

Parkside Primary Academy – Science Curriculum Progression


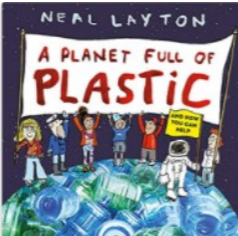
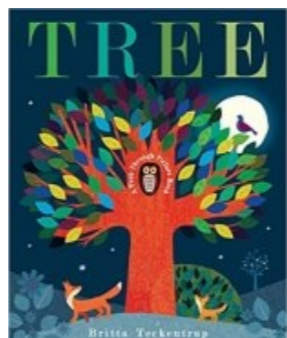
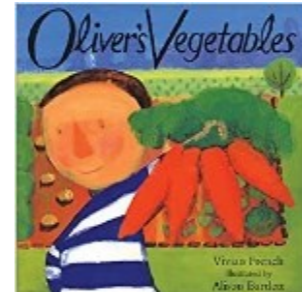
SCIENCE

EYFS THEMES and LINKS

<p>EYFS 22-23 Aut 2 Sum 123-24 Aut 2 Sum 1</p>	<p>Who can help us stay safe and healthy?</p> <ul style="list-style-type: none"> Dental hygiene Stranger danger Healthy food plate Why exercise is important Dark vs light (road safety) Bonfire night and firework safety. <p>Class Texts:</p> <ul style="list-style-type: none"> People who help us books; doctor's nurses, firemen teachers, vets, lolly pop people, lifeguards and paramedics. Zog and the flying doctors. Little people big dreams. Lost and found Bonfire Night Brush your teeth please Room on the broom Spinderella Stick Man The Jolly Postman 	<p>What can you find down on the farm?</p> <ul style="list-style-type: none"> Life cycles: farm animals Taking care of living creatures Chicks? Farm visits/Zoo Lab Habitats Plant and animal safety The importance of bees Farm vehicles, tractors. <p>Class Texts:</p> <ul style="list-style-type: none"> The enormous turnip Where's my mum? Super worm What the ladybird heard What the ladybird heard next Life cycle books, cow, sheep, butterfly, frogs ect.. Farmer Ducks The very hungry caterpillar 	<p>Who goes to the ugly bug ball?</p> <ul style="list-style-type: none"> Mini-beast varieties Life cycles: butterflies/frogs/farm animals Taking care of living creatures Farm visits/Zoo Lab Habitats Plant and animal safety The importance of bees <p>Class Texts:</p> <ul style="list-style-type: none"> Jack and the beanstalk – talk for writing The very hungry caterpillar The billy goats gruff What the ladybird heard The enormous turnip Where's my mum? Superworm What the ladybird heard What the ladybird heard next Tadpoles 	<p>Do you want to go on an adventure?</p> <ul style="list-style-type: none"> Space, planets, rockets, aliens and robots. Famous astronauts and figures. Space station Technology used in space Building space ships/rockets Staying safe in the sun – summer safety Shadow experiments Transition into F2/Y1 <p>Class Texts:</p> <ul style="list-style-type: none"> Tiddler What the ladybird heard at the seaside What the ladybird heard on holiday he Smeds and the Smoods
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SCIENCE: Year 1 – Year 6

Objectives

<p>Year 1: Aut 1 Spr 2</p>	<p>What are everyday objects made from and why?</p> <p>Building on children's first hand experiences of water, sand and malleable materials in EYFS, children continue their scientific enquiry by learning further about the names of other materials. They begin to describe their physical properties and group them together looking at similarities and differences.</p>  <p>Children will work scientifically by performing simple tests to explore the question 'What is the best material for an umbrella?' Children will perform simple tests and gather and record data to help them answer questions.</p> <p>Class Texts: We Build our Homes by Laura Knowles and Chris Madden</p> <p>A Planet full of Plastic by Neal Layton</p>  <p>Through the text 'A planet full of plastic', children will be introduced to the global problem of plastic pollution. This text provides children with the knowledge where plastic comes from, why it doesn't biodegrade, and why it is dangerous for humans and animals alike. This builds cultural capital in children and teaches children about responsible citizenship with ideas of how to make a difference in protecting Planet Earth therefore contributing positively to climate change. Cultural Capital is built by teaching children how to be a responsible citizen by recycling, re-using and reducing plastic waste.</p> <p><u>Why this, why now?</u></p>	<p>How do plants and trees change through the seasons?</p> <p>Through the anchor text 'Oliver's vegetables' children build on their learning in Early years to further explore how plants grow. They learn the structure of a plant and the function of each part. They learn the names of some common wild and garden plants including deciduous and evergreen trees.</p> <p>Class Texts: Oliver's Vegetables by Vivian French</p> <p>Tree by Britta Teckentrup</p>  <p>Through the text 'Tree' children learn about how plants and trees change through the seasons and observe the weather associated with seasons. Children will use the school grounds and the local environment to answer and ask questions about plants.</p>  <p><u>Why this, why now?</u> The topic about what makes the world alive, links to EYFS themes Our World and Mini Beasts. The content learnt by children in reception around environments, life cycles and taking care of plants and creatures, provide the foundation for this topic. Children will use the scientific knowledge taught in Year 1 to support their understanding of plants and animals in Year 2 and Year 3.</p>	<p style="text-align: center;">Working Scientifically</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>I know:</p> <ul style="list-style-type: none"> How to use simple equipment to help me make observations How to match objects into groups e.g. living things, non-living things How to record my information </td> <td style="width: 50%; padding: 5px;"> <p>I can:</p> <ul style="list-style-type: none"> Perform a simple test Give a reason why I sorted things into particular groups Put my information into a chart </td> </tr> </table> <p style="text-align: center;">Biology plants</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>I know:</p> <ul style="list-style-type: none"> The names of most of the parts of a plant e.g. the petals, stem, leaf, bulb, flower, seed, root the names of some common plants and trees e.g. daffodil, Oak, what deciduous and evergreen mean names of the trunk, branches and roots of a tree </td> <td style="width: 50%; padding: 5px;"> <p>I can:</p> <ul style="list-style-type: none"> Label parts of a plant with the correct name Describe the parts of a plant e.g. root, stem, leaves, flowers Recognise which trees are deciduous and which trees are evergreen Label parts of a tree with the correct name </td> </tr> </table> <p style="text-align: center;">Biology Animals Including Humans</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"> <p>I know:</p> <ul style="list-style-type: none"> The names of lots of different common animals including fish, amphibians, reptiles birds and mammals What a domestic animal is The names of lots of different domestic animals What a wild animal is The names of some wild animals That animals live in a habitat and that these can be different depending on the animal What carnivores, herbivores and omnivores are The names of the basic parts of the human body that you can see The names of the 'senses' e.g. touch, taste, smell, hearing, sight </td> <td style="width: 50%; padding: 5px;"> <p>I can:</p> <ul style="list-style-type: none"> Explain the difference between a domestic animal and a wild animal. Sort photographs of living and non-living things Explain what a habitat is and tell you how an animal is suited to it's habitat e.g. Meerkats Name some common animals who are meat eaters/plant eaters using scientific vocabulary Classify animals by what they eat Label and draw basic parts of the human body </td> </tr> </table>	<p>I know:</p> <ul style="list-style-type: none"> How to use simple equipment to help me make observations How to match objects into groups e.g. living things, non-living things How to record my information 	<p>I can:</p> <ul style="list-style-type: none"> Perform a simple test Give a reason why I sorted things into particular groups Put my information into a chart 	<p>I know:</p> <ul style="list-style-type: none"> The names of most of the parts of a plant e.g. the petals, stem, leaf, bulb, flower, seed, root the names of some common plants and trees e.g. daffodil, Oak, what deciduous and evergreen mean names of the trunk, branches and roots of a tree 	<p>I can:</p> <ul style="list-style-type: none"> Label parts of a plant with the correct name Describe the parts of a plant e.g. root, stem, leaves, flowers Recognise which trees are deciduous and which trees are evergreen Label parts of a tree with the correct name 	<p>I know:</p> <ul style="list-style-type: none"> The names of lots of different common animals including fish, amphibians, reptiles birds and mammals What a domestic animal is The names of lots of different domestic animals What a wild animal is The names of some wild animals That animals live in a habitat and that these can be different depending on the animal What carnivores, herbivores and omnivores are The names of the basic parts of the human body that you can see The names of the 'senses' e.g. touch, taste, smell, hearing, sight 	<p>I can:</p> <ul style="list-style-type: none"> Explain the difference between a domestic animal and a wild animal. 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Year 1 builds on the topic of Space in EYFS where pupils investigate shadows and different materials suitable for building rockets. This understanding is vital for the learning in Year 3 and 5 where pupils investigate using the properties of materials in a more complex way.

- Tell you which part of the body is linked with each sense e.g. tongue = taste, eyes = sight

Chemistry: Everyday Materials (Identifying/Comparing Materials)

I know:

- The names of up to 6 materials e.g. wood, metal, glass etc
- That solid shapes can sometimes be changed by squashing, bending, twisting and stretching
- Why some materials are used for certain things e.g. wood to build a fence

I can:

- Tell objects apart from the material it is made of e.g. drinking glass or plastic beaker
- Describe everyday materials using my senses e.g. look like/feel like/smell like – hard/ bendy/soft etc
- Explain why a particular material might/might not be used for a job e.g. you wouldn't make a fence out of paper

Chemistry: Everyday materials (changing materials)

I know:

- The names of up to 6 materials e.g. wood, metal, glass etc
- That solid shapes can sometimes be changed by squashing, bending, twisting and stretching
- Why some materials are used for certain things e.g. wood to build a fence
- that solid shapes can be changed when you squash, bend, twist and stretch them
- the names of and differences between a variety of everyday materials like wood, metal, plastic, glass, brick, rock, fabrics, paper and cardboard
- how to describe different materials e.g. waterproof, bendy, transparent, opaque, absorbent
- how to describe different surfaces e.g. smooth, shiny, dull, rough, hard, soft
- that things move differently on different surfaces e.g. a toy car moves faster on wood than on carpet

I can:

- Tell objects apart from the material it is made of e.g. drinking glass or plastic beaker
- Describe everyday materials using my senses e.g. look like/feel like/smell like – hard/ bendy/soft etc
- Explain why a particular material might/might not be used for a job e.g. you wouldn't make a fence out of paper
- explain how solid shapes can be changed by squashing, bending, twisting and stretching them
- compare and explain how suitable different materials are to build something e.g. glass is more suitable for a window than cardboard
- compare and group different everyday materials accord to a given criteria
- explain how things move on different surfaces

Physics: Seasonal Changes (Changing Seasons)

I know:

- The names of the four seasons
- What the weather is like in each season
- What happens in each season
- That the day is shorter in winter and longer in summer

I can:

- Tell you the four seasons in order
- Tell you how the weather is different/similar in each season
- Tell you why the day is longer in summer

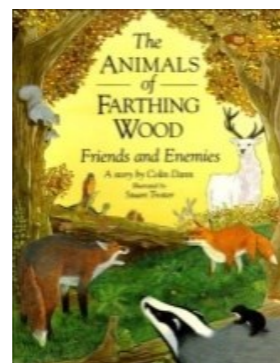
Year 2:
Aut 1
Spr 2

How do plants and animals survive?

Through Science investigation, children learn what makes animals alive: classifying different types of living things, exploring life processes and different habitats.

Class Text: The Animals of Farthing Wood by Colin Dann

Through the classic anchor text "The Animals of Farthing Wood", children build upon learning in Year 1, Spring 1 to investigate the similarities and differences between different animals and habitats. Children explore how people's actions can affect the future and present their understanding of what makes the world alive.



As a hook, children will receive a letter informing them a housing company is going to build on Rabbit Ings, a local country park. Children will apply their knowledge and write to inform the building company of the damage and destruction this will cause to the animals and their habitats.

Why this, why now?

How can I look after myself?

Building on learning from EYFS, All about me, children learn the importance of self-care, exercising and a balanced diet. Through the non-fiction text 'Life on Earth: Human Body', children will gather information in order to write an information text to inform an audience.

Class Texts: George's Marvellous Medicine by Roald Dahl

Life on Earth: Human Body by Heather Alexander

A dental hygiene nurse will visit children and further explore the importance of healthy eating and oral hygiene.

Working Scientifically

I know:

- How to use my senses to help me answer questions
- How to perform a simple test
- How to use prompts to find things out
- How to identify similarities/differences in animals e.g. has feathers, lays eggs
- How to record my findings

I can:

- Use some scientific words to describe what I have noticed e.g. waterproof, absorbent, transparent, opaque
- Explain why a test might not be fair
- Tell you if my test happened like I expected
- Find simple patterns
- Compare several things
- Classify or group animals by using similarities/differences identified
- Use diagrams, pictures, charts
- Use scientific vocabulary to explain what I have found out

Biology plants

I know:

- The things that plants need to live e.g. water, sunlight, correct temperature
- how seeds and bulbs grow into mature plants

I can:

- describe how plants need water, light and the correct temperature to grow and stay healthy
- explain how seeds and bulbs grow into mature plants

Biology: Living things and their habitats

Children have classified animals and plants in EYFS (Mini-Beasts) and Year 1. This scientific knowledge supports children in their learning about all living things, life processes and habitats. The learning in Year 2 provides a foundation for in depth understanding needed about plants in Year 3, further classification about habitats and animals in Year 4 and Year 5. Also their study on the impact of humans on the world around them is key for this further study in Year 5 and 6.



Children will use the text 'George's Marvellous Medicine' to write to inform the audience how to make a marvellous medicine.

Why this, why now?

The topic 'How can we stay fit and healthy?' explored in EYFS is the foundation for pupils learning this Year 2 topic. They build on the biological understanding of the human body but also PHSCE around looking after themselves. This themes continues through school but is closely linked to the Year 3



topic understanding how animals and plant grow. This also further links to Year 4 learning about the human body, major organs and the digestive system. Further links can be make with Year 6 learning where children explore the heart and what happens if it doesn't function properly.

I know:

- that animals and plants need certain types of **habitats** to live in e.g. **woodland, pond, desert**
- some types of different **habitats**
- what makes something alive (a **living** thing)

I can:

- match plants and animals to the **habitats** they live in
- describe how a **habitat** provides for the basic needs of animals and plants living there
- describe a range of different **habitats**
- describe in detail why animals and plants are **suited** to their **habitat**
- decide if something is **living, dead or non-living**
- explain the difference between **living and non-living things**

Biology: Animals including humans

I know:

- the things animals and humans need to stay alive and **survive** e.g. **food, water, air**
- that animals and humans might eat different things and these give them **energy**
- how different animals grow and **reproduce** to make **offspring**
- what a **food chain** is and understand words like **prey** and **predator**
- what a **life cycle** is
- different words to describe animals and humans during their **life cycle** e.g. **baby, calf, kitten, puppy, adult**

I can:

- explain how animals grow and **reproduce**
- describe the **life cycle** of some living things e.g. **egg, chick, chicken**
- describe why **exercise, balanced diet** and **hygiene** are important for humans

Year 3
Aut 1
Spr 2

Do you need light to see?

Children will encounter for the first time the concept of light and dark. They will learn that we need light in order to see and that light is reflected from surfaces. They will discuss how light from the sun is dangerous and how to protect themselves. They will explore how shadows are formed and how they change size. Children will build on their knowledge that light is reflected from surfaces to understand that the light reflects into the eye and that is how we see. They will build on their knowledge of shadows to explain that light travels in straight lines, which is why shadows are the same shape as the object that cast them.

Class Text: The Distance Between Me and the Cherry Tree by Paola Peretti



The anchor text, The Distance Between Me and the Cherry Tree focuses on a young girl who is losing her sight due to a degenerative eye condition. The text explores the theme of sight and works towards Parkside's intent that children will understand the world around them and how to keep themselves safe. It will develop their cultural capital by realising that not all disabilities are visible and that having a disability doesn't mean you can't do the things you would like.

Why this, why now?

Children in Year 2, investigated in depth about what make you healthy. Year 3 builds on this by looking specifically at the eye, how it works and how to look after it. They also use their understanding from KS1 about the properties of materials to

investigate how shadows are made and which materials are best for creating shadows and reflections. These scientific enquires support investigations that take place in the rest of KS2. Also the consideration about keeping ourselves healthy fits carefully in the rest of biology taught through KS2 (Year 4 the digestive system and Year 6 the circulatory system).

How do plants and animals move and grow?

Children will identify and describe the functions of different parts of flowering plants and explore what they need to live and grow. This will build on previous learning in KS1 where children have learnt the names of common wild and garden plants and learnt to identify the parts of a plant. New learning will mean the children will explore the part that flowers play in the life cycle of flowering plants.

Children will build on their learning from year 2 when they learn that humans and animals need different foods to stay healthy. Through new learning they will discover foods that are good for different aspects of the body. They can explore foods further in their learning about the importance of the skeleton and what foods will help bones to grow and be strong. It will also provide a basis for learning in year 4 when they learn about how nutrients are processed through the digestive system.

Children will identify that humans and animals have skeletons and muscles. They will describe the purpose of these body parts to support, protect, and for movement.

Class Text: Trust me Mr, Jack's Beanstalk Stinks by Eric Braun



Through the anchor text, Trust me Mr, Jack's Beanstalk Stinks, children begin to consider other characters in stories and think about different perspectives which they will use to inform their writing.

Why this, why now?

Children will build on their learning from year 2 when they learn that humans and animals need different foods to stay healthy. It will also provide a basis for learning in year 4 when they learn about how nutrients are processed through the digestive system.

Working Scientifically

I know:

- How to use different ideas to find something out
- How to set up a simple fair test
- How to make a comparison by using a fair test
- How to use different equipment and units of measure
- How to record what I have found out in different ways e.g. chart, labelled diagram

I can:

- Make a prediction before my test
- Explain what makes a test fair
- Explain why I need to collect information to answer a question
- Make accurate measurements using units of measure
- Describe what I have found out using scientific language
- Explain what I have found out and use my measurements to say if this helps to answer my questions

Biology: Plants

I know:

- The different names and functions of different parts of flowering plants e.g. **root, stem/trunk, leaves, flowers**
- what plants need to survive and grow e.g. **air, light, water, nutrients** from **soil** and room to **grow**
- how **water** is **transported** within plants
- that flowers are important in the **life cycle** of **flowering plants**
- what **pollination, seed formation and seed dispersal** means

I can:

- Describe the different functions of different parts of flowering plants
- Explain how what plants need to survive might be different depending on what type of plant it is e.g. a cactus and a rose bush
- Explain the **life cycle** of **flowering plants** using the correct scientific names

Biology: Animals including humans

I know:

- that animals and humans need a **nutritionally balanced diet**
- how **nutrients, water and oxygen** are **transported** within animals and humans
- that animals and humans do not make their own food, they need to get **nutrition** from what they eat
- what a human **skeleton** looks like
- the names of some of the **bones** in a human's **skeletal system** e.g. **skull**
- how the **muscular** system of a human works

I can:

- explain why a **nutritionally balanced diet** is important to humans and animals
- explain how **nutrients, water and oxygen** are **transported** within animals and humans
- describe and explain the **skeletal system** of a humans
- describe and explain the **muscular system** of a human and how humans use their muscles to move



Chemistry: Rocks

I know:

- the names of some different types of rock e.g. **sandstone, granite, marble, pumice**
- how to compare and group together different rocks according to their appearance and simple **properties**
- what **sedimentary** and an **igneous** rocks are and how they are formed
- how a **fossil** is formed when things that have lived are trapped within a rock
- that soils are made from rocks and **organic** matter

I can:

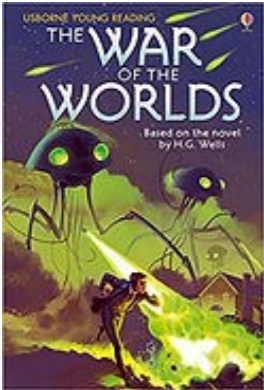
- Explain how different rocks can be useful to us
- Explain the differences between **sedimentary** and **igneous** rocks considering the way they are formed
- Explain how a **fossil** is formed

			<p style="text-align: center;">Physics: Forces and magnets</p> <p>I know:</p> <ul style="list-style-type: none"> That things move differently on different surfaces What friction means That magnetic forces can be transmitted without direct contact That magnets have two poles N & S That some magnets attract or repel each other Which materials/types are attracted to magnets and which are not The names of some magnetic materials <p>I can:</p> <ul style="list-style-type: none"> Compare how things move on different surfaces Predict whether two magnets will attract or repel each other depending on which poles are facing <hr/> <p style="text-align: center;">Physics: Light</p> <p>I know:</p> <ul style="list-style-type: none"> that I need light so that I can see things that dark is when there is no light that light from the sun can be dangerous what reflection and refraction mean that light is reflected from surfaces that shadows are made when the light from a light source is blocked by a solid object That light appears to travel in straight lines That we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes How to use scientific vocabulary like refraction, reflection, spectrum, rainbow, periscope, telescope, binocular <p>I can:</p> <ul style="list-style-type: none"> explain why I need light so that I can see things describe different ways I can protect my eyes from the sun find patterns in the way that the size of shadows change 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 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
<p>Year 4 Aut 1 Spr 2</p>	<p style="text-align: center;">What makes the world alive?</p> <p>Children will learn to describe the functions of the basic parts of the digestive system in humans. This will develop learning from KS1 and year 3 where children learnt about different types of food and what nutrients they provide the human body.</p> <p>Children will build on their learning from year 2 when they learn that animals obtain their food from plants and other animals forming a simple food chain. Children will construct their own food chains and learn about producers, predators and prey.</p> <p style="text-align: center;">Class Text: A Journey Through the Digestive System by Max Axiom</p> <p>Through the anchor text, A Journey Through the Digestive System by Max Axiom, the children learn and are able to explain the process of the digestive system and how this works to break food down into our bodies. Furthermore, the text will expose the children to the scientific language that is used to describe the digestive system</p> <p>Children will also learn about the different types of teeth and their simple functions. This new learning can be linked with the digestive system and the function of the teeth in the digestive process. It can also build on learning about carnivores and herbivores in previous years.</p> <p>Children will build on learning from year 2 where the children explored the impact people can have on habitats. New learning will focus on the positive and negative effects of changes to an environment.</p> <p>This theme will work towards Parkside's intent that children will be able to name the key organs in the human body. They will be able to look after their teeth and understand why it's important to look after their teeth.</p> <p>Why this, why now? Building on biology scientific knowledge from year 2 about how to keep their body healthy and year 3's understanding around keeping the skeleton and muscles healthy, pupils will investigate deeper into how our digestive system allows these things to happen. Without this prior knowledge children will not understand the important of their digestive system. This supports understanding which will occur in Year 5 and 6 where pupils continue to develop their biological understanding of how humans grow and the importance of the circulatory system.</p> 	<p style="text-align: center;">What makes the world work?</p> <p>Children will explore and identify the way sound is made through vibration using a range of different materials and how vibrations from sounds travel to the ear. They will explore how the pitch and volume of sounds can be changed in a variety of ways. The main characters in the anchor text 'Wonderstruck' are hearing impaired. This text will expose the children to life without sound. The book can be used as a discussion tool about how important sound is and how it affects lives. The children will encounter electricity for the first time in year 4 where they will identify common appliances that run on electricity. The children will construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. To underpin learning that will occur in year 6, children will draw circuits as a pictorial representation, not necessarily using conventional circuit symbols.</p> <p style="text-align: center;">Class Text: Thunder Struck by Ali Sparkes</p> <p>Through the anchor text, Thunder Struck by Ali Sparkes, children gain a further understanding of how a lightning strike can generate electricity. It also allows children to study a different genre of book which they have not encountered before.</p> <p>This theme will work towards Parkside's intent that children will know the dangers of using and working with electricity so they can stay safe.</p> <p>Why this, why now? In this topic, children are building on their understanding of the physical world around them and how it works. Although the areas of content are different, it is the scientific enquiry and skills, which are developed. During this topic, children will learn how to plan, conduct, record and conclude a range of scientific experiments. These will develop from those in Year 3 where pupils focus on just one skill at a time. Year 4 pupils will be expected to consider a number of these skills in more depth. This builds on knowledge and skills needed for Year 5 and 6 where they will be asked to conduct their own investigations, carry out investigations with a number of variables and use more complex ways of recording and interpreting results. All of these skills support and are linked to pupils statistical skills required in maths for their year group.</p> 	<p style="text-align: center;">Working Scientifically</p> <p>I know:</p> <ul style="list-style-type: none"> How to set up a simple fair test to make comparisons How to plan a fair test and isolate variables Different ways to collect information Use different equipment to take measurements and I know how to use different ways to record what I have found out To look for and find patterns in my evidence/measurements How to identify similarities/differences <p>I can:</p> <ul style="list-style-type: none"> Explain which variables have been isolated and why Suggest improvements and predictions based on something I know/have found out Decide which information needs to be collected and the best way to do this Use what I have found out to come to a simple conclusion Make accurate measurements using standard units Explain what I have found out in different ways e.g. display, diagram, presentation Explain why I have chosen a particular way to explain what I have found out Evaluate what I have found using scientific language, drawings, labelled diagrams, bar charts and tables Use scientific evidence to answer questions <hr/> <p style="text-align: center;">Biology: living things and their habitats</p> <p>I know:</p> <ul style="list-style-type: none"> That living things can be grouped in a variety of ways what a classification key is the difference between vertebrates and invertebrates that animals live in different environments and habitats e.g. amphibians, reptiles, birds, mammals <p>I can:</p> <ul style="list-style-type: none"> use a classification key to group, identify and name a variety of living things e.g. plants, vertebrates, invertebrates compare the classification of common plants and animals to living things found in other places e.g. under the sea, prehistoric explain how environments can change and how this can sometimes mean danger for living things <hr/> <p style="text-align: center;">Biology: Animals including humans</p> <p>I know:</p> <ul style="list-style-type: none"> the names of the basic parts of the digestive system in humans like oesophagus, stomach, small intestine the simple functions of the basic parts of the digestive system in humans the function of different types of teeth in humans e.g. canine, incisor, molar how to build/understand different food chains by identifying consumers, producers, predators and prey <p>I can:</p> <ul style="list-style-type: none"> explain how the digestive system in humans works explain why herbivores and carnivores teeth might be different explain how a food chain works <hr/> <p style="text-align: center;">Physics: Sound</p> <p>I know:</p> <ul style="list-style-type: none"> how to describe a range of sounds using words like volume, pitch, tone that some sounds are made by something vibrating how vibrations from sound travel through a medium to an ear <p>I can:</p> <ul style="list-style-type: none"> Explain how different sounds are made Compare sources of sound and explain how the sounds differ Explain how to change a sound e.g. softer/louder Explain how you could change the pitch of a sound

			<ul style="list-style-type: none"> that sounds get fainter as the distance from the sound source increases 	<ul style="list-style-type: none"> Find patterns between the volume of the sound and the strength of the vibrations that produced it Investigate how different materials can affect the pitch and volume of sounds
			Physics: Electricity	
			I know: <ul style="list-style-type: none"> The names of common appliances that run on electricity e.g. kettle, toaster, washing machine The names of the parts that make up a simple series electrical circuit including cells, wires, bulbs, battery, switches and buzzers That a switch opens and closes a circuit Some common conductors and insulators e.g. copper That some metals are good conductors The symbols you need to use when representing a simple circuit in a diagram 	I can: <ul style="list-style-type: none"> Construct a simple series electrical circuit Tell you the function of the parts that make up a simple series electrical circuit e.g. cells, wires, bulbs, battery, switches and buzzers 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 Look at a switch opening and tell you whether or not a lamp lights in a simple circuit Tell you why some metals are better conductors than others Compare and give reasons for variations in how the different components function, including the brightness of the bulbs, the loudness of buzzers, the on/off position of switches

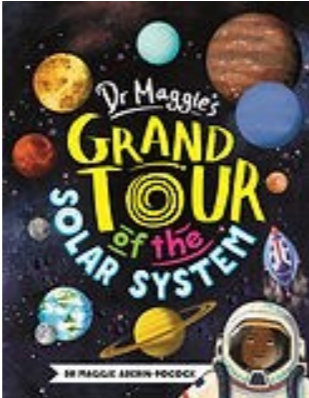
Year 5
Aut 1
Spr 2

How do forces affect Earth and Space?



In this theme, the children will identify and explore the effects of friction and movement on different surfaces. The children can discover why Galileo Galilei and Isaac Newton are important to the understanding of gravitation. During an exploration day, the children will focus on the force of air resistance by working scientifically to create the best parachutes for an egg.

Class Text: The War of the Worlds by H. G. Wells (Usborne version)
Dr Maggie's Grand Tour of the Solar System by Maggie Aderin-Pocock



After looking at forces, children will apply this knowledge to the wider theme of Space. They will learn how gravity affects the orbit of different celestial bodies and also consider the work of different astronomers and scientists in discovering this. **Children will have some knowledge to bring to the science topic of space. In Key Stage 1, children learnt about seasons and a significant individual in history - Neil Armstrong.** While the learning was not around the science of space, the children will learn about Neil's achievements, which were in space.

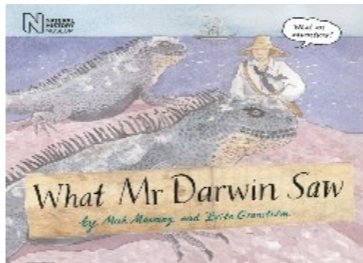
This theme will work towards Parkside's intent that children will be able to name some other planets and understand that the Earth isn't the only thing that exists. They will know famous scientists and their impact on the world today.

Why this, why now?
Studying space in Year 5 is one of the highlights of the year for our children. **It builds on knowledge gained about Space from Foundation Stage and Year 2 when they study Neil Armstrong.** This topic continues to build their skills in scientific enquiry. Children investigate physics in a number of ways. In previous year groups, **they have been asked to make simple tests and record them using diagrams and simple units of measure (Year 1,2,3 and 4).** Children now begin to discuss their own hypotheses and build their own investigations, recording in numerous ways and presenting their findings to others. This becomes a base for **Year 6 where pupils make explicit links between their hypotheses, methods and findings. They will also change a number of variables.**

How do living things change over time?

The topic will begin with children building on their learning from year 2 when they learnt that animals and humans have offspring that grow into adults. Through new learning, children will describe the changes that a mammal, an amphibian, an insect and a bird go through as part of their life cycle. They will work scientifically by observing butterflies.

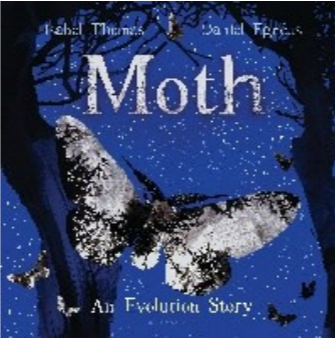
Class Texts: What Mr Darwin Saw by Mick Manning
Moth by Isabel Thomas





After developing their understanding of how living things change throughout their lifetime, children will begin to look at evolution. Children will learn about how characteristics are passed from parents their offspring (e.g. dog breeding). They will look at how some characteristics are more or less advantageous and how this leads to evolution.

This topic builds cultural capital in our children as they will gain a deeper understanding about our place in the world and where we have come from. They will learn that there is not one superior adaptation, but rather animals and humans have adapted in different ways to suit a wide range of environments and conditions.

Why this, why now?
The biological knowledge gained from understanding of how the human body grows and develops in Year 2,3 and 4 provides the foundation needed to understand evolution. Knowledge gained from geography about **animal adaptations in Year 4 and Year 2 also support this learning.** Without this key prior knowledge pupil will not be able to understand that animals including humans develop over time due to adaptations of their surroundings. **This learning in Year 5 allows pupils to develop ethical views around using the heart of a pig to keep a human alive and how we may continue to adapt and evolve in the future which they study in Year 6.**



Working Scientifically	
I know: <ul style="list-style-type: none"> How to plan and carry out an investigation by controlling variables fairly and accurately How to take measurements using a range of scientific equipment with accuracy and precision How to use a graph or a diagram to answer scientific questions How to find patterns in my evidence/measurements 	I can: <ul style="list-style-type: none"> Make a prediction and give reasons for my prediction Use test results to make further predictions and set up further comparative tests Present and report my findings in different ways e.g. writing, display, presentation, drawing Take repeated reading when appropriate Record complex data and results using scientific diagrams, labels, classification keys, tables, scatter graphs, bar charts, line graphs Use scientific evidence to answer questions
Biology: living things and their habitats	
I know: <ul style="list-style-type: none"> The differences in the life cycles of a mammal, an amphibian, an insect and a bird what the life cycle is of common plants the names of well known naturalists like David Attenborough 	I can: <ul style="list-style-type: none"> observe my local environment and draw conclusions about life cycles compare the life cycles of plants and animals in my local environment with the life cycles of those around the world e.g. rainforests
Biology: Animals including humans	
I know: <ul style="list-style-type: none"> The changes which happen as humans develop to old age using vocabulary like teenager, elderly, growth, development, puberty, foetus, embryo, womb, gestation, baby, toddler 	I can: <ul style="list-style-type: none"> Create a timeline to indicate stages of growth in certain animals e.g. frogs and butterflies Describe the changes experienced in puberty Draw a timeline to indicate stages in the growth and development of humans
Biology: Evolution and inheritance	
I know: <ul style="list-style-type: none"> That living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago That living things produce offspring, but normally offspring vary and are not identical to their parents Know what evolution means and what it is That plants and animals are adapted to suit their environments in different ways that adaptations may lead to evolution Who Charles Darwin is and why he is famous 	I can: <ul style="list-style-type: none"> Give reasons why offspring are not identical to each other or to their parents Explain the process of evolution and describe the evidence for this
Physics: Earth and Space	
I know: <ul style="list-style-type: none"> That astronomy is the study of Earth and Space what constellations are The names of the planets in our solar system and the order they are nearest to the sun how the Earth and other planets move in relation to the sun and the solar system how the moon moves in relation to the Earth the phases of the moon how the Earth rotates on it's axis 	I can: <ul style="list-style-type: none"> Explain how seasons and their weather is created Explain how the Moon affects the water tides Describe the sun, Earth and Moon as approximately spherical bodies Explain day and night and why the sun looks like it moves across the sky

			<p align="center">Physics: Forces</p> <p>I know:</p> <ul style="list-style-type: none"> That all unsupported objects fall towards the Earth because of the force of gravity which acts between the Earth and the falling object Some things can affect how an object falls e.g. air resistance, water resistance, friction That you can use mechanisms like levers, pulleys and gears to make a small force have a greater effect That scientists like Galileo Galilei and Isaac Newton helped to develop the theory of gravity <p>I can:</p> <ul style="list-style-type: none"> Explain how gravity works Identify the effects of air resistance, water resistance and friction on moving objects
<p>Year 6 Aut 1 Spr 2</p>	<p align="center">Would you have the heart of a pig?</p> <p>Children will use their previous learning from across key stage 2 to classify plants. They will use learning from year 4 about how to group animals and plants using classification keys. New learning will mean children will learn the difference between vascular and non-vascular plants and will use this to classify a variety of plants. This will be separate learning.</p> <p>In previous years, children will have learnt about how organs have a specific function in the human body. Through new learning and the use of the anchor text, children will identify and name parts of the circulatory system and describe the functions of the heart, blood vessels and blood. The main theme of the anchor text 'Pig Heart Boy' is around the main character having an incurable heart defect and a doctor wanting to help him by giving him the heart from a pig. The scientific language the doctor uses in the text will support the teaching of the circulatory system. Building on learning in year 2 and 3 children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>This theme will work towards Parkside's intent that children will be able to name the key organ in the human body and know how plants grow and what they need to survive.</p> <p>Class Text: – Pig Heart boy by Malorie Blackman</p> <p>The main theme of the book is around the main character having an incurable heart defect and a doctor wanting to help him by giving him the heart from a pig. Throughout the story, the characters change their minds about whether Cam getting a pig heart is the right thing to do. I can use this to lead the children to discuss animal rights and the moral issues around taking animal organs throughout different sections of the story. The main character is the same age as the pupils, so they can relate to his behaviour and feelings. As the main character is relatable, this will support the children when they write in the role of the character.</p> <p>This text will expose the children to scientific language some of which they will be unfamiliar with and will link to the science topic about the circulatory system.</p> <p>Why this, why now? Building on learning in year 2 and 3 children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Also in previous years, children will have learnt about how organs have a specific function in the human body (Year 3 skeleton and muscles and Year 4 digestive system). Through new learning and the use of the anchor text, children will identify and name parts of the circulatory system and describe the functions of the heart, blood vessels and blood. This continuing theme of keeping themselves healthy is a key life skill we want for our children.</p> 	<p align="center">Do states of matter, matter?</p> <p>This theme focuses on the chemistry topic 'States of Matter'. Children will learn that matter makes up our planet and the whole universe. On Earth, all matter exists in one of three main states: solid, liquid or gas. Children will have the opportunity to understand how some materials dissolve and separate through experiments.</p> <p>In previous years, children will have learnt about materials and their properties. Through new learning and the use of the anchor text, children will dissolve, mix and change the properties of materials. They will learn how temperature and pressure affects substances in different states and how matter changes state. The main theme of the anchor text 'Itch' is around the main character having a passion for chemistry. The scientific language that he uses and his teachers use will support the technical language of states of matter.</p> <p>This theme will work towards Parkside's intent that children will be able to name the three states, explain the properties of materials and understand that the Earth exists in one of three main states. They will know famous scientists and their impact on the world today.</p> <p>Class Text: – Itch by Simon Mayo</p> <p>This book is about a child, Itchingham Lofe, who loves science, especially chemistry. He is an element-hunter and in his spare time collects the elements in the periodic table. The children will enjoy reading this book because the main character has a passion for science and loves to experiment. Even though the main character is male there are two strong female characters, who are the same age as Itch. Together, they find themselves tangles in a shadowy web of mystery and action.</p> <p>The overriding theme of chemistry will be linked to the science topic and will provide stimulus for both writing tasks. This text will expose the children to scientific language that they will be unfamiliar with.</p> <p>Why this, why now? Using their knowledge of the properties of materials from Year 2 and Year 3 children begin to investigate how materials change through chemical processes. There learning around the water cycle also supports their understanding of the properties of state. Children use this understanding of how the world works to allow them to prepare them for their next stage in education.</p> 	<p align="center">Working Scientifically</p> <p>I know:</p> <ul style="list-style-type: none"> How to use different ways to test an idea How to vary one factor in my test and keep others the same in an experiment How to plan and carry out an investigation by controlling variables fairly and accurately To decide which units of measurement I need to use How to choose specific equipment I need for my test How to take measurements with accuracy and precision using scientific equipment How to record my measurements in different ways e.g. bar charts, tables, line graphs How to record complex data and results using scientific diagrams, classifications keys, tables, bar charts, line graphs and models. <p>I can:</p> <ul style="list-style-type: none"> Choose the best way and give reasons for my choice Explain why I have varied one factor in my test and kept others the same Make a prediction with reasons and explain these Use scientific information to make a prediction Use test results to make further predictions and set up comparative tests Explain a scientific idea and what evidence supports it Present a detailed report of my findings through writing, display and presentations Identify scientific evidence that has been used to support of refute ideas or arguments <p align="center">Biology: living things and their habitats</p> <p>I know:</p> <ul style="list-style-type: none"> That living things are classified into broad groups according to common observable characteristics based on similarities and differences The differences between microorganisms, plants and animals <p>I can:</p> <ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics <p align="center">Biology: Animals including humans</p> <p>I know:</p> <ul style="list-style-type: none"> The names of the main parts of the human circulatory system e.g. arteries, veins, blood vessels, heart, oxygenated, deoxygenated, valve, respiration, aorta, ventricle, pulmonary circulatory system How the main parts of the human circulatory system work <p>I can:</p> <ul style="list-style-type: none"> Explain how the human circulatory system including the pulmonary circulatory system works Recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function Explain the ways in which nutrients and water are transported within animals including humans <p align="center">Chemistry: States of Matter</p> <p>I know:</p> <ul style="list-style-type: none"> what solids, liquids and gases are how to group and compare materials together according to whether they are solids, liquids or gases how to measure or research the temperature at which different materials change state in degrees Celsius how to use scientific vocabulary to describe changes of state <p>I can:</p> <ul style="list-style-type: none"> explain what happens to materials when they are heated or cooled use measurements to explain changes to the state of water identify the part that evaporation and condensation has in the water cycle associate the rate of evaporation with temperature <p align="center">Chemistry: Properties and changes to materials</p> <p>I know:</p> <ul style="list-style-type: none"> how to compare and group together everyday materials on the basis of their properties including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets how to choose the right materials for a particular purpose based on their properties that dissolving, mixing and changes of state are reversible changes what reversible and irreversible mean <p>I can:</p> <ul style="list-style-type: none"> explain how some materials dissolve in liquid to form a solution use my knowledge of solids, liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporating give reasons why I have chosen particular materials based on their properties 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