

Science Long Term Overview 2021/2022



Science Year 1 Overview			
Autumn Materials - Physics	Animals including humans -Biology	Summer 1 Plants - Biology	Summer 2 Seasonal Change - Biology
<p>Everyday Materials:</p> <ul style="list-style-type: none"> • <u>Distinguish between an object and the material from which it is made.</u> Children to sort materials into groups and to refine their sorting abilities throughout the unit. Children to look at the same object made out of a variety of materials. • <u>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</u> Children to be able to label the materials that make up an object. • <u>Describe the simple physical properties of a variety of everyday materials.</u> Investigation - which material is best? E.g. shopping bag - based on their materials. <p><u>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</u> Children to sort materials into groups and to refine their sorting abilities throughout the unit. Investigation - which material is best? E.g. shopping bag - based on their materials.</p> <p>Seasonal Change:</p> <ul style="list-style-type: none"> • <u>Observe changes across the four seasons.</u> 	<p>Animals Including Humans:</p> <ul style="list-style-type: none"> • <u>Identify and name a variety of common animals including fish.</u> Can children sort animals into mammals, amphibians, fish, reptiles and birds? Can children identify the features of these different groups? What makes each group special? • <u>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</u> Can children identify what is special about each group? Can they identify animals that belong to each group? • <u>Describe and compare the structure of a variety of common animals -fish, amphibians, reptiles, birds and mammals, including pets.</u> Children to be able to label features that they observe. Children to be able to discuss the differences and similarities that they observe. • <u>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</u> Children to identify the head, limbs, torso, neck, elbow, knees and ankles. Children to be able to compare their heights and the length 	<p>Plants:</p> <ul style="list-style-type: none"> • <u>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</u> Children to go on a nature walk and observe/record the plants in the school environment. Children to learn to identify plants and trees (from their leaves). Children to grow a plant from a seed and plant - ensure it is a plant well suited to the environment and teach the children where it should be planted and how it should be cared for. • <u>Identify and describe the basic structure of a variety of common flowering plants, including trees.</u> Children to compare plants/trees-what are their common features? What is different? Children to sort a variety of plants/trees. Children to label the basic structure of a plant and tree. Children to create an Attenborough style clip explaining the parts of a plant/tree. <p>Seasonal Change:</p> <ul style="list-style-type: none"> • <u>Observe changes across the four seasons.</u> • <u>Observe and describe weather associated with the seasons and how the day length varies.</u> Children to go on regular walks looking at key plants and areas around 	

<ul style="list-style-type: none"> • <u>Observe and describe weather associated with the seasons and how the day length varies.</u> <p>Children to go on regular walks looking at key plants and areas around school and observing the changes over the seasons. Children to create weather reports.</p>	<p>of limbs like the arms. Children to create simple pictographs/ graphs with this data.</p> <p>Seasonal Change:</p> <ul style="list-style-type: none"> • <u>Observe changes across the four seasons.</u> • <u>Observe and describe weather associated with the seasons and how the day length varies.</u> <p>Children to go on regular walks looking at key plants and areas around school and observing the changes over the seasons. Children to create winter weather reports. Children to make rain collectors to monitor the amount of rainfall each week.</p> <p>Science and Industry Investigation: Pencils, Poems and Princesses.</p>	<p>school and observing the changes over the seasons. Children to create winter weather reports. Children to make rain collectors to monitor the amount of rainfall each week. Children to create a weather vane to identify the direction of the wind and its strength.</p>
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<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking simple questions • Observing using simple equipment. • Performing simple tests • Identify and classifying • Using Observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking simple questions • Observing using simple equipment. • Performing simple tests • Identify and classifying • Using Observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking simple questions • Observing using simple equipment. • Performing simple tests • Identify and classifying • Using Observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.
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<p>Scientists in focus 'working in role as a 'biologist'</p>	<p>Scientists in focus 'working in role as a 'botanist'</p>	<p>Scientists in focus 'working in role as a 'physicist'</p>
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Science Year 2 Overview

<p style="text-align: center;">Autumn Materials - Physics</p>	<p style="text-align: center;">Spring 1 Animal habitats - biology</p>	<p style="text-align: center;">Spring 2 Animals including humans - Biology</p>	<p style="text-align: center;">Summer Plants - Biology</p>
<p>Uses of Everyday Materials:</p> <ul style="list-style-type: none"> • <u>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</u> 	<p>.Animals Including Humans:</p> <ul style="list-style-type: none"> • <u>Notice that animals, including humans, have offspring which grow into adults.</u> Can children match the offspring to the adult animal? Can children observe changes that have occurred when comparing animals 		<p>Plants:</p> <ul style="list-style-type: none"> • <u>Observe and describe how seeds and bulbs grow into mature plants.</u> Children to grow a variety of plants

Link to DT children to build products fit for purpose. Children to evaluate the properties of different materials and suggest what they would be best suited for.

- Find out how the shapes of solid objects made from some materials can be changes by squashing, bending, twisting and stretching. Link to fit for purpose when exploring properties.

Science and Industry Investigation: Tidy and Sort.

when young to when they are an adult? Can children sort animals based on how they are born e.g. from an egg?

- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Link to survival expedition- what would we take with us? What could we find around us? Use different locations. Where do animals get what they need in the local environment of the school? How can we help animals that are struggling to survive such as bees and birds in winter?
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Link to P.E to explore the benefits of exercise. Introduce the different food groups and the benefits of each in the correct measure.

Living things and their habitats:

- Explore and compare the differences between things that are living, dead, and things that have never been alive. Children to sort using Venn diagrams and explain their choices. Children to identify the features of the three groups and how we identify something as living/dead or never alive.
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Children to go on a habitats walk -what lives in our school environment? Why? How are they suited to the environment? How does it help them to survive? Children to look at habitats such as hedgerows and how we can help to support the animals that are losing this sort of habitat in our own gardens. Children to look at the hedgehog and build hedgehog houses or the bumble bee and how we can make our environment more friendly for pollinating insect and why this is important.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats. Children to go on a nature walk to find micro-habitats. Children to create their own micro-habitat (mini-beast hotel) and create a guide book for it.
- Describe how animals obtain their food from plants and other animals, using micro-habitats.
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different

from both bulbs and seeds - children to create gardeners guides to taking care of them. Link to pollination project and planting in Andrew's garden. Children to learn about the advantages of growing in a greenhouse. Possible extension - children to investigate the ph levels of the soil around school to decide where plants would be best suited.

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Children to investigate what plants need to survive. Children to plan an investigation that tests what plants need to survive

	<p><u>sources of food</u>. Children to look at their local environment and the animals we know make it their home. What food sources do these animals have? Children to create simple food chains. Look at how energy moves up the food chain. What would happen if part of the food chain was removed? For example if the plants were to be killed? What would happen to the rest of the food chain.</p>	
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<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests • Identify can classifying • Using Observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. 			
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<p>Scientists in focus 'working in role as a 'biologist'</p>	<p>Scientists in focus 'working in role as a 'physicist'</p>	<p>Scientists in focus 'working in role as a 'botanist'</p>	<p>Scientists in focus 'working in role as a 'biologist'</p>
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<h2>Science Year 3 Overview</h2>				
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<p>Autumn 1 Rocks Physics</p>	<p>Autumn 2 Light Physics</p>	<p>Spring Forces and Magnets Physics</p>	<p>Summer Plants Animals/Humans Biology</p>	
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<p>Rocks:</p> <ul style="list-style-type: none"> • <u>Compare and group together different kinds of rocks on the basis of their appearance and simple physical</u> 	<p>Light:</p> <ul style="list-style-type: none"> • <u>Recognise that they need light in order to see things and that dark is the absence of light.</u> Children to explore different light sources. • <u>Notice that light is reflected from surfaces.</u> Children to 	<p>Forces and Magnets:</p> <ul style="list-style-type: none"> • <u>Compare how things move on different surfaces.</u> Children to identify whether an object moving is due to a push or a pull. • <u>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</u> • <u>Observe how magnets attract or repel each other and attract some materials and not others.</u> • <u>Compare and group together a variety of everyday materials on the basis of whether</u> 	<p>Plants:</p> <ul style="list-style-type: none"> • <u>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</u> Children to 'dissect' a plant and identify the 	<p>Animals Including Humans:</p> <ul style="list-style-type: none"> • <u>Identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</u> Children to sort food -what food groups are they aware of/ can identify. Link to cooking
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<p><u>properties.</u> Children to sort using Venn and Carroll diagrams based on their own and set criteria. Children to explore properties such as permeability . Children to identify why different rocks are used for different purposes - why are they best suited to this job?</p> <ul style="list-style-type: none"> • <u>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</u> Children to look at a 	<p><u>reflect light from different surfaces.</u> Can they identify reflective and non-reflective surfaces? Can they create a reflective scale from most to least?</p> <ul style="list-style-type: none"> • <u>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</u> Children to create a campaign to keep their eyes safe. Could also link to the dangers of laser pens. • <u>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</u> Children to explore shadows. What is the biggest/ smallest shadow they can make from their bodies. Shadow puppet theatre. • <u>Find patterns in the way that the sizes of shadows change.</u> Children to investigate the impact of shadows in relation to the 	<p><u>they are attracted to a magnet, and identify some magnetic materials.</u> Children to sort using Venn Diagrams before they test materials and then refine after testing using magnets.</p> <ul style="list-style-type: none"> • <u>Describe magnets as having two poles.</u> Children to explore how a compass works. Children to create a simple compass. • <u>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</u> Children to explore the effects of magnets on a range of materials, including other magnets. <p>Science and Industry Investigation: Forces and Recycling</p>	<p>parts of a plant and their role. Children to create an information leaflet/ video about the functions of different parts of a plant. Recap the purpose of scientific diagrams as opposed to pictures.</p> <ul style="list-style-type: none"> • <u>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.</u> Children to recap what they learnt in Year 2 about what plants need to survive. Children to use this knowledge to grow the healthiest plant over the half term - agree as a class on the criteria for healthiest. 	<p>on a budget topic. Children to investigate the nutritional values of different foods and use to inform menu creations.</p> <ul style="list-style-type: none"> • <u>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</u> Children to explore and sort images of different x-rays. Children to compare the skeleton structures of different animals. Children to be able to write an explanation of why we need skeletons. <p>Science and Industry Investigation: Medicine for Pets.</p>
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<p>range of fossils. Children to create their own fossils.</p> <ul style="list-style-type: none"> • <u>Recognise that soils are made from rocks and organic matter.</u> Children to observe different soils and make comparisons . Children to identify different types of soil. 	<p>distance from a light source.</p>		<p>Children to review their progress and keep a diary of any changes they make to the plant/ environment and the outcome to its health.</p> <ul style="list-style-type: none"> • <u>Investigate the way in which water is transported within plants.</u> Children to use food colouring in water with a flowering plant to observe how water is transported. • <u>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</u> Link to pollination project. Children to identify how flowering plants around school pollinate. Children to create a model that explains either pollination 	
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			<p>or seed dispersal e.g. dandelion seed.</p> <p>Science and Industry Investigation: Turf Troubles</p>	
<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions. • Set up simple practical enquires and comparative tests. • Making systematic and careful observations and take accurate measurements. • Gathering, recording, classifying and presenting data in a variety of ways. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions. • Set up simple practical enquires and comparative tests. • Making systematic and careful observations and take accurate measurements. • Gathering, recording, classifying and presenting data in a variety of ways. • 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 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions. • Set up simple practical enquires and comparative tests. • Making systematic and careful observations and take accurate measurements. • Gathering, recording, classifying and presenting data in a variety of ways. • 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. • Identifying differences, similarities or changes related to simple scientific ideas and processes. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions. • Set up simple practical enquires and comparative tests. • Making systematic and careful observations and take accurate measurements. • Gathering, recording, classifying and presenting data in a variety of ways. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions. • Set up simple practical enquires and comparative tests. • Making systematic and careful observations and take accurate measurements. • Gathering, recording, classifying and presenting data in a variety of ways. • 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. <p>Identifying differences, similarities or changes related to</p>

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Scientists in focus 'working in role as a 'geologist, agronomist and palaeontologist'	Scientists in focus 'working in role as a physicist'	Scientists in focus 'working in role as a physicist'	Scientists in focus 'working in role as a botanist'	Scientists in focus 'working in role as a biologist and dietician'
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Science Year 4 Overview

Autumn 1 Sound Physics	Autumn 2 Living things habitats Biology	Spring 1 Animals/Humans Biology	Spring 2 Animals/Humans Biology	Summer States of Matter/Electricity Physics/Chemistry
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<p>Sound:</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Link to music teaching. DT link to creating their own instrument. Children to explain how their instrument makes a sound through vibration. Recognise that 	<p>Living things and their habitats:</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. Children to use Venn and Carroll diagrams to sort using their own criteria and given criteria. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Use keys for known wildlife. Children to create keys to be used in the school environment looking at habitats around school. Children to use keys to identify 	<p>Animals Including Humans:</p> <ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans. Children to learn about the organs involved in digestion and what role they play. Children to create a working model of the digestive system to demonstrate how food passes through the body. Identify the different types of teeth in humans and their simple functions. Children to be able to identify how many teeth a human has, why we have baby teeth, the different teeth we have and the jobs each tooth does. Children to create a guide to taking care of your teeth. Children to explain how the different teeth function and why we need them Construct and interpret a variety of food chains, identifying producers, predators and prey. <p>Science and Industry Investigation: Healthy Drinks and Tasty Toothpaste.</p> <p>*Try to arrange a visit to or from a dentist/hygienist.</p>		<p>States of Matter:</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids. Liquids or gases. Can children identify the different structures of states of matter? Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happened in degrees Celsius. Investigations such as melting/ evaporating to be 	<p>Electricity:</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Children to sort and identify objects. Construct simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Children given time to explore at the beginning of the unit to identify prior knowledge and understanding. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp
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<p><u>vibrations from sounds travel through a medium to the ear.</u> Investigate string telephones.</p> <ul style="list-style-type: none"> • <u>Find patterns between the pitch of a sound and features of the object that produced it.</u> Link to music teaching about pitch. • <u>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</u> • <u>Recognise that sounds get fainter as the distance</u> 	<p>animals they may not have encountered before from habitats different to the <u>local environment.</u></p> <ul style="list-style-type: none"> • <u>Recognise that environments can change and that this can sometimes pose dangers to living things.</u> Children to look at the impact of wildlife and eco-systems when the countryside is developed (local link) and to areas of deforestation (world link) or pollution in the sea (world link). 		<p>conducted as part of this unit.</p> <ul style="list-style-type: none"> • <u>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</u> Children to create a model to explain the water cycle. This could be done as a cross curricular computing session. <p>Science and Industry Investigation: Runny Liquids / Rough Guide to Gas.</p>	<p><u>lights in a simple series circuit.</u></p> <ul style="list-style-type: none"> • <u>Recognise some common conductors and insulators, and associate metals with being good conductors.</u> <p>Possible investigation: Can children create a burglar alarm to keep the fashion show jewellery safe using their knowledge of circuits.</p>
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<p><u>from the sound source increases.</u> Investigate telephone phones. Investigate the distance sound can travel around the school. Use data loggers.</p>				
<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Set up simple practical enquires comparative and fair tests. • Making systematic and careful 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Set up simple practical enquires 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. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Set up simple practical enquires 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 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Set up simple practical enquires comparative and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • Asking relevant questions and using different types of scientific enquiries to answer them. • Set up simple practical enquires 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.

<p>observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<p>range of equipment, including thermometers and data loggers.</p> <ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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.
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<p>from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <ul style="list-style-type: none">• 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	<p>scientific evidence to answer questions or to support their findings.</p>		<p>raise further questions</p> <ul style="list-style-type: none">• Identifying differences, similarities or changes related to simple scientific ideas and processes• Using straightforward scientific evidence to answer questions or to support their findings.	
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answer questions or to support their findings.				
Scientists in focus 'working in role as a physicist'	Scientists in focus 'working in role as a 'biologist'	Scientists in focus 'working in role as a 'biologist, dentist and gastroenterologist'	Scientists in focus 'working in role as a physics and chemist'	Scientists in focus 'working in role as a physics'

Science Year 5 Overview

Autumn 1 Space Physics	Autumn 2 Light Physics	Spring Materials Biology	Summer 1 Living things/habitats Biology	Summer 2 Animals/Humans Biology
<p>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 approximate 	<p>Forces:</p> <ul style="list-style-type: none"> <u>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</u> Ensure children understand that weight is not the factor that determines the rate in which an object falls -this can be demonstrated by dropping a basket ball and tennis ball from the same height and at the same time -they will both hit the ground at the same time. 	<p>Properties and changes of materials:</p> <ul style="list-style-type: none"> <u>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.</u> Children to sort different materials and then to re-sort and refine their choices after testing. <u>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</u> Children to investigate using sugar/ salt to create a solution and then evaporate the water to get salt/sugar crystals. <u>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</u> <u>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</u> 	<p>Living things and their habitats:</p> <ul style="list-style-type: none"> <u>Describe the differences in the life cycle of a mammal, an amphibian, an insect and a bird.</u> <u>Describe the life process of reproduction in some plants and animals.</u> <p>Children to identify plants/ animals in the local environment -and further afield and research their life cycle -this could be done as a group project with a presentation at the end of the unit.</p>	<p>Animals Including Humans:</p> <ul style="list-style-type: none"> <u>Describe the changes as humans develop to old age.</u> <p>(To be taught as part of Sex Education). Literacy/PSHE links to the story of the Flour Babies. To look at how a human changes/ develops from a foetus to old age.</p>

ly spherical bodies.

- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Science and Industry

Investigation: Is there anybody out there?

Children also need to understand that weight can vary based on location (Moon/ Earth) but your mass remains the same.

- Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Children to investigate parachutes/ streamline shapes. Taught through 'Go Kart Unit'.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Taught through 'Go Kart Unit'.

Science and Industry

Investigation: Feel the Force.

Light:

- Recognise that light appears to travel in straight lines. Children to create a light maze or periscope applying

changes of state are reversible changes. Children to create a materials guide based on their properties and what they would be best suited for.

- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. Children to look at a burning candle melting chocolate -how are these two changes different? Children to look at the effect of bicarbonate of soda and vinegar. How can we identify it as a chemical change?

Science and Industry Investigation: Renewables Don't Run Out/ A Pinch of Salt.

their knowledge of how light travels to make it work.

- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Look at how cars use mirrors and how Hermione avoided being killed in the Chamber of secrets using a mirror. Children to utilise a mirror to i.e. 'see' around a corner or behind them (spy glasses).
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Children could explore Indonesian shadow puppets - ensure

	<p>they can explain the science behind the shadows not just tell a story.</p> <p>Science and Industry Investigation: Kitchen Concoctions.</p>			
<p>Working Scientifically:</p> <ul style="list-style-type: none"> • 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, taking repeat readings 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • 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, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • 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, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, 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. 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • 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, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification 	<p>Working Scientifically:</p> <ul style="list-style-type: none"> • 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, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, 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

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degree of trust in results, in oral and written forms such as displays and other presentations.				
Scientists in focus 'working in role as an astronomer'	Scientists in focus 'working in role as a physicist'	Scientists in focus 'working in role as a 'physicist and chemist'	Scientists in focus 'working in role as a biologist'	Scientists in focus 'working in role as a biologist'

Science Year 6 Overview

Autumn 1 Light Physics	Autumn 2 Electricity Physics	Spring 1 Living things and their habitats Biology	Spring 2 Evolution and Inheritance Biology	Summer Animals including Humans Biology
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<p>Light:</p> <ul style="list-style-type: none"> Recognise that light appears to travel in straight lines. Children to create a light maze or periscope applying 	<p>Electricity:</p> <ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Investigate the effect of more/less cells used in a circuit. 	<p>Living things and their habitats:</p> <ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, 	<p>Evolution and Inheritance:</p> <ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living 	<p>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. Children to create diagrams/models of the heart and explain how it works. Children to explain how we can take care of our hearts. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Children to create healthy living guides. Children to conduct research. Children to look at the link between different types of exercise and the effect they have
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<p>their knowledge of how light travels to make it work.</p> <ul style="list-style-type: none"> • <u>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</u> Look at how cars use mirrors and how Hermione avoided being killed in the Chamber of secrets using a mirror. Children to utilise a mirror to i.e. 'see' around a corner or behind them 	<ul style="list-style-type: none"> • <u>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</u> Children to create a range of circuits and explain how changing variables affects outputs. • <u>Use recognised symbols when representing a simple circuit in a diagram.</u> Children to create diagrams from circuits and circuits from diagrams. <p>Science and Industry Investigation: Generating Electricity.</p>	<p><u>plants and animals.</u> Children to sort into Venn diagrams using their own and set headings. Children to create factsheets/ presentations about the different groups. Children to invest a living thing for someone to sort into a group.</p> <ul style="list-style-type: none"> • <u>Give reasons for classifying plants and animals based on specific characteristics.</u> <p>Science and Industry Investigation: Medicine from Microbes</p>	<p><u>things that inhabited the Earth millions of years ago.</u> Children to compare different fossils and draw conclusions from them. What can we learn from where fossils are found about how the Earth has changed?</p> <ul style="list-style-type: none"> • <u>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</u> Children to bring in family photos - what 	<p>on heart rate. Children to identify which exercise is most beneficial to different parts of our bodies.</p> <ul style="list-style-type: none"> • <u>Describe the ways in which nutrients and water are transported within animals, including humans.</u> <p>Science and Industry Investigation: Science of Healthy Skin.</p> <p>*Try to get a visit from a cardiac nurse, the British heart foundation or someone who could teach the children CPR.</p>
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(spy glasses).

- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Children could explore Indonesian shadow puppets - ensure they can explain the science behind the

inherited features can you identify. Pose the question about whether they can inherit other traits such as creativity? Idea of nature vs nurture to debate. If they have siblings what inherited features do they share? What differs. Look at a basic explanation of how parents pass on their genes.

Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

<p>shadows not just tell a story.</p> <p>Science and Industry Investigation: Kitchen Concoctions.</p>			<p>Look at the examples from the Galapagos islands as to how adaption led to evolution. That animals do not change to survive but that the strong survive and their genes are passed on. Look at animal breeding for specific features such as race horses. Study the resurrection plant and how it has adapted to its environment to survive. Children to explain how a plant/ animal is well adapted to its environment.</p>		
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<ul style="list-style-type: none"> • 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. 	<p>repeat readings when appropriate</p> <ul style="list-style-type: none"> • 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. 	<p>where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> • 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 	<p>equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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.
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		<p>to set up further comparative and fair tests.</p> <ul style="list-style-type: none">• 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.	<p>displays and other presentations.</p> <ul style="list-style-type: none">• Identifying scientific evidence that has been used to support or refute ideas or arguments.	
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Scientists in focus 'working in role as a physicist'	'Scientists in focus 'working in role as a biologist'	Scientists in focus 'working in role as a biologist and geneticist'	'Scientists in focus 'working in role as a biologist and cardiologist'
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