scientists and scientific research -Know the risks of drugs, alcohol and lifestyle on the way bodies function	What does the heart do? How does the heart work?	<b>Independently plan an investigation to examine an artificial blood sample- select appropriate equipment and choose how to present data</b>  <b>Consider the variables and make decisions about variables to keep the test fair when conducting an investigation into blood flow.</b>  <b>Independently design a practical demonstration of how blood vessels move using stop animation</b>	<b>Using scientific and technical language make observations about the internal working of the heart. Select the correct equipment to carry out the scientific observations. Make decisions about which observations to record.</b>  Record and make observational drawings of the heart with labelled explanations.  Make accurate measurements of liquids and speed of flow using appropriate equipment  Accurate measurements of heart rate using stop watch	<i>Scatter graph of data for heart rate</i>  <i>Line graph for impact of exercise on heart rate</i>  <i>Select and choose the right graph/chart/table to display data</i>	<b>Write a conclusion in the style of a explanation text about the circulatory system and what it does based on the demonstration of the circulatory system.</b>  <b>Independently Write a conclusion summary of the work of Karl Landsteiner</b>	Making a prediction about the size of tubes and how it might affect the flow using scientific vocabulary and explanations  Class discussion Discussion text: where do you see the health service in 100 years time? Development of transplantaion?	Stop watches Data logger Heart rate monitor stethoscope	Circulatory Capillaries Vessels	
LTI what can your heart rate tell you?										
LTI What's in blood?										
Link up with transition to secondary school.  ( working scientifically investigations to prepare for secondary- what do the teachers want	Hola Mexico (consolidation)	Light travels in a straight line to explain why shadows have the same shape as the objects cast them El Castillo –temple in Chichen ITza	What impacts the size of shadows?  How does light travel?	1) Set up an investigation to compare size of shadows to distance from the light source  Independent investigations into science of interest-	Observe that light travels in straight line- diagrams to show.	<i>Record data on spreadsheet of shadows over time</i>  <i>Independent line graphs based on size of shadow over time</i>				

Science Progression

y7 pupils to know)				(talk to secondary schools) Provide investigation to include line graphs.							
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