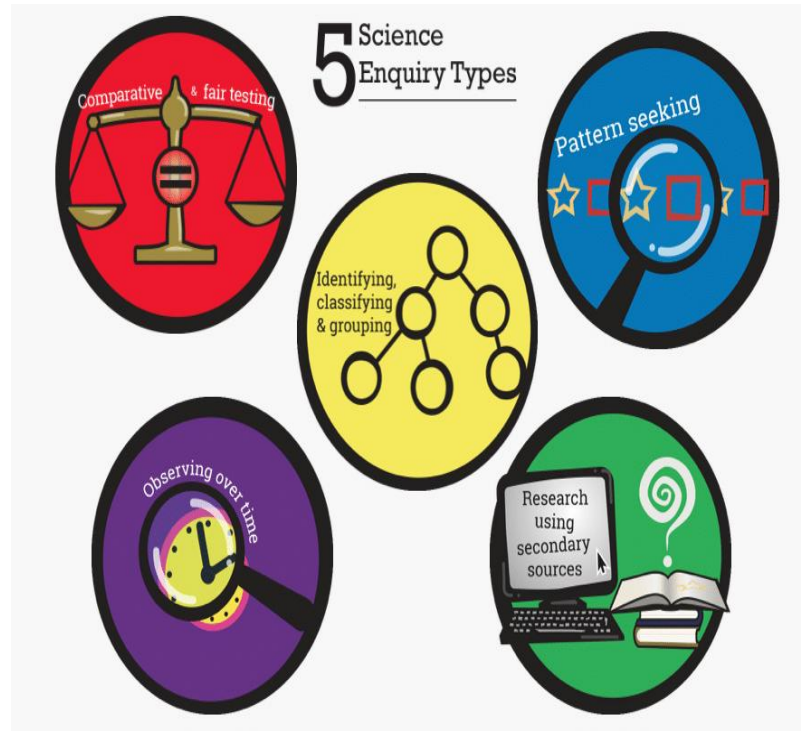


The main three aims in science are:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Children will achieve these aims through a range of scientific enquiries and the Plan, Do, Review approach which assesses childrens working scientifically skills.













TAPS Working Scientifically Cycle



The five scientific enquiry types in science are:

- **Comparative and fair testing** - Pupils identify the effect of changing one variable on another whilst attempting to keep other variables constant. They are useful for gathering data that might inform predictions and further tests. In comparative tests pupils compare one event with another and identify different outcomes. With fair tests pupils look to identify a causal relationship between two variables.
- **Pattern seeking** - Pupils make observations and measure to explore natural events where there are variables that they can't easily control. They seek to identify patterns in the measurements, which may lead to other investigations in an effort to try to explain why a particular pattern occurred.
- **Identifying, classifying and grouping** - Pupils sort objects, materials, living things or events into manageable sets using different criteria.
- **Observation over time** - Pupils identify and measure events and changes in living things, materials and physical processes or events. These observations may take place over time spans of minutes or hours up to several weeks or months.
- **Secondary research** - Pupils use a range of secondary sources (books, websites, articles, people, videos etc.) to gather evidence to answer questions. They look for patterns in the information they collect, evaluating the reliability and trustworthiness of the evidence they collect when drawing conclusions.

Every lesson and enquiry type should be underpinned by at least one or more working scientifically skills as shown below:

	Science skill		Science skill
	Asking scientific questions		Presenting results
	Planning an enquiry		Interpreting results
	Observing closely		Drawing conclusions (KS2 only)
	Taking measurements		Making predictions (KS2 only)
	Gathering and recording results		Evaluating an enquiry (KS2 only)

EYFS Aims

In the Early Year Foundation Stage, children begin to learn that as they grow up they are increasingly able to do more things for themselves independent, through planned and independently explored opportunities in their environment. This emerging knowledge and understanding can be used to explore crucial early scientific skills. The aims and content address a number of key scientific concepts. These are presented through a cross-curricular approach that aims to develop children's learning across a range of the key learning areas. The early learning goals at EYFS aim to guide children to make sense of their physical world and their community by exploring, observing and finding out about the environment.

The aims of our EYFS curriculum is to develop children's early scientific skills by providing rich experiences to promote the following:

Three and Four-Year-Olds**Communication and Language**

Pupils should be given the opportunity to:

- Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"

Personal, Social and Emotional Development**Pupils should be given the opportunity to:**

- Make healthy choices about food, drink, activity and tooth brushing

Understanding the World**Pupils should be given the opportunity to:**

- Use their senses in hands-on exploration of natural materials
- Explore collections of materials with similar and/or different properties
- Talk about what they see, using a wide vocabulary
- Begin to make sense of their own life-story and family's history
- Explore how things work.
- Plant seeds and care for growing plants
- understand the key features of the life cycle of a plant and an animal
- Begin to understand the need to respect and care for the natural environment and all living things
- Explore and talk about different forces they can feel
- Talk about the differences between materials and changes they notice

Reception**Communication and Language****Pupils should be given the opportunity to:**

- Learn new vocabulary
- Ask questions to find out more and to check what has been said to them
- Articulate their ideas and thoughts in well-formed sentences
- Describe events in some detail
- Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen
- Use new vocabulary in different contexts

Personal, Social and Emotional Development**Pupils should be given the opportunity to:**

- Know and talk about the different factors that support their overall health and wellbeing
 - regular physical activity
 - healthy eating
 - tooth brushing
 - sensible amounts of screen time
 - having a good sleep routine
 - being a safe pedestrian

Understanding the World**Pupils should be given the opportunity to:**

- Explore the natural world around them
- Describe what they see, hear and feel while they are outside
- Recognise some environments that are different to the one in which they live
- Understand the effect of changing seasons on the natural world around them

ELG**ELG: Communication and Language - Listening, Attention and Understanding****Pupils should be given the opportunity to:**

- Make connections about what they have heard and ask questions to clarify their understanding

ELG: Personal, Social and Emotional Development - Managing Self**Pupils should be given the opportunity to:**

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choice.

ELG: Understanding the World - The Natural World

Pupils should be given the opportunity to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

Autumn 1	Spring 1	Summer 1
<p>Humans</p> <ul style="list-style-type: none"> • Different parts of the human body. • Make robot hands. • Look at how they have changed and how we are different from each other. • Drawing pictures of their face. • Talk about different food and limits of those. <p>Life cycles</p> <ul style="list-style-type: none"> • Baby - toddler - child - adult 	<p>Materials</p> <ul style="list-style-type: none"> • Talk about why things happen and how things work. • Natural and found objects. • Floating and sinking. • Freezing and melting. • Magnets. • Testing materials. 	<p>Habitats</p> <ul style="list-style-type: none"> • Talk about where you live and what nature is. • Talk about how we care for animals. • Talk about things observed such as plants and animals. • Notice features of objects in their environment. • Light and dark - linked to habitats. •
Key Vocabulary	Key Vocabulary	Key Vocabulary
N - Baby, grown up, boy, girl, head, body, arms, legs, nose, mouth, eyes, healthy, choice R - Adult, child, toddler, ears, face, features, grow, change, life cycle, sugar, fats, teeth	N - Materials, water, plastic, metal, wood, ice, glass R - Floating, sinking, freezing, melting, magnets, shiny, dull, rough, smooth	N - Home, cold, hot, food, drink, dark, safe, animal, plant R - Habitat, warm, care, liquid, environment, light, observed
Season		
This topic will be ongoing throughout the year and will be included throughout your other topics.		
Start Small Dream Big	Start Small Dream Big	Start Small Dream Big
Using photos, what is the weather like? why is she wearing sunglasses? School Nurse Matching pictures to clothes. Matching trees to the weather.	GSK - Material Scientist - GlaxoSmithKline - SchoolScience.co.uk	Zoologist
Autumn 2	Spring 2	Summer 2
<p>Force</p> <ul style="list-style-type: none"> • Using photos and talking about them. • Similarities and differences in relation to places, objects, materials and living things. 	<p>Plants</p> <ul style="list-style-type: none"> • Observations of plants, trees and flowers. • Planting and growing. • Planting cress on the investigation table. • Draw plants and trees and talk about them. • Seasonal walks. 	<p>Habitats</p> <ul style="list-style-type: none"> • Continuation from Summer 1
Key Vocabulary	Key Vocabulary	Key Vocabulary
N - Autumn, Wimps, different, ramps, hot, cold, sun, wind, ice, snow, rain, cloud R - Seasons, rolling, mist, fog, dew, warm, damp, overcast • Push and pull toys.		Mini beasts
<p>Electricity</p> <ul style="list-style-type: none"> • Understand that some object need electricity to work. • Understand a switch will turn something on and off. • Build circuits. <p>*To have a range of battery operate items on the investigation table.</p>	<p>Animals</p> <ul style="list-style-type: none"> • Understanding of growth and change (including lifecycles). • Talk about observations. • Farm animals, zoo animals and sea animals - similarities and differences. • How we care about animals (visits from Hearing Dogs) 	<ul style="list-style-type: none"> • Make a bug den. • Watching the life cycle of a butterfly. • Small world play. • Bug hunt in different habitats. • Spider web hunt. • Bug boxes and magnifying glasses. • Be a minibeast detective.
Key Vocabulary	Key Vocabulary	Key Vocabulary
N - Push, pull, plug, charge R - Force, push, pull, magnet, battery, electricity	N - Tree, flower, plant, leaf, change, grow, Spring, Autumn, Summer, Winter, different, cress, water R - Seasons, trunk, stem, petal, blossom, bloom, change, growth, care, investigate, same, life cycle	N - Home, bugs, dark, food, dry, magnifying glass, bug hunt, look R - Habitat, light, feed, water, drink, binoculars, observe, detective
Start Small Dream Big	Start Small Dream Big	Start Small Dream Big

Forces and Motion Workshop (Physicist) Forces and Motion Workshops for Schools - We list them here. Take a look. (educationalworkshops.co.uk) Fire Service (Electrical Safety)	Botanist Zoologist - ZooLab Classroom Animal Encounters Animal Therapy United Kingdom (zoolabuk.com)	Zoologist
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Key Stage One Long Term Plan



Year 1		
Autumn	Spring	Summer
<u>Autumn 1</u> Animals, including humans	<u>Spring 1</u> Everyday Materials <u>Spring 2</u> Careers Term	<u>Summer 1</u> Year 1 - Plants <u>Summer 2</u> Seasonal Changes

Year 2		
Autumn	Spring	Summer
<u>Autumn 1-2</u> Year 1 - Animals, including humans	<u>Spring 1</u> Year 1 - Everyday Materials <u>Spring 2</u> Careers Term	<u>Summer 1</u> Year 2 - Animals, including humans <u>Summer 2</u> Year 2 - Plants

Working Scientifically Year 1 and 2 (To be complete during every topic)

- Asking simple questions and recognising that they can be answered in different ways
- Observing closely, using simple equipment
- Performing simple tests
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions
- Gathering and recording data to help in answering questions.



Year One Science Long Term Plan



Autumn 1&2	Spring 1	Summer 1
<p><u>Animals, including humans</u></p> <ul style="list-style-type: none"> ● Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. ● Identify and name a variety of common animals that are carnivores, herbivores and omnivores. ● Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals). ● Identify, name, draw and label the basic parts of the human body and say which part is associated with each sense. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> ● <i>Identifying, classifying and grouping - mammals, fish, birds and reptiles.</i> ● <i>Identifying, classifying and grouping - carnivore, omnivore and herbivore.</i> ● <i>Identifying, classifying and grouping - Name and parts of the human body.</i> ● <i>Pattern seeking - Compare animals within the mammal, reptile, bird, fish or amphibian groups to spot similarities and differences in their features and abilities.</i> 	<p><u>Everyday Materials</u></p> <ul style="list-style-type: none"> ● Distinguish between an object and the material from which it is made ● Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock ● Describe the simple physical properties of a variety of everyday materials ● Compare and group together a variety of everyday materials on the basis of their simple physical properties. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> ● <i>Identifying, classifying and grouping - Different materials.</i> ● <i>Identifying, classifying and grouping - properties of objects and materials.</i> ● <i>Pattern seeking - Do all plastics bend? Are all glasses transparent?</i> ● <i>Comparative and fair test - Test materials (waterproof or not waterproof)</i> 	<p><u>Plants</u></p> <ul style="list-style-type: none"> ● Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees ● Identify and describe the basic structure of a variety of common flowering plants, including trees. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> ● <i>Identifying, classifying and grouping - types of trees</i> ● <i>Identifying, classifying and grouping - wild and garden plants</i> <p>Key Scientist <i>Carolus Linnaeus (1879 - 1955)</i> Carolus Linnaeus - Biography, Facts and Pictures (famousscientists.org)</p>

Autumn 1&2	Spring 1	Summer 1																																							
<ul style="list-style-type: none"> Comparative and fair test - Using different senses <p>Additional scientific enquires for additional lessons</p> <ul style="list-style-type: none"> Secondary research - diets of animals which are herbivores, omnivores and carnivores. Pattern seeking - Notice links between why certain animals can or cannot be found living in the local area. Observation over time - Identify which senses are being used over a period of time to find out which sense is being used the most and least. <p>Key Scientist David Attenborough (1926 -) https://www.wwf.org.uk/get-involved/schools/calendar/a-life-on-our-planet-ks2</p>	<p>Key Scientist Becky Schroeder (1962-) Female Scientist (squarespace.com)</p> <p>Key Vocabulary</p> <table border="1" data-bbox="808 416 1431 549"> <tr> <td>Material</td> <td>Plastic</td> <td>hard/soft</td> </tr> <tr> <td>Object</td> <td>Metal</td> <td>transparent/opaque</td> </tr> <tr> <td>Property</td> <td>Waster</td> <td>solid/liquid/gas</td> </tr> <tr> <td>Wood</td> <td>Rock</td> <td>shiny/dull</td> </tr> <tr> <td>Glass</td> <td>Physical properties</td> <td>smooth/rough</td> </tr> </table> <p>Start Small Dream Big</p> <p>GlaxoSmithKline (Materials scientist) - GlaxoSmithKline - SchoolScience.co.uk</p>	Material	Plastic	hard/soft	Object	Metal	transparent/opaque	Property	Waster	solid/liquid/gas	Wood	Rock	shiny/dull	Glass	Physical properties	smooth/rough																									
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<p>Key Vocabulary</p> <table border="1" data-bbox="98 890 786 1145"> <tr> <td>Omnivore</td> <td>Torso</td> <td>Vertebrae</td> </tr> <tr> <td>Herbivore</td> <td>Sight</td> <td>Invertebrate</td> </tr> <tr> <td>Carnivore</td> <td>Backbone</td> <td>Reptile</td> </tr> <tr> <td>Fish</td> <td>Mammal</td> <td>Limbs</td> </tr> <tr> <td>Amphibian</td> <td></td> <td>Smell</td> </tr> <tr> <td>Gills</td> <td></td> <td>Taste</td> </tr> <tr> <td>Scales</td> <td></td> <td>Touch</td> </tr> <tr> <td>Fins</td> <td></td> <td>Bird</td> </tr> <tr> <td>Hearing</td> <td></td> <td></td> </tr> </table>	Omnivore	Torso	Vertebrae	Herbivore	Sight	Invertebrate	Carnivore	Backbone	Reptile	Fish	Mammal	Limbs	Amphibian		Smell	Gills		Taste	Scales		Touch	Fins		Bird	Hearing			<p>Spring 2</p> <p>Whole School Events -</p>	<p>Key Vocabulary</p> <table border="1" data-bbox="1444 890 2123 1145"> <tr> <td>Wild</td> <td>Flowering</td> <td>Leaves</td> </tr> <tr> <td>Cultivated</td> <td>Evergreen</td> <td>Trunk</td> </tr> <tr> <td>Deciduous</td> <td>Structure</td> <td>Flowers</td> </tr> <tr> <td>Roots</td> <td>Twig</td> <td>Branch</td> </tr> </table>	Wild	Flowering	Leaves	Cultivated	Evergreen	Trunk	Deciduous	Structure	Flowers	Roots	Twig	Branch
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<p>Key Vocabulary - Working Scientifically * to be used continually throughout the year.</p>																																									

Autumn 1&2	Spring 1	Summer 1
Answer	Identify	Record
Question	Classify	Compare
Observe	Sort	Describe
Equipment	Group	Contrast

In each related term:

<p><u>Year 1 - Seasonal Changes</u></p> <ul style="list-style-type: none"> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. 	Day length Seasons Summer Winter Rain gauge	Spring Autumn Light Dark Forecast
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Year Two Science Long Term Plan



Autumn 1&2	Spring 1	Summer 1
<p><u>Year 1 - Animals, including humans</u></p> <ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals). Identify, name, draw and label the basic parts of the human body and say which part is associated with each sense. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - mammals, fish, birds and reptiles. 	<p><u>Year 1 - Everyday Materials</u></p> <ul style="list-style-type: none"> Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - Different materials. 	<p><u>Summer 1</u></p> <p><u>Year 2 - Animals, including humans</u></p> <ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - adult animals and their offspring.

Autumn 1&2	Spring 1	Summer 1																														
<ul style="list-style-type: none"> Identifying, classifying and grouping - carnivore, omnivore and herbivore. Identifying, classifying and grouping - Name and parts of the human body. Pattern seeking - Compare animals within the mammal, reptile, bird, fish or amphibian groups to spot similarities and differences in their features and abilities. Comparative and fair test - Using different senses <p>Additional scientific enquires for additional lessons</p> <ul style="list-style-type: none"> Secondary research - diets of animals which are herbivores, omnivores and carnivores. Pattern seeking - Notice links between why certain animals can or cannot be found living in the local area. Observation over time - Identify which senses are being used over a period of time to find out which sense is being used the most and least. <p>Key Scientist David Attenborough (1926 -) https://www.wwf.org.uk/get-involved/schools/calendar/a-life-on-our-planet-ks2</p>	<ul style="list-style-type: none"> Identifying, classifying and grouping - properties of objects and materials. Pattern seeking - Do all plastics bend? Are all glasses transparent? Comparative and fair test - Test materials (waterproof or not waterproof) <p>Key Scientist Becky Schroeder (1962-) Female Scientist (squarespace.com)</p> <p>Key Vocabulary</p> <table border="1" data-bbox="808 539 1424 695"> <tr> <td>Material</td> <td>Plastic</td> <td>hard/soft</td> </tr> <tr> <td>Object</td> <td>Metal</td> <td>transparent/opaque</td> </tr> <tr> <td>Property</td> <td>Waster</td> <td>solid/liquid/gas</td> </tr> <tr> <td>Wood</td> <td>Rock</td> <td>shiny/dull</td> </tr> <tr> <td>Glass</td> <td>Physical properties</td> <td>smooth/rough</td> </tr> </table> <p>Start Small Dream Big</p> <p>GlaxoSmithKline (Materials scientist) - GlaxoSmithKline - SchoolScience.co.uk</p>	Material	Plastic	hard/soft	Object	Metal	transparent/opaque	Property	Waster	solid/liquid/gas	Wood	Rock	shiny/dull	Glass	Physical properties	smooth/rough	<ul style="list-style-type: none"> Pattern seeking - What activities make our heart rate faster and slower. Identifying, classifying and grouping - healthy and unhealthy foods. Comparative and fair test - Impact of food on exercise (star jumps before and after dinner) Observation over time - soap and pepper investigation <p>Key Scientist Elizabeth Anderson (1836-1917) BBC - History - Elizabeth Garrett Anderson</p> <p>Key Vocabulary</p> <table border="1" data-bbox="1447 539 2112 695"> <tr> <td>Same as Year 1 and:</td> <td>Tadpole</td> <td>Survival</td> </tr> <tr> <td>Kitten</td> <td>Offspring</td> <td>Nutrition</td> </tr> <tr> <td>Puppy</td> <td>Adult</td> <td>Water</td> </tr> <tr> <td>Hygiene</td> <td>Air</td> <td>Exercise</td> </tr> <tr> <td>Energy</td> <td>Species</td> <td>Germes</td> </tr> </table> <p>Start Small Dream Big</p> <p>School Nurse NHS online workshop</p>	Same as Year 1 and:	Tadpole	Survival	Kitten	Offspring	Nutrition	Puppy	Adult	Water	Hygiene	Air	Exercise	Energy	Species	Germes
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Energy	Species	Germes																														
	<p>Spring 2</p> <p>Whole School Events -</p>	<p>Summer 2</p> <p>Year 2 - Plants</p> <ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Observation over time - planting a bulb (class) Observation over time - planting two seeds. One watered the other one not watered (class) Observation over time - planting a seed (individual) Observation over time - extreme conditions for growing conditions (too hot, too much water) Pattern seeking - Are there areas where plants grow more healthily? Pattern seeking - Do bigger seeds germinate more quickly? 																														

Autumn 1&2			Spring 1	Summer 1		
				<ul style="list-style-type: none"> • <i>Comparative and fair test - What conditions does a plant need to grow and stay healthy.</i> • <i>Secondary research - life cycle/different plants.</i> <p>Key Scientist <i>Carolus Linnaeus (1879 - 1955)</i> Carolus Linnaeus - Biography, Facts and Pictures (famousscientists.org)</p>		
Key Vocabulary				Key Vocabulary		
Omnivore Herbivore Carnivore Fish Amphibian Gills Scales Fins Hearing	Torso Sight Backbone Mammal	Vertebrae Invertebrate Reptile Limbs Smell Taste Touch Bird		Year 1 Vocabulary and: Seeds Growth Mature Dispersal	Conditions Bulbs Nutrients Germinate	Year 1 Vocabulary and: Seeds Growth Mature Dispersal
Start Small Dream Big			Start Small Dream Big	Start Small Dream Big		
Exotic animal workshop (Zoologist) - Welcome to animalstory.co.uk... - Animal Story - Animal workshops North East Middlesbrough Stockton Darlington Hartlepool				Botanist		
Key Vocabulary - Working Scientifically						
* to be used continually throughout the year.						
Answer Question Observe Equipment		Identify Classify Sort Group		Record Compare Describe Contrast		

<u>Autumn 1</u> Year 3 - Forces and magnets	<u>Spring 1</u> Year 3 - Animals including humans	<u>Summer 1</u> Year 3 - Rocks
<u>Autumn 2</u> Year 3 - Light	<u>Spring 2</u> * science term spring 2	<u>Summer 2</u> Year 3 - Plants

Year 4		
Autumn	Spring	Summer
<u>Autumn 1</u> Year 3 - Forces and magnets	<u>Spring 1</u> Year 4 - Sound	<u>Summer 1</u> Year 4 - Living things and their habitats
<u>Autumn 2</u> Year 3 - Light	<u>Spring 2</u> * science term spring 2	<u>Summer 2</u> Year 3 - Plants

Working Scientifically Year 3 and 4 (to be completed throughout all topics within the year)
<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

Autumn			Spring			Summer		
<p>Year 3 - Forces and magnets</p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Comparative & fair test - friction investigation Comparative & fair test - paper clip and magnet experiment Identifying, classifying and grouping - magnetic and non-magnetic. Comparative & fair test - keys experiment <p>Key Scientist William Gilbert (1544-1603) https://www.famousscientists.org/william-gilbert/</p>			<p>Year 3 - Animals, including humans</p> <ul style="list-style-type: none"> identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - Food groups. Secondary research - Food groups. Secondary research - diets of average person, body builder and marathon runner. Secondary research - different joints (hinge, glide, ball and socket) <p>Key Scientist Adelle Davis (1904-1974) Davis, Adelle (1904-1974) Encyclopedia.com</p>			<p>Year 3 - Rocks</p> <ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter. <p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - Rocks and their type. Comparative and fair test - Permeability and durability of rocks Secondary research - Rock types <p>Key Scientist Mary Anning (1799-1847) Who was the fossil hunter Mary Anning? - BBC Bitesize</p>		
Key Vocabulary			Key Vocabulary			Key Vocabulary		
Magnetic Force Magnets Repel Attract	Compare Poles North Materials South	Push Pull Resistance	Incisor Canine Food chain	Producer Predator Prey Consumer Oesophagus	Stomach Intestine (Sm + LG) Rectum Scavenger Consumer	Appropriate Key Stage 1 vocabulary and: Rocks Appearance Magma Permeable	Crumbly Crystals Sedimentary Fossils Lava Impermeable	Soils Organic Matter Igneous Metamorphic Sediment Density
Start Small Dream Big			Start Small Dream Big			Start Small Dream Big		
Forces and Motion Workshop (Physicist) Forces and Motion Workshops for Schools - We list them here. Take a look. (educationalworkshops.co.uk)			Noisy Toys - (Acoustician) - Shows (noisytoys.org)			Rocks and Fossils Workshop (paleontologist) - Palaeoquest - Fossil, Workshop, Rocks		
Autumn			Spring			Summer		
<p>Year 3 - Light</p> <ul style="list-style-type: none"> recognize that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognize that light from the sun can be dangerous and that there are ways to protect their eyes recognize that shadows are formed when the light from a light source is blocked by an opaque object <p>Find patterns in the way that the size of shadows change.</p>			<p>Whole School Events -</p>			<p>Year 3 - Plants</p> <ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant 		

Autumn			Spring	Summer
<p><i>Scientific enquiries</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - natural, manmade or not light sources. Identifying, classifying and grouping - reflective materials or not Comparative and fair test - design, make and test a badge. Pattern seeking - UV lights Identifying, classifying and grouping - opaque, transparent and translucent. Comparative and fair test - opaque puppet and the shadow it casts. <p>Key Scientist Albert Einstein (1879 - 1955) https://www.twinkl.co.uk/teaching-wiki/albert-einstein#:~:text=Einstein%20discovered%20the%20idea%20that,lots%20of%20branches%20of%20science.</p>				<ul style="list-style-type: none"> investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal <p><i>Scientific enquiries</i> Observation over time - tomato, cactus and cress in sand and compost.</p> <ul style="list-style-type: none"> Observation over time - onions test. Observation over time - celery/carnations in coloured water. <p>Key Scientist Carolus Linnaeus (1879 - 1955) Carolus Linnaeus - Biography, Facts and Pictures (famousscientists.org)</p>
Key Vocabulary				Key Vocabulary
Light Dark Reflected/reflection Surface	Sun Shadows Translucent Patterns Emit Pupil Retina	Opaque Transparent		Key Stage 1 Vocabulary and: Transportation Pollination Seed dispersal Seed formation Stigma Life cycle Stem Roots Function Nutrients Anther
Start Small Dream Big			Start Small Dream Big	Start Small Dream Big
Optical Scientist				Botanist
Key Vocabulary - Working Scientifically * to be used continually throughout the year.				
Revisit Year 1/2 vocabulary and: Measure Investigate Compare Fair test Conclusions			Predictions Evidence Improve Construct Interpret	
Interpreting and gathering data * not all applicable to every lesson or unit of work.				
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Autumn	Spring	Summer
Pictographs Bar graphs		



Upper Key Stage 2 Long Term Plan



Year 5		
Autumn	Spring	Summer
<u>Autumn 1</u> Year 5 - Properties and changes of changes of materials	<u>Spring 1</u> Year 5 - Animals including Humans	<u>Summer 1</u> Year 5 - Living things and their habitats
<u>Autumn 2</u> Year 5- forces	<u>Spring 2</u> * science term spring 2	<u>Summer 2</u> Year 5 - Earth and Space

Year 6		
Autumn	Spring	Summer
<u>Autumn 1</u> Year 5 - Properties and changes of materials	<u>Spring 1</u> Year 6 - Electricity	<u>Summer 1</u> Year 5 - Living Things and their habitats
<u>Autumn 2</u> Year 5- Forces	<u>Spring 2</u> * science term spring 2	<u>Summer 2</u> Year 6 - Animals including humans

Working Scientifically Year 5 and 6 (To be complete during every topic)

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Autumn	Spring	Summer									
<p>Year 5 - Properties and changes of materials</p> <ul style="list-style-type: none"> compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes <p><i>Scientific enquires</i></p> <ul style="list-style-type: none"> Identifying, classifying and grouping - durability, transparency, conductivity and magnetism. Comparative test - Dissolving a solid into a liquid. Identifying classifying and grouping - solids, liquids and gases. Comparative and fair test - best materials for switch, cup and pan. <p>Key Scientist Ruth Benerito (1916-2013) Ruth Benerito - Kids Britannica Kids Homework Help</p>	<p>Year 5 - Animals including humans</p> <ul style="list-style-type: none"> Describe the changes as humans develop to old age. <p>Key Scientist Charles Darwin (1809-1882) KS2: Charles Darwin - The biggest name in Victorian science - BBC Teach</p>	<p>Year 5 - Living Things and their habitats</p> <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird <p>Describe the life process of reproduction in some plants and animals.</p> <p>Key Scientist David Attenborough (1926 -) https://www.wwf.org.uk/get-involved/schools/calendar/a-life-on-our-planet-ks2</p>									
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GlaxoSmithKline (Materials scientist) - GlaxoSmithKline - SchoolScience.co.uk	Electricity safety (Fire brigade) Electricity Buzz Wire (Electrical engineer) - Electricity Buzz Wire - STEMworks	Zoo Lab (Zoo keeper) - ZooLab Classroom Animal Encounters Animal Therapy United Kingdom (zoolabuk.com)									
Autumn	Spring	Summer									

<p>Year 5 - Forces</p> <ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognize that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <p><i>Scientific enquires</i></p> <ul style="list-style-type: none"> Secondary research - Effects of gravity on different planets Comparative and fair test - Air resistance Pattern seeking - Streamlining shapes Comparative and fair test - car/shoe friction investigation Identifying, classifying and grouping - pulley, lever or gear. <p>Key Scientist Sir Issac Newton (1544-1603) Isaac Newton: The man who discovered gravity - BBC Teach</p>	<p>Whole School Events -</p>	<p>Year 5 - Earth and Space</p> <ul style="list-style-type: none"> describe the movement of the Earth, and other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p><i>Scientific enquires</i></p> <ul style="list-style-type: none"> Secondary research - planets and length of years. Secondary research - significant events around the moon. Secondary research - earth, moon and sun spherical. Pattern seeking - size of planet and how long it takes to move around the sun. <p>Key Scientist Nicolaus Copernicus (1473-1543) Science KS2: The work of Nicolaus Copernicus - BBC Teach</p>					
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<p>Revisit Year 3/4 vocabulary and: Plan Variables Measurements Accuracy</p>	<p>Precision Scientific diagrams Classification Graphs</p>	<p>Data Predictions Conclusion Relationships</p>	<p>Support Identify Patterns Quantitative measurements</p>				

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Appropriate Key Stage 1 vocabulary and: Life cycles	Fur Size Feathers Leaves Flowers Bird	Bulbs Seeds Amphibian Mammal Insect Reproduction										
Start Small Dream Big	Start Small Dream Big	Start Small Dream Big										
GlaxoSmithKline (Materials scientist) - GlaxoSmithKline - SchoolScience.co.uk	Electricity safety (Fire brigade) Electricity Buzz Wire (Electrical engineer) - Electricity Buzz Wire - STEMworks	Zoo Lab (Zoo keeper) - ZooLab Classroom Animal Encounters Animal Therapy United Kingdom (zoolabuk.com)										
Autumn	Spring	Summer										

<p>Year 5 - Forces</p> <ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognize that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <p><i>Scientific enquires</i></p> <ul style="list-style-type: none"> Secondary research - Effects of gravity on different planets Comparative and fair test - Air resistance Pattern seeking - Streamlining shapes Comparative and fair test - car/shoe friction investigation Identifying, classifying and grouping - pulley, lever or gear. <p>Key Scientist Sir Issac Newton (1544-1603) Isaac Newton: The man who discovered gravity - BBC Teach</p>	<p>Whole School Events -</p>	<p>Year 6 - Animals including humans</p> <ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognize the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans. <p><i>Scientific enquires</i></p> <ul style="list-style-type: none"> Secondary research - blood vessels/blood Identifying, classifying and grouping - food groups. <p>Key Scientist <i>Daniel Hale Williams (1858-1931)</i> Science: Scientists and Inventors: Daniel Hale Williams Year 6 Lesson Pack 6 (twinkl.co.uk)</p>					
<p>Key Vocabulary</p> <table border="1"> <tr> <td data-bbox="91 683 353 863"> <p>Year 3 vocabulary and: Gravity Air resistance Water resistance Load Fulcrum</p> </td> <td data-bbox="353 683 562 863"> <p>Friction Levers Pulley Gears Buoyancy Streamlined Mechanism</p> </td> <td data-bbox="562 683 770 863"> <p>Newton Opposing Streamline Effort</p> </td> </tr> </table>		<p>Year 3 vocabulary and: Gravity Air resistance Water resistance Load Fulcrum</p>	<p>Friction Levers Pulley Gears Buoyancy Streamlined Mechanism</p>	<p>Newton Opposing Streamline Effort</p>	<p>Key Vocabulary</p> <table border="1"> <tr> <td data-bbox="1391 683 1552 863"> <p>Appropriate Lower Key Stage 2 Vocabulary and: Heart Valves</p> </td> <td data-bbox="1552 683 1744 863"> <p>Vein Blood Drugs Artery Life style Blood vessels Capillaries</p> </td> <td data-bbox="1744 683 2078 863"> <p>Involuntary muscle Plasma Drug/Alcohol Nutrients Food groups</p> </td> </tr> </table>	<p>Appropriate Lower Key Stage 2 Vocabulary and: Heart Valves</p>	<p>Vein Blood Drugs Artery Life style Blood vessels Capillaries</p>
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<p>Start Small Dream Big</p>	<p>Start Small Dream Big</p>	<p>Start Small Dream Big</p>					
<p>Forces and Motion Workshop (Physicist) Forces and Motion Workshops for Schools - We list them here. Take a look. (educationalworkshops.co.uk)</p>		<p>School Nurse NHS online workshop Zoo Lab (Zoo keeper) - ZooLab Classroom Animal Encounters Animal Therapy United Kingdom (zoolabuk.com)</p>					
<p>Key Vocabulary - Working Scientifically * to be used continually throughout the year.</p>							
<p>Revisit Year 3/4 vocabulary and: Plan Variables Measurements Accuracy</p>	<p>Precision Scientific diagrams Classification Graphs</p>	<p>Data Predictions Conclusion Relationships</p>	<p>Support Identify Patterns Quantitative measurements</p>				