



Setting up tests



# A Snapshot of Science at OLOTR



## Working as scientists



Evaluating

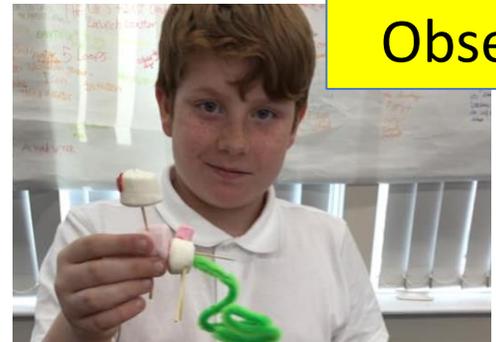
Interpreting and communicating results



Recording data



Observing and measuring



Making predictions



Asking questions





# EYFS Long Term Plan 21-22

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
General Themes	All About me!	Terrific Tales!	Amazing Animals!	Come Outside!	Ticket to Ride!	Fun at the seaside!
Our Values Assemblies / Sharing Circles	<p><b>Mutual respect</b></p> <p>We are all unique. We respect differences between different people and their beliefs in our community, in this country and all around the world. All cultures are learned, respected, and celebrated.</p>	<p><b>Mutual Tolerance</b></p> <p>Everyone is valued, all cultures are celebrated and we all share and respect the opinions of others. Mutual tolerance of those with different faiths and beliefs and for those without faith.</p>	<p><b>Rule of law</b></p> <p>We all know that we have rules at school that we must follow. We know who to talk to if we do not feel safe. We know right from wrong. We recognise that we are accountable for our actions. We must work together as a team when it is necessary.</p>	<p><b>Individual liberty</b></p> <p>We all have the right to have our own views. We are all respected as individuals. We feel safe to have a go at new activities. We understand and celebrate the fact that everyone is different.</p>	<p><b>Democracy</b></p> <p>We all have the right to be listened to. We respect everyone and we value their different ideas and opinions. We have the opportunity to play with who we want to play with. We listen with intrigue and value and respect the opinions of others.</p>	<p><b>Recap all British Values</b></p> <p>Fundamental British Values underpin what it is to be a citizen in a modern and diverse Great Britain valuing our community and celebrating diversity of the UK. Fundamental British Values are not exclusive to being British and are shared by other democratic countries.</p>
Assessment opportunities	Analyse Nursery Assessments (Rec) In-house - Baseline data on entry National Baseline data by end of term	On going assessments Baseline analysis Pupil progress meetings Parents evening info EYFS team meetings In house moderation Midterm Assessments	GLD Projections for EOY Cluster moderation Trust moderation EYFS team meetings Phase meeting and internal moderations	Pupil progress meetings Parents evening info EYFS team meetings itrack data	Cluster moderation Trust moderation EYFS team meetings	Pupil progress meetings Parents evening info EYFS team meetings itrack data EOY data
Resources	Proud Clouds	Proud Clouds	Proud Clouds writing parental information and Read morning	Proud Clouds Parents Evening Reading parental information	Proud Clouds Tapestry/dojo	Proud Clouds End of year reports Parent's Picnic
<p><b>What does science look like in EYFS?</b></p> <p><i>We recognise that all children are unique and special.</i></p>						



# Every Long Term Plan 21-22



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
General Themes	All About me!	Terrific Tales!	Amazing Animals!	Come Outside!	Ticket to Ride!	Fun at the seaside!
Understanding the world RE / Festivals	<p>Understanding the world involves guiding children to <b>make sense of their physical world and their community</b>. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.</p>					
	<ul style="list-style-type: none"> <li>Identify themselves in pictures</li> <li>Identifying their family. Commenting on photos of their family; naming who they can see and of what relation they are to them.</li> <li>Can begin to talk about what they do with their family and places they have been with their family. Begin to draw similarities and make comparisons between other families. Name and describe people who are familiar to them.</li> <li>Read fictional stories about families and talk about members of their immediate family and community.</li> <li>Navigating around our classroom and outdoor areas. Create treasure hunts to find places/ objects within our learning environment.</li> <li>Listen out for and make note of children's discussion between themselves regarding their experience of past birthday celebrations.</li> <li>How we have changed from being a baby to growing up to be 2, 3 or 4!</li> </ul>	<ul style="list-style-type: none"> <li>Can talk about what they have done with their families during Christmas' in the past.</li> <li>To introduce children to a range of fictional characters and creatures from stories and to begin to differentiate these characters from real people in their lives..</li> </ul>	<ul style="list-style-type: none"> <li>Listening to stories.</li> <li>Compare animals from a jungle to those on a farm.</li> <li>Explore a range of jungle animals. Learn their names and label their body parts. Could include a trip to the zoo.</li> <li>Use images, video clips, shared texts and other resources to bring the wider world into the classroom. Listen to what children say about what they see</li> <li>Listen to children describing and commenting on things they have seen whilst outside, including plants and animals.</li> <li>After close observation, draw pictures of the natural world, including animals and plants</li> </ul>	<ul style="list-style-type: none"> <li>Can children make comments on the weather, culture, clothing, housing.</li> <li>Change in living things – Changes in the leaves, weather, seasons,</li> <li>Explore the world around us and see how it changes as we enter Summer. Provide opportunities for children to note and record the weather.</li> <li>Building a 'Bug Hotel'</li> <li>Draw children's attention to the immediate environment, introducing and modelling new vocabulary where appropriate.</li> <li>Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences.</li> <li>Look for children incorporating their understanding of the seasons and weather in their play.</li> </ul>	<ul style="list-style-type: none"> <li>Use Handa's Surprise to explore a different country.</li> <li>Introduce transport, how we can get to different places</li> <li>Use bee-bots on simple maps. Encourage the children to use navigational language.</li> <li>Can children talk about their homes and children drawing/painting or constructing their homes.</li> <li>Encourage them to comment on what their home is like. Show photos of the children's homes and encourage them to draw comparisons.</li> <li>Environments – Features of local environment Maps of local area Comparing places on Google Earth – how are they similar/different?</li> <li>Take children to places of worship and places of local importance to the community.</li> </ul>	<ul style="list-style-type: none"> <li>To understand where dinosaurs are now and begin to understand that they were alive a very long time ago.</li> <li>Materials: Floating / Sinking – boat building Metallic / non-metallic objects</li> <li>Seasides long ago – Magic Grandad</li> <li>Listen to how children communicate their understanding of their own environment and contrasting environments through conversation and in play.</li> </ul>
	<p>Our RE Curriculum Come and See enables children to develop a positive sense of themselves and others and learn how to form positive and respectful relationships.</p> <p>They will begin to understand and value the differences of individuals and groups within their own community.</p> <p>Children will have opportunity to develop their emerging moral and cultural awareness.</p>	Special Times	Special Times	Special Times	Special Times	Special Times
		Diwali Hannukah Christmas	Epiphany	Ash Wednesday Palm Sunday Easter Start of Ramadan	Eid Fathers day	



# Revision Long Term Plan 21-22

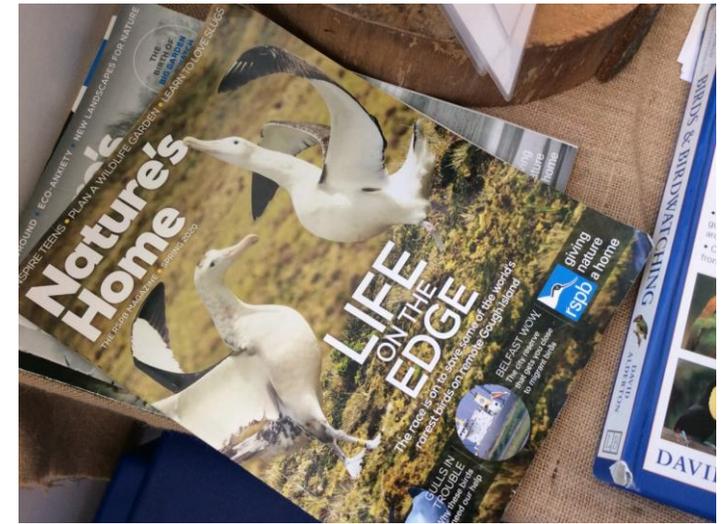
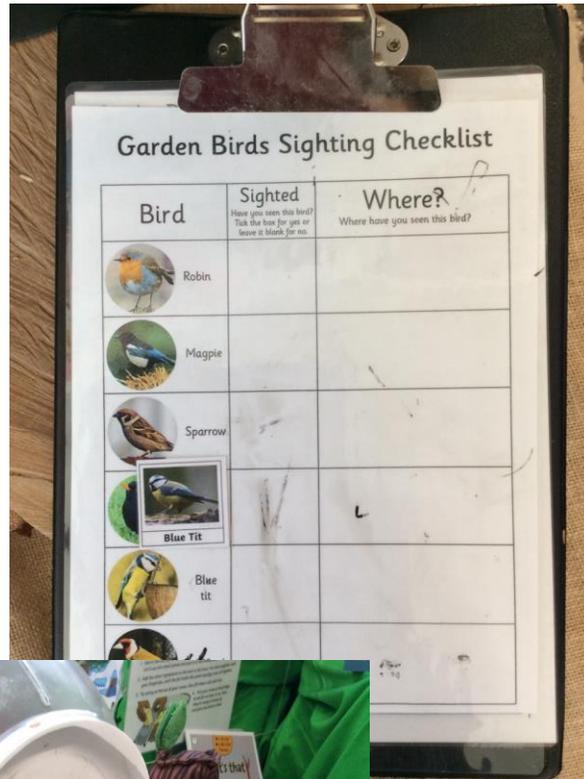


	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
General Themes	All About me!	Terrific Tales!	Amazing Animals!	Come Outside!	Ticket to Ride!	Fun at the seaside!
Understanding the world RE / Festivals	Understanding the world involves guiding children to <b>make sense of their physical world and their community</b> . The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.					
	<ul style="list-style-type: none"> <li>Identifying their family. Commenting on photos of their family; naming who they can see and of what relation they are to them.</li> <li>Can talk about what they do with their family and places they have been with their family. Can draw similarities and make comparisons between other families. Name and describe people who are familiar to them.</li> <li>Read fictional stories about families and start to tell the difference between real and fiction. Talk about members of their immediate family and community.</li> <li>Navigating around our classroom and outdoor areas. Create treasure hunts to find places/ objects within our learning environment.</li> <li>Listen out for and make note of children's discussion between themselves regarding their experience of past birthday celebrations.</li> <li>Long ago – How time has changed. Using cameras.</li> </ul>	<ul style="list-style-type: none"> <li>Can talk about what they have done with their families during Christmas' in the past.</li> <li>Show photos of how Christmas used to be celebrated in the past. Use world maps to show children where some stories are based. Use the Jolly Postman to draw information from a map and begin to understand why maps are so important to postmen.</li> <li>To introduce children to a range of fictional characters and creatures from stories and to begin to differentiate these characters from real people in their lives..</li> </ul>	<ul style="list-style-type: none"> <li>Listening to stories and placing events in chronological order.</li> <li>Nocturnal Animals Making sense of different environments and habitats</li> <li>Use images, video clips, shared texts and other resources to bring the wider world into the classroom. Listen to what children say about what they see</li> <li>Listen to children describing and commenting on things they have seen whilst outside, including plants and animals.</li> <li>After close observation, draw pictures of the natural world, including animals and plants</li> </ul>	<ul style="list-style-type: none"> <li>Introduce the children to recycling and how it can take care of our world. Look at what rubbish can do to our environment and animals. Create opportunities to discuss how we care for the natural world around us.</li> <li>Can children make comments on the weather, culture, clothing, housing.</li> <li>Change in living things – Changes in the leaves, weather, seasons,</li> <li>Explore the world around us and see how it changes as we enter Summer. Provide opportunities for children to note and record the weather.</li> <li>Draw children's attention to the immediate environment, introducing and modelling new vocabulary where appropriate.</li> <li>Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences.</li> <li>Look for children incorporating their understanding of the seasons and weather in their play.</li> </ul>	<ul style="list-style-type: none"> <li>Use Handa's Surprise to explore a different country.</li> <li>Discuss how they got to school and what mode of transport they used. Introduce the children to a range of transport and where they can be found.</li> <li>Look at the difference between transport in this country and one other country. Encourage the children to make simple comparisons.</li> <li>Use bee-bots on simple maps. Encourage the children to use navigational language.</li> <li>Can children talk about their homes and what there is to do near their homes?</li> <li>children drawing/painting or constructing their homes.</li> <li>Encourage them to comment on what their home is like. Show photos of the children's homes and encourage them to draw comparisons.</li> <li>Environments – Features of local environment Maps of local area Comparing places on Google Earth – how are they similar/different? What did the tree see?</li> <li>Take children to places of worship and places of local importance to the community.</li> </ul>	<ul style="list-style-type: none"> <li>To understand where dinosaurs are now and begin to understand that they were alive a very long time ago.</li> <li>Learn about what a palaeontologist is and how they explore really old artefacts. Introduce Mary Anning as the first female to find a fossil.</li> <li>Materials: Floating / Sinking – boat building Metallic / non-metallic objects</li> <li>Seasides long ago – Magic Grandad</li> <li>Share non-fiction texts that offer an insight into contrasting environments.</li> <li>Listen to how children communicate their understanding of their own environment and contrasting environments through conversation and in play.</li> </ul>
	Special Times	Special Times	Special Times	Special Times	Special Times	Special Times
	All about me – Biology	Animals and plants – Biology	Seasons and weather – Physics	Materials – Chemistry		
			Start of Ramadan Mothers day			

# Reception Long Term Plan 21-22

## Early Learning Goals – for the **end of the year** - Holistic / best fit

Communication and Language	Personal, social, emotional development	Physical Development	Literacy	Judgement	Maths	Understanding the World	Expressive arts and design
<p><b>ELG: Listening, Attention and Understanding</b></p> <p>Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions</p> <p>Make comments about what they have heard and ask questions to clarify their understanding</p> <p>Hold conversation when engaged in back-and-forth exchanges with their teacher and peers</p> <p><b>ELG: Speaking</b></p> <p>Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.</p> <p>Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate.</p> <p>Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher.</p>	<p><b>ELG: Self-Regulation</b></p> <p>Show an understanding of their own feelings and those of others, and begin to regulate their behaviour accordingly.</p> <p>Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate.</p> <p>Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions.</p> <p><b>ELG: Managing Self</b></p> <p>Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.</p> <p>Explain the reasons for rules, know right from wrong and try to behave accordingly.</p> <p>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p> <p><b>ELG: Building Relationships</b></p> <p>Work and play cooperatively and take turns with others.</p>	<p><b>ELG: Gross Motor Skills</b></p> <p>Negotiate space and obstacles safely, with consideration for themselves and others.</p> <p>Demonstrate strength, balance and coordination when playing.</p> <p>Move energetically, such as running, jumping, dancing, hopping, skipping and climbing.</p> <p><b>ELG: Fine Motor Skills</b></p> <p>Hold a pencil effectively in preparation for fluent writing using the tripod grip in almost all cases.</p> <p>Use a range of small tools, including scissors, paint brushes and cutlery.</p> <p>Begin to show accuracy and care when drawing.</p>	<p><b>ELG: Comprehension</b></p> <p>Demonstrate understanding of what has been read to them by retelling stories and narratives using their own words and recently introduced vocabulary.</p> <p>Anticipate – where appropriate – key events in stories.</p> <p>Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role-play.</p> <p><b>ELG: Word Reading</b></p> <p>Say a sound for each letter in the alphabet and at least 10 digraphs.</p> <p>Read words consistent with their phonic knowledge by sound-blending.</p> <p>Read aloud simple sentences and books that are consistent with their phonic knowledge, including some common exception words.</p> <p><b>ELG: Writing</b></p> <p>Write recognisable letters, most of which are correctly formed.</p> <p>Spell words by identifying sounds in them and representing the sounds with a letter or letters.</p> <p>Write simple phrases and sentences that can be read by others.</p>	<p><b>ELG: Number</b></p> <p>Have a deep understanding of number to 10, including the composition of each number;</p> <p>Subitise (recognise quantities without counting) up to 5; - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</p> <p><b>ELG: Numerical Patterns</b></p> <p>Verbally count beyond 20, recognising the pattern of the counting system; - Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.</p> <p>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>	<p><b>ELG: Past and Present</b></p> <p>Talk about the lives of the people around them and their roles in society.</p> <p>Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class.</p> <p>Understand the past through settings, characters and events encountered in books read in class and storytelling.</p> <p><b>ELG: People, Culture and Communities</b></p> <p>Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.</p> <p>Know some similarities and differences between different religious and cultural communities in this country, drawing on their experiences and what has been read in class.</p> <p>Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and – when appropriate – maps.</p> <p><b>ELG: The Natural World</b></p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p>	<p><b>ELG: Creating with Materials</b></p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>Share their creations, explaining the process they have used; - Make use of props and materials when role playing characters in narratives and stories.</p> <p><b>ELG: Being Imaginative and Expressive</b></p> <p>Invent, adapt and recount narratives and stories with peers and their teacher.</p> <p>Sing a range of well-known nursery rhymes and songs; Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music.</p>	



EYFS as scientists – Welcome to our investigation station



## Coverage across a year

Science Long Term Plan 2021 - 2022

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	Everyday Materials 1	Seasonal changes (Also ongoing throughout year)	Plants 1	Animals and humans 1	Earth and space 1	Movement, <u>forces</u> and magnets 1
2	Uses of Everyday Materials 2	Electricity 1	Plants 2	Animals and humans 2	Living things and their habitats 1	Science project
3	Animals and humans 3	Movement, <u>forces</u> and magnets 2	Plants 3	Materials Rocks 3	Living things and their habitats 2	Light and seeing 1
4	Animals and humans 4	Electricity 2	Sound and hearing 1	Materials states of matter 4	Living things and their habitats 3	Earth and space 2
5	Animals and humans 5	Movement, <u>forces</u> and magnets 3	Sound and hearing 2	Properties and changes of Materials 5	Living things and their habitats 4	Earth and space 3
6	Evolution and inheritance 1	Electricity 3	Light and seeing 2	Animals and humans 6	Living things and their habitats 5	Science project

Biology ■ Chemistry ■ Physics ■

**These are flexible to fit in with time of year or cross-curricular topics and community**

**All National Curriculum topics are covered across the academic year**

## National Curriculum Expectations

How this lesson meets the national curriculum

From Year 2 – Year 6, all planned lessons follow the same structure.

Uses of everyday materials

Statutory requirements	
identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses	
compare how things move on different surfaces	
find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	
Working scientifically	
asking simple questions and recognising that they can be answered in different ways	
observing closely, using simple equipment	
performing simple tests	
identifying and classifying	
using their observations and ideas to suggest answers to questions	
gathering and recording data to help in answering questions	

Weekly lessons cover statutory requirements and working scientifically is embedded within the content of biology, chemistry and physics.

# Clear sequence of learning across a topic



Year 2

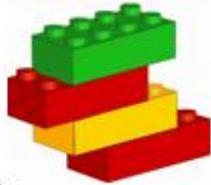
## Learning Journey Uses of everyday materials

Identify everyday materials and uses

Investigate properties of everyday materials



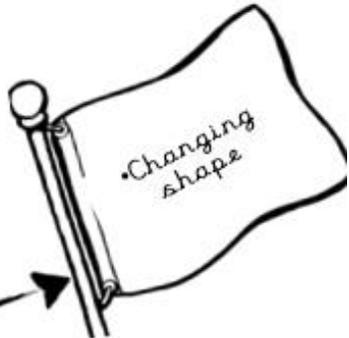
Identify and compare uses of everyday materials



Comparing suitability



Identify and compare uses of everyday materials



Pupils use and transfer their learning and gain a deep understanding of the concepts taught in order to progress to the next stage.

# Plants: Unit 1



## Teacher Toolkit

### What's in the garden?

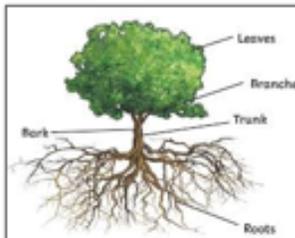
<https://www.bbc.co.uk/bitesize/topics/zpxnvr/articles/zw2v34j>

It is important for pupils to find out for themselves. Take children outdoors to explore plants, letting them handle and recognise the diversity of plants life. They will notice that many share similar features (as outlined below). They should have opportunities to name common garden and wild plants.



<https://www.bbc.co.uk/bitesize/topics/zpxnvr/articles/z3wpsbk>

<b>root</b>	anchors the plant and absorbs <b>food, water</b> and nutrients from the soil
<b>stem</b>	supports the plant and carries water through it
<b>leaves</b>	make the food for the plant
<b>flower</b>	coloured and scented to attract the insects. the flower produces seeds to make new plants



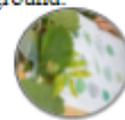
**Is a tree a plant?** Trees are simply one kind of plant, sharing with other plants a similar range of attributes.

While both trees and plants usually have a vascular structure, with roots, stems and leaves transporting food and water throughout the plant, plants typically have multiple soft or slightly woody stems while trees have one hard, woody and tall trunk with few leaves or branches on the lower section. Plants have leaves close to the ground or they consist entirely of leaves, as with grasses and ferns.

<https://www.youtube.com/watch?v=7h5TiPevd-Q>

**Deciduous:** Trees with leaves that change colour in autumn and fall to the ground.

**Evergreen:** Trees that keep their colour and leaves all through the seasons



Children should be given names and know to recognise the two main types.



**Autumn Watch** During the autumn months begin some preliminary discussions with pupils and gather some 'autumn scene' photographs of them to use when studying this unit. Also collect interesting items such as acorns and seeds to act as prompts and reminders 'out of season' for how plants change in the autumn.

**Deciduous:** Trees with leaves that change colour in autumn and fall to the ground.

**Acorn:** A fruit of the oak tree a smooth oval nut in a rough cup-shaped base

**Conker:** the hard, shiny dark brown nut of a horse chestnut tree

**Harvest:** to collect what has been planted and grown in the ground. It is usually done by farmers, and in the autumn season. This is also called picking **crops**.

Autumn provides great opportunities to discuss plants for food.

<https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-animals-preparing-winter-storing-food-migrating-hibernating/z6h6urd>



**Spring Watch** A variety of native birds display seasonal spring-time behaviour, plants burst into leaf and flower which shows the change in the landscape. Completing this unit during the springtime will provide many opportunities for pupils to experience first-hand the growth and new life associated with this season.

<https://www.bbc.co.uk/teach/class-clips-video/science-ks1-ks2-seasonal-changes-behaviour-animals-growth-cycle-plants/zfvmvk7>

**Spring:** one of 4 seasons characterised by new life and regrowth

**bulbs:** refers to plants that have underground, fleshy storage structures

**seeds:** part of a flowering plant, capable of developing into another such plant

**blossom:** a flower or a mass of flowers, especially on a tree or bush.

compare/contrast



Assessment Quiz

Summary session - what have we found out?

Use various garden scenes to stimulate discussion. Following a Tell me! or Teach it! model to challenge pupils to explain their garden scenes to others. Alternatively, pupils produce a short film tour of a garden area with accompanying narration.

# Clear learning journey reinforced through knowledge clock on display and in books

Different birds have different beaks; they are used for different causes depending on the bird eg. hawk use their beaks to rip their prey.

Chameleons can colour change and Camouflage, which can help them survive from predators. Sloths live far up in the trees, because they are so slow they won't die by predators.

Cacti have spikes so that they don't lose water and stops animals trying to drink the water.

Drip tip leaves have a cone shape body so water drips off them.

Inheritance is where you get certain characteristics from your parents or ancestors. Example: Your parents have blue eyes: you will most likely have blue eyes too.

Genepalogy shows what people will look like in the future. Scientists use a code to figure out people's DNA.

Our cells have chromosomes inside of them which contain our DNA. Our DNA then carries our characteristics.

Bipedalism has gave us free hands and it helps us to multi-task. We also have an app like creature we used to walk on, our hands and knees but now we have developed a spine and can see more things around us.

electricity to work?

Genetic code is were look like in future.

Genepalogy shows what people will look like in the future. Scientists use a code to figure out people's DNA.

Our cells have chromosomes inside of them which contain our DNA. Our DNA then carries our characteristics.

Bipedalism has gave us free hands and it helps us to multi-task. We also have an app like creature we used to walk on, our hands and knees but now we have developed a spine and can see more things around us.

Revision Clock: Evolution and Inheritance

Y3-6 Children can refer to previous learning

Science

Our Knowledge Clock: Animals and Humans

What happens in Spring, Summer, Autumn and Winter?

The sun shines in Summer.

There is new life in spring.

We made our own rain gauge using a plastic bottle. We put them outside to investigate how much rain falls in a week.

Day of the week: Rainfall (cm)

Monday: 1.2

Tuesday: 2.5

Wednesday: 3.8

Thursday: 4.1

Friday: 5.4

What happens in Spring, Summer, Autumn and Winter?

The sun shines in Summer.

There is new life in spring.

We made our own rain gauge using a plastic bottle. We put them outside to investigate how much rain falls in a week.

Day of the week: Rainfall (cm)

Monday: 1.2

Tuesday: 2.5

Wednesday: 3.8

Thursday: 4.1

Friday: 5.4

Materials

Science

Lesson 1: Can I identify different everyday materials and their uses?

Predict: Is it stretchy? Properties: Is it magnetic? Will it float?

Lesson 2: Can I investigate the properties of different materials?

Lesson 3: Can I compare the suitability of different materials?

Lesson 4: Can I investigate the flexibility of plastics?

Lesson 5: Can I identify and compare the uses of different materials suitable for preventing a leak?

Our Knowledge Clock: Uses of Everyday Materials

Investigate: Can I compare the suitability of different materials?

Lesson 5: Can I identify and compare the uses of different materials suitable for preventing a leak?

Our observations: We used different materials to make a model robot. We compared the suitability of different materials while making model robots.

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Our observations: We used different materials to make a model robot. We compared the suitability of different materials while making model robots.

Celebrate children's work

Science

We made fact files about animals that hibernate.

We made our own windsocks.

What happens in Spring, Summer, Autumn and Winter?

The sun shines in Summer.

There is new life in spring.

We made our own rain gauge using a plastic bottle. We put them outside to investigate how much rain falls in a week.

Day of the week: Rainfall (cm)

Monday: 1.2

Tuesday: 2.5

Wednesday: 3.8

Thursday: 4.1

Friday: 5.4

Our Knowledge Clock: Seasonal changes

What happens in Spring, Summer, Autumn and Winter?

The sun shines in Summer.

There is new life in spring.

We made our own rain gauge using a plastic bottle. We put them outside to investigate how much rain falls in a week.

Day of the week: Rainfall (cm)

Monday: 1.2

Tuesday: 2.5

Wednesday: 3.8

Thursday: 4.1

Friday: 5.4

Science

Our Knowledge Clock: Humans and animals

Teeth: Incisors, Canines, Premolars, Molars

Tongue: Epiglottis, Uvula, Pharynx, Larynx

Small intestine, Large intestine

Stomach, Gallbladder, Pancreas

Our Knowledge Clock: Humans and animals

Stomach, Gallbladder, Pancreas

Small intestine, Large intestine

Teeth: Incisors, Canines, Premolars, Molars

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Our Knowledge Clock: Humans and animals

Stomach, Gallbladder, Pancreas

Small intestine, Large intestine

Teeth: Incisors, Canines, Premolars, Molars

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## Science Yearly Overview

EYFS	Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.									
	✓	✓	✓		✓		✓			
Area of Science	Biology				Chemistry	Physics				
Learning Focus: To Understand...	Plants	Living Things	Animals and Humans	Evolution and Inheritance	Materials	Movement, Forces and Magnets	Earth and Space	Light and Seeing	Sound and Hearing	Electricity
Year One	Unit 1		Unit 1		Unit 1	Unit 1	Unit 1 (link also to Seasons)	<i>Link to Animals and Humans Unit 1 - senses</i>	<i>Link to Animals and Humans Unit 1 - senses</i>	
Year Two	Unit 2	Unit 1	Unit 2	<i>Link to Animals and Humans Unit 2 (humans resemble their parents in many features)</i>	Unit 2					Unit 1
Year Three	Unit 3	Unit 2	Unit 3	<i>Link to Materials Unit 3 (Rocks and fossils)</i>	Unit 3	Unit 2		Unit 1		
Year Four		Unit 3	Unit 4		Unit 4		Unit 2		Unit 1	Unit 2
Year Five		Unit 4	Unit 5		Unit 5	Unit 3	Unit 3		Unit 2	
Year Six		Unit 5	Unit 6	Evolution and Inheritance Unit				Unit 2		Unit 3

# Clear sequencing and progression of knowledge across year groups

## Biology Unit: Plants

What does progression of knowledge look like?

Year 1	Year 2	Year 3	Year 7	Year 8	Year 9
<ul style="list-style-type: none"> <li>Flowering plants have a root, stem, leaves and a flower</li> <li>Trees can be deciduous which means</li> <li>Trees can be evergreen which means</li> <li>Trees and plants have roots, stems and leaves but plants have a softer stem</li> <li>Trees are made of roots, trunk, branches and leaves.</li> <li>Grasses and ferns consist entirely of leaves.</li> <li>In Autumn, the leaves on deciduous trees change colour, fruits and nuts fall to the ground. Farmers can harvest the crops.</li> <li>In Spring, birds sing, trees produce leaves and flowers blossom and the landscape changes</li> </ul>	<ul style="list-style-type: none"> <li>Plants can grow from seed or bulbs</li> <li>Seeds and bulbs germinate and grow into seedlings</li> <li>Seedlings grow into mature plants</li> <li>Plants need light, water, space, suitable temperature in order to grow</li> <li>Some plants grow best in full sun</li> <li>Some plants grow best in the shade</li> <li>Some plants need lots of water</li> <li>Some plants don't need much water</li> <li>Some plants grow quicker than others.</li> </ul>	<ul style="list-style-type: none"> <li>Plants contain roots for...</li> <li>Plants contain a stem/trunk which ...</li> <li>Plants contain flowers which contain the stamen, carpel, petal, ovule, sepal and stem</li> <li>Plants need light, water, space, suitable temperature in order to grow</li> <li>The level of nutrients required depends on the type of plant</li> <li>Insects like bees and wasps transfer the pollen from the male part of a flower to the female part of other flowers</li> <li>Seeds can also be dispersed by wind, animal fur, animals eating them (and excreting them), in water and if the seed pod explodes</li> <li>The roots absorb water from the soil, the stem transports it to the leaves, water evaporates from the leaves which causes more water to be absorbed from the soil</li> </ul>	<ul style="list-style-type: none"> <li>Draw and label a plant cell</li> <li>Understand that a plant cell has a cell wall, chloroplasts and vacuoles and animal cells do not</li> <li>Label a diagram of plant organs and state the function of each of the organs</li> <li>Know that photosynthesis is required for plants to produce glucose in order for respiration to occur and so the plant can make cell walls, membranes or store it as starch, seeds, oils in order to help it survive</li> <li>Root hair cells absorb water and minerals in the roots of plants</li> <li>Xylem tissue in the stem transports water to the leaves of the plant</li> <li>Phloem transports a solution containing sugars and ions from the leaves to the plant</li> </ul>	<ul style="list-style-type: none"> <li>Plants and other organisms can be classified according to their similar appearances</li> <li>Plants have scientific names according to their classification</li> <li>Biodiversity is important because</li> <li>Sexual reproduction of plants is when</li> <li>Asexual reproduction of plants is when...</li> <li>A hybrid is a plant that</li> <li>Inherited variation</li> <li>Photosynthesis is</li> <li>The factors that affect the growth of a plant are....</li> <li></li> </ul>	

When planning, it's easy to see previous and future learning, including transition into KS3

Planning the science curriculum so that pupils build knowledge of key concepts and the relationships between them over many years; this prevents pupils from seeing science as a list of isolated facts

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# We assess prior knowledge through frequent retrieval to build substantive concepts so children don't forget them

This example assesses knowledge from previous year group

## What do we already know?

Quick Recap...

Think back to your Science learning in Year 1. See if you can answer some of these questions with a partner:

How many everyday materials can you name and what were the materials used for?

Can you remember anything about them?  
 - What did they look like?  
 - What did they feel like?  
 - How did they behave?

Can you remember doing any investigations?

What did you find out and what did you learn?



Pupils remembering long-term the content that has been taught; this is because building domain-specific knowledge leads to expertise.

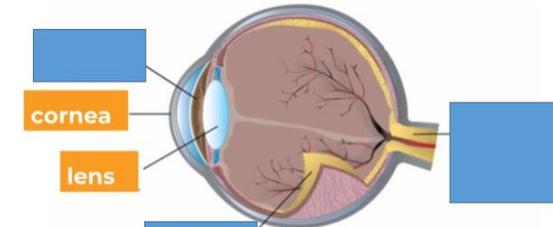
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## Quick Quiz



1. Add the missing parts to the eye diagram: **pupil, optic nerve and retina.**

The Human Eye



To send signals to the brain, in order for us to see the light.

2. What is the purpose of the optic nerve?

## What do we already know?

Quick Recap...

Storm Arwen hit the UK last week and many parts of the country had no electricity for days and days.

Think about the appliances you use at home.

What would you miss and why?



This example assesses knowledge from 1<sup>st</sup> week but links to current news (weather /geography)

## Where does a plant come from?

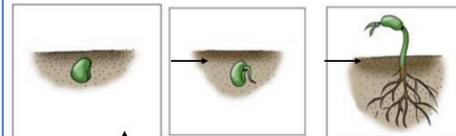


Quick Recap...

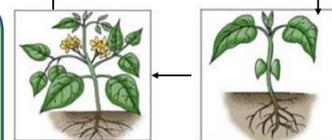


Can you remember the three parts of a bean seed?

Can you remember the five parts of a bulb?



Can you describe what is happening in each picture of this life cycle?



What do plants need to grow?



This example assesses knowledge from previous week

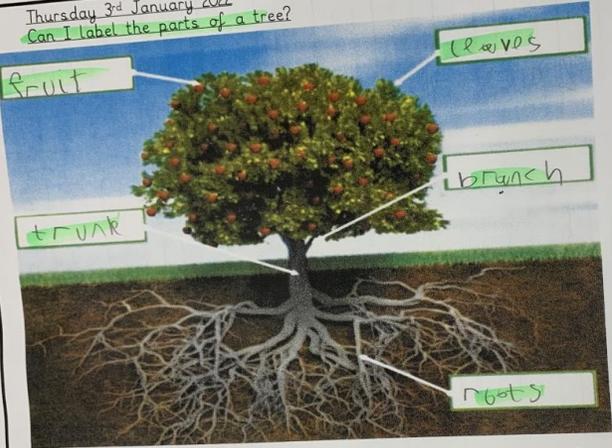
This example assesses knowledge from last two previous weeks

# Year 1

# Progression from EYFS Plants – Year 1 – Year 3

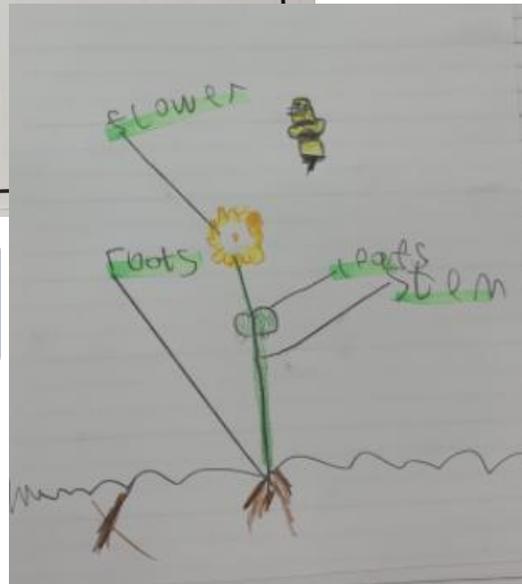
# Year 3

Thursday 3<sup>rd</sup> January 2022  
Can I label the parts of a tree?



branch	fruit
roots	leaves
trunk	

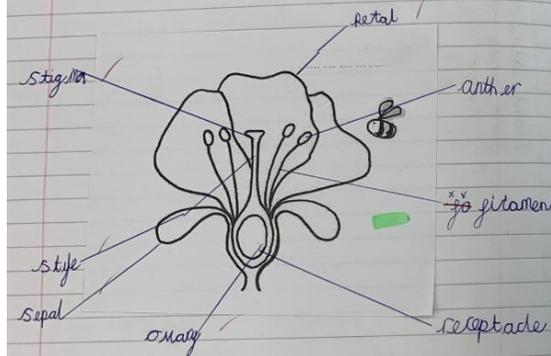
I can label the parts of a plant or tree.



I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

Friday 14<sup>th</sup> January 2022

Can I identify and describe the internal structure of a plant?



Ovary  
This contains the egg cells so the plant can reproduce.

Stigma  
The stigma traps the pollen from bees.

Style

The style allows pollen to travel down towards the egg cells.

Anther and Filament

The anther makes pollen and the filament provides support to keep it up.

Sepal

The sepal protected the flower when it was a small before it had bloomed.

I can identify and describe the internal structure of a plant.

# Year 2

Monday 24th January 2022  
Can I carry out an investigation to find out what a plant needs to grow?

Conditions	Date	Date	Date	Date
	27.1.22	28.1.2022	31.1.22	4.2.22
			7cm	monthly
			2cm	

I can 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

Tuesday 25th January 2022  
Can I explain what plants need to grow?  
I think plants need soil, water, food and sunlight.  
Exploring and Observing Investigation  
Our Question  
Do plants need the same thing to grow?  
My prediction  
I predict that they don't need the same things to grow.  
We will need

- seeds
- soil
- water
- cups

I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

# Year 3

Tuesday 8th February 2022  
Can I explain ~~how~~ how water is transported in a plant?  
Water comes through the roots and goes <sup>upwards</sup> up to stem.  
~~Root~~ The roots transport water is the way water moves through the stem.  
Investigation instructions

1. Get a beaker
2. Decide how to ~~many~~ mix much water. Our team decided 600 ml.
3. Get a name tag and put your name on and your ml.
4. Fill it with water
5. Add celery ~~and~~ which represents the stem.
6. Add food ~~and~~ colouring because if you didn't the water would be clear.
7. Leave it for a couple of days

My prediction is that the one with the least water will grow.

I can investigate the way in which water is transported within plants

# Working Scientifically



- asking questions
- **making predictions**
- setting up tests
- observing and measuring
- recording data
- interpreting and communicating results
- evaluating

Explicitly teaching pupils the concepts and procedures needed to work scientifically.

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# Evidence of working scientifically

6<sup>th</sup> October 2021  
Can I predict which material will float or sink?

Object	Predict: Do you think it will float or sink?	When you put it in water did it float or sink?
Marble	Sink	Sink ✓
Coin	Sink	Sink ✓
Cork	float	float ✓
Paper clip	Sink	Sink ✓
Key	Sink	Sink ✓
Drinking straw	sink	float x
Tin foil	float	float ✓

**KS1**

Friday 28<sup>th</sup> January 2022

**LKS2**

Can I investigate the change in pitch?

How will the amount of water effect the pitch when the bottle is struck?

My prediction  
I predict that when the bottle is empty it will have the highest pitch.

Friday 19<sup>th</sup> November 2021

**UKS2**

Can I complete an investigation on friction?

I predict that the car would travel the furthest on the paper because it is smoother, if it's smoother it has less friction, less friction means the car would go further. I also think plastic would be better.

I predict that the surface that slows the car down the most will be the foam and the cotton because it has less & more friction (rougher), if it's rougher it slows down which makes it go less further.

Surface	Investigation 1	Investigation 2

# Working Scientifically

# Evidence of working scientifically

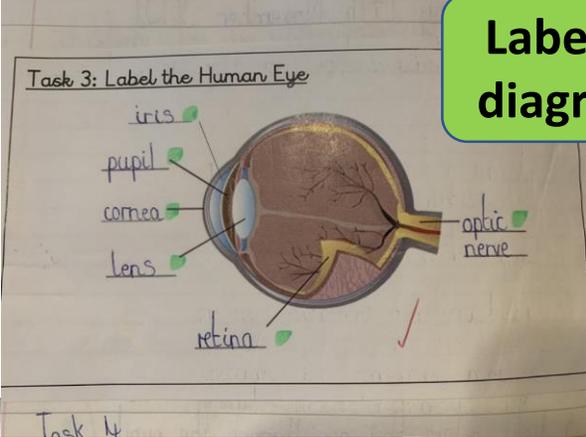


- asking questions
- making predictions
- setting up tests
- observing and measuring
- recording data
- interpreting and communicating results
- evaluating

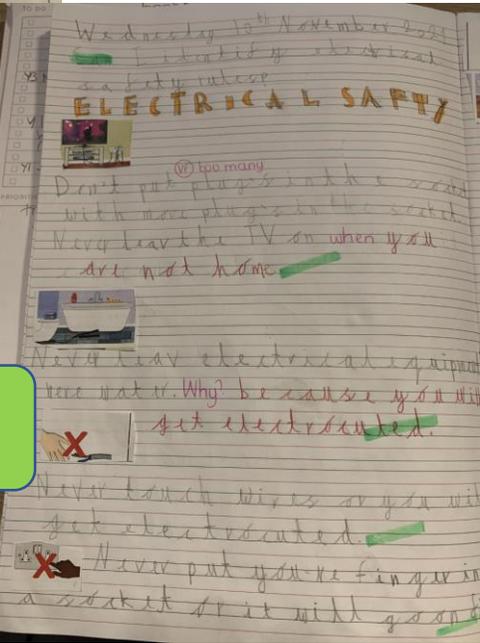
**Lists**

Sources of Light	NOT Sources of Light
• Fire ✓	• Pencil ✓
• Torch ✓	• Mirror ✓
• Sun ✓	• Table ✓
• Lamp ✓	• Chair ✓
• TV ✓	• Moon ✓
• Candle ✓	• Pizza ✓
• Stars ✓	• Sunglasses ✓
• Firework ✓	

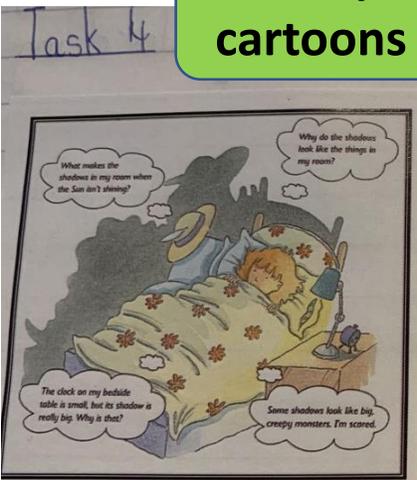
**Labelled diagrams**



**Poster**

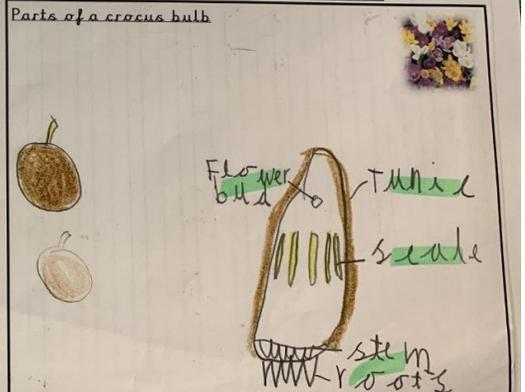
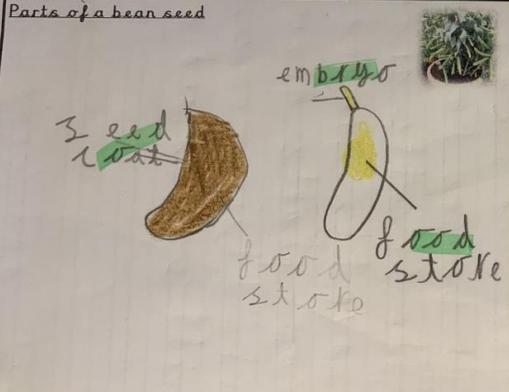
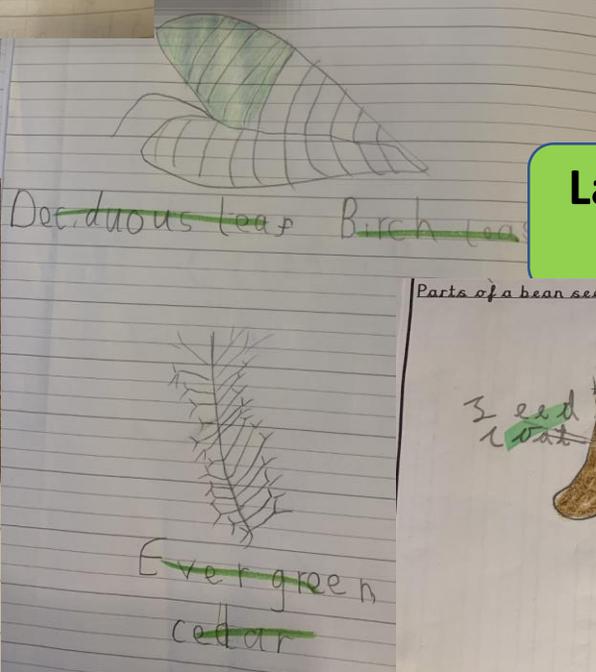


**Concept cartoons**



The things in her room look like shadows because the bed is blocking the light; this makes it look like there is strange shadows in her room, which looks like people.

**Labelled observational drawings**





- asking questions
- making predictions
- setting up tests
- observing and measuring
- recording data
- interpreting and communicating results
- evaluating

**Year 4**  
**Full write up of**  
**an investigation**

**Develop clear**  
**progression**  
**between Y1 –**  
**Y6**

Wednesday 6<sup>th</sup> & October 2021

Can I plan an investigation to answer a scientific question about tooth decay?

Which liquids damage teeth the most?

Variables  
 I want to change the liquids to see what effect they have on the egg.

Diet coke  
 Coke  
 Orange juice  
 Vinegar

Equipment:  
 Cup  
 Eggs  
 Jug

Prediction  
 I think vinegar will cause the most damage because it's an acid.

Wednesday 13<sup>th</sup> October 2021

Can I write and record results from an investigation about tooth decay?

Method  
 We put four boiled eggs into separate plastic cups. Then we poured Coke, Orange juice, Diet coke and vinegar in, one liquid per cup making sure they covered the eggs and they were the same amount. After, we left them for a week and now we'll see what happened!

Results

Liquid	Observation after 1 week.	Observation after 2 weeks
Coke	It has dyed the egg brown.	The sugar made a kind of slime around the shell.
Diet Coke	It has changed colour.	The same
Vinegar	The egg is shrunken and it has gone squishy.	it has rubbery skin, not a shell.
Orange juice	The shell has started to dissolve	Eroded the shell but still looks the same on the inside.

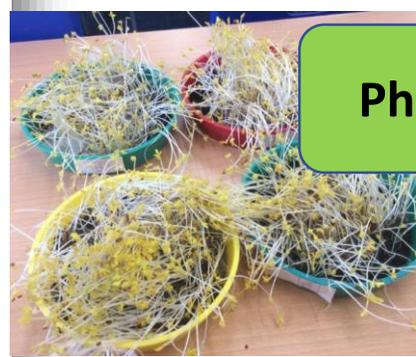
Conclusion  
 The vinegar had the strongest effect because it is very strong acid and acids damage teeth the most.

# Working Scientifically

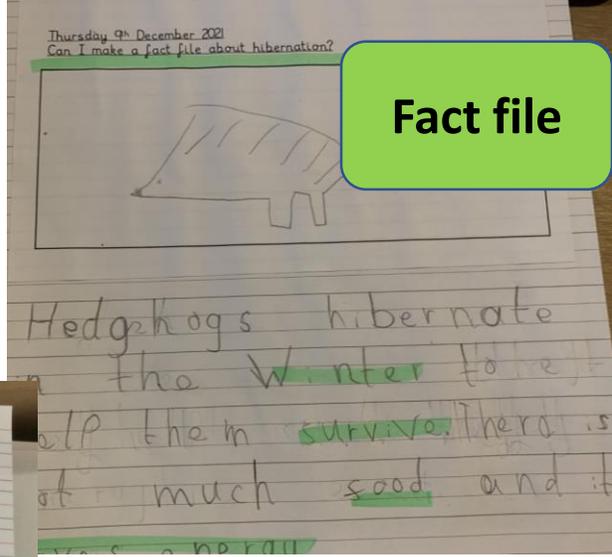
# Evidence of working scientifically



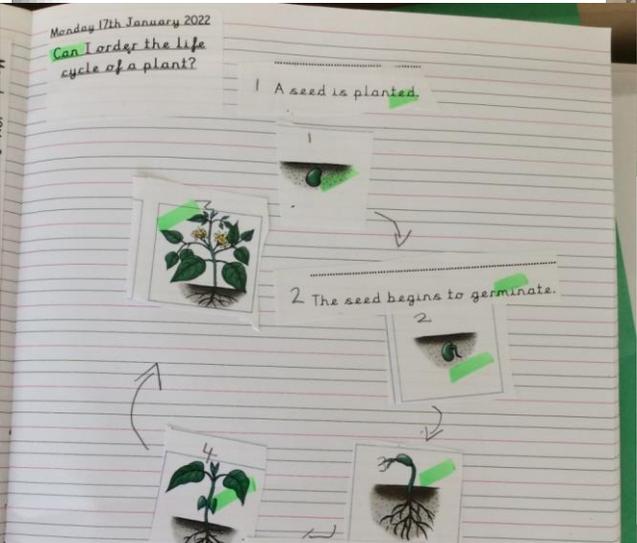
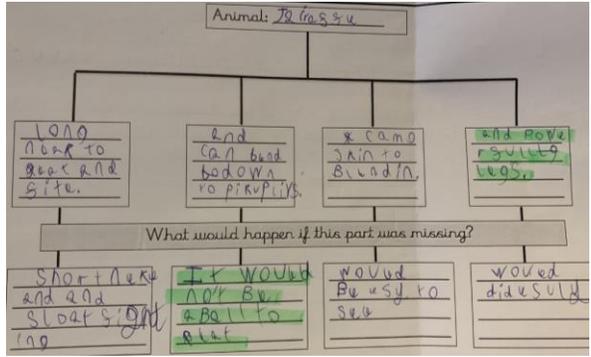
- asking questions
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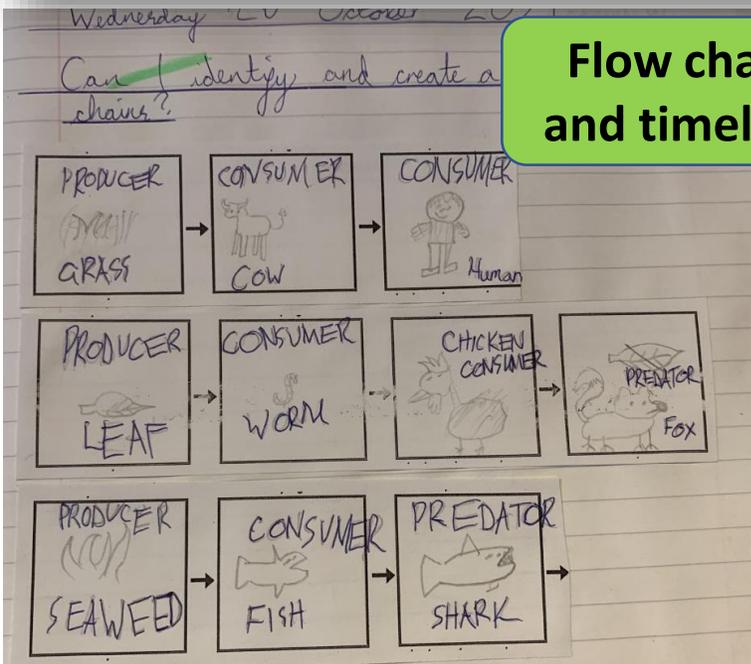
Photos



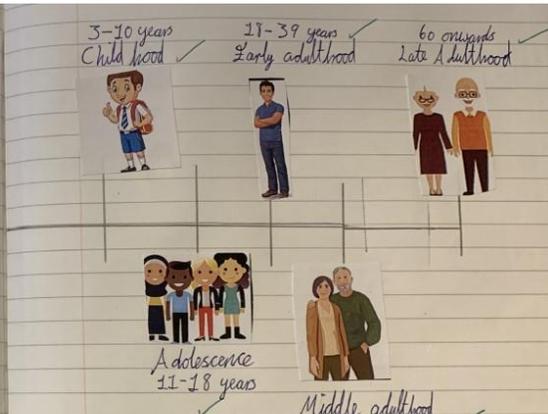
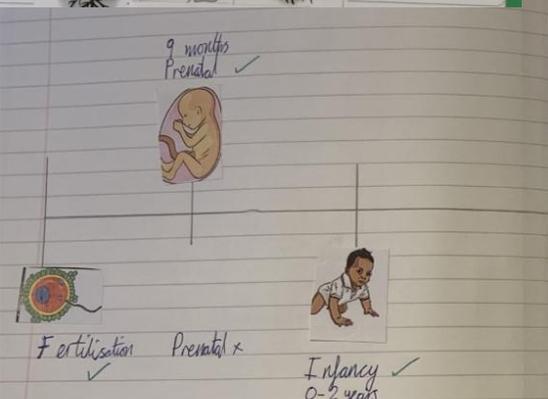
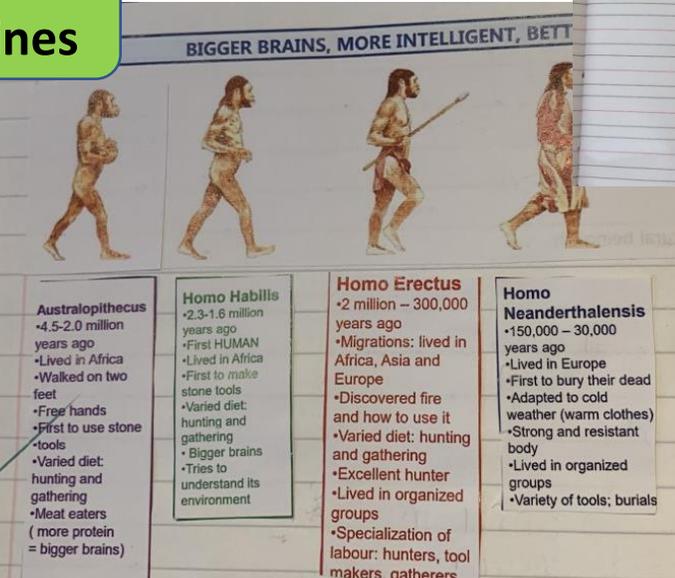
Fact file



Graphs



Flow charts and timelines



# How does science link to other curriculum areas?

## Task 1

Where in the world are these fruits mainly grown?



Make more explicit links in planning where applicable

Which fruit seeds will germinate first?

Friday 11th February 2022  
Can I set up an investigation?

Which fruit seeds will germinate first?

My prediction

I think the apple seed will germinate first because apples grow in the UK.

Which fruit might germinate last?

kiwi because they grow in the UK.

### Geography - Locational knowledge

Name and locate the world's 7 continents and 5 oceans

### Human and physical geography

Identify seasonal and daily weather patterns in the United Kingdom and the location of hot and cold areas of the world in relation to the Equator and the North and South Poles

# LEARN IT! LINK IT!

## UNIT 1: PLANTS

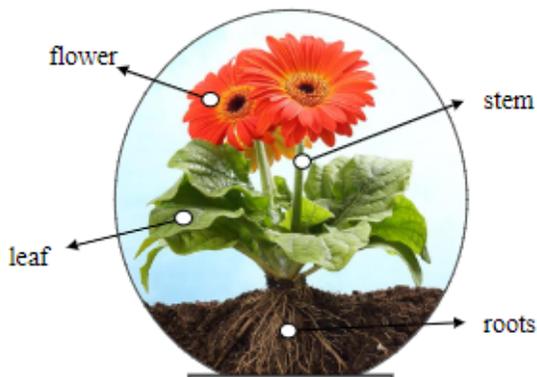
### Working Scientifically

- Ask questions
- Collect data
- Observe
- Classify
- Test/experiment

### Key Learning

Remember to make links to what you already know...

- The main parts of the plant are the flower, stem, leaves and roots
- The different parts of the plant have different functions
  - Roots – anchor the plant
  - Leaf – makes food
  - Stem – carries water
  - Flower – attracts insects
- Trees are a type of plant
- There are two main types of tree; deciduous and evergreen
- Autumn and Spring are two of the four seasons
- In the autumn, the leaves on deciduous trees change colour and fall to the ground
- In the spring many plants begin to regrow, trees and large bushes begin to blossom



Parts of the plant

### Key Vocabulary

**deciduous:** Trees with leaves that change colour in autumn and fall to the ground.  
**evergreen:** Trees that keep their colour and leaves all through the seasons.  
**acorn:** A fruit of the oak tree a smooth oval nut in a rough cup-shaped base  
**conker:** the hard, shiny dark brown nut of a horse chestnut tree  
**harvest:** to collect what has been planted and grown in the ground. It is usually done by farmers, and in the autumn season. This is also called picking crops.  
**bulbs:** refers to plants that have underground, fleshy storage structures  
**seeds:** part of a flowering plant, capable of developing into another such plant  
**blossom:** a flower or a mass of flowers, especially on a tree or bush.

### Significant People/Career Links



- Joseph Hooker, an Englishman, came from a family of scientists who specialised in studying plants.
- His father was Glasgow University's professor of botany and as a child, Hooker studied mosses and orchids.
- He wrote books about plants

Horticulture is the agriculture of plants, mainly for food, materials, comfort and beauty for decoration

## Planning documents used to ensure progression

Working scientifically

Key learning

Making links to previous learning

Key vocabulary

Significant people and career links

# LEARN IT! LINK IT!

## UNIT 2: PLANTS

### Working Scientifically...

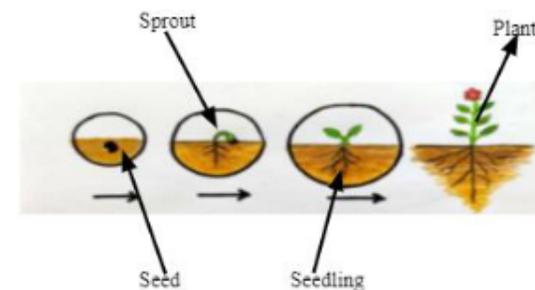
- Ask questions
- Collect data
- Observe
- Classify
- Test/experiment

Remember to make links to what you already know...

### Key Learning...

- Plants can grow from seed or bulbs
- Seeds and bulbs germinate and grow into seedlings
- Seedlings grow into mature plants
- Plants need light, water, space, suitable temperature in order to grow
- Some plants grow best in full sun
- Some plants grow best in the shade
- Some plants need lots of water
- Some plants don't need much water
- Some plants grow quicker than others.

### The Lifecycle of a Plant



### Key Vocabulary...

**Seed:** A seed is the part of a seed plant which can grow into a new plant  
**Bulb:** A bulb is larger than a seed and when it is planted the new plant begins to grow underground.  
**Germinate:** Germination is the process by which a plant grows from a seed.  
**Sprout:** A sprout is a small growth on a little plant. It is a new little bud.  
**Seedling:** A seedling is a young plant which has grown from a seed.  
**Nutrients:** They are substances needed for living things to grow and survive. The nutrients come from the soil.

### Significant People/Career Links...



- Joseph Hooker, an Englishman, came from a family of scientists who specialised in studying plants.
- His father was Glasgow University's professor of botany and as a child, Hooker studied mosses and orchids.
- He wrote books about plants

Horticulture is the agriculture of plants, mainly for food, materials, comfort and beauty for decoration

## Working Scientifically...



Ask questions



Collect data



Observe



Classify



Test/experiment

Remember to make links  
to what you already know...

## Key Learning...

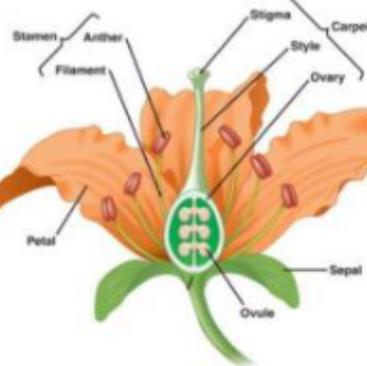


- Plants contain roots for...
- Plants contain a stem/trunk which...
- Plants contain flowers which contain the stamen, carpel, petal, ovule, sepal and stem.
- Plants need light, water, space, suitable temperature in order to grow.
- The level of nutrients required depends on the type of plant.
- Insects like bees and wasps transfer the pollen from the male part of a flower to the female part of other flowers.
- Seeds can also be dispersed by wind, animal, fur, animals eating them (and excreting them), in the water and if the seed pod explodes.
- The roots absorb water from the soil, the stem transports it to the leaves, water evaporates from the leaves which causes more water to be absorbed from the soil.



Metacognition: Assess the task, plan the approach, apply strategies, reflect.

## Parts of a Flower



## Key Vocabulary...

**Stamen**- The male reproductive part of a plant**Carpel**- The female reproductive part of a plant**Ovule**- Part of the flower which contains the female seed cell and after pollination becomes the seed.**Sepal**- These are the lower parts of a flower. They fold over the closed bud and protect it from the cold.**Pollination**- The transfer of pollen from one flower to another.**Seed Dispersal**- The movement, spread or transport of seeds away from the parent plant.**Nutrients**- These substances are needed by living things to grow and survive.

## Significant People/Career Links...



- Joseph Banks, an Englishman dedicated his life to botany, the study of plants.
- After completing studies in botany at the University of Oxford, he went on to work with other botanists at the Chelsea Physic garden in London, which was full of amazing plants that could be used for medicine.

Botany- The study of plants

## Scientists Across the Curriculum

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p style="text-align: center;"><b>Plants</b></p> <p>Beatrix Potter Author &amp; Botanist</p>	<p style="text-align: center;"><b>Living Things and Their Habitats</b></p> <p>Rachel Carson- Marine Pollution</p> <p>Liz Bonnin Conservationist</p>	<p style="text-align: center;"><b>Plants</b></p> <p>Joseph Banks- Botanist</p> <p><u>Ahmed Mumin Warfa</u> - Botanist</p>	<p style="text-align: center;"><b>Living Things and Their Habitats</b></p> <p>Jacques Cousteau -Marine Biology</p> <p>Cindy Looy-Environmental Change and Extinction</p> <p>Joean Beauchamp Procter Zoologist</p>	<p style="text-align: center;"><b>Living Things and Their Habitats</b></p> <p>Jane Goodall- naturalist</p> <p>Sylvia Earle - Marine biologist</p> <p>Dr. Paula Kahumbu-wildlife conservationist</p> <p>Mangala Mani – Antarctic scientist</p> <p>Sir David Attenborough- Animal Behaviourist</p>	<p style="text-align: center;"><b>Living Things and Their Habitats</b></p> <p>Carl Linneus Classification</p> <p>Libby Hyman Classification Invertebrates</p>
<p style="text-align: center;"><b>Animals inc Humans</b></p> <p>Chris Packham-Animal Conservationist</p>	<p style="text-align: center;"><b>Plants</b></p> <p>Captain Cook- Botanists</p> <p>Agnes Arber Botanist</p> <p>Alan Titchmarsh- Botanist &amp; Gardener</p>	<p style="text-align: center;"><b>Animals inc. Humans</b></p> <p>Marie Curie- Radiation</p> <p>Wilhelm Rontgen - X rays</p> <p>Adelle Davis -Nutritionist</p>	<p style="text-align: center;"><b>Animals inc. Humans</b></p> <p>Joseph Lister-Antiseptic</p> <p>Ivan Pavlov- Digestive System Mechanisms</p> <p>Washington &amp; Lucius Sheffield-Toothpaste in a tube</p>	<p style="text-align: center;"><b>Animals inc. Humans</b></p> <p>Alexander Fleming- Penicillin</p> <p>Louis Pasteur- Vaccination</p> <p>Eva Crane -Reproduction in Bees</p> <p><u>Virginia Apgar- obstetrical anaesthesiologist</u></p>	<p style="text-align: center;"><b>Animals inc. Humans</b></p> <p>Leonardo Da Vinci- anatomy</p> <p>Santorio Santorio-Anatomist</p> <p>Dr. Katherine Dibb – Expert in Cardiovascular Sciences</p> <p>Justus von Liebig- Theories of Nutrition and Metabolism</p> <p>Sir Richard Doll- Linking Smoking and Health Problems</p>
<p style="text-align: center;"><b>Everyday Materials</b></p> <p>William Addis Toothbrush Inventor</p> <p>Charles Mackintosh (Waterproof coat)</p> <p>John MacAdam- roads Chester Greenwood- Earmuffs</p>	<p style="text-align: center;"><b>Animals inc. Humans</b></p> <p>Florence Nightingale Pioneer of modern nursing in GB</p> <p>Elizabeth Garrett Anderson - First British female physician and surgeon</p> <p>Steve Irwin -Wildlife expert</p> <p>Robert Winston Human Scientist</p>	<p style="text-align: center;"><b>Rocks</b></p> <p>Mary Anning- Fossil hunter</p> <p>Dr Anjana Khatwa Geologist</p> <p>William Smith Fossils strata</p> <p>Inge Lehrmasn -Earth's Mantle</p> <p>Katia Krafft - Geologist and Volcanologist</p>	<p style="text-align: center;"><b>States of Matter</b></p> <p>Joseph Priestly – Discovered oxygen</p> <p>Lord Kelvin -Absolute zero (temperature)</p> <p>Anders Celsius -Temperature Scale</p> <p>Daniel FahrenheitTemperature Scale / Invention of the Thermometer</p> <p>George Washington Carver-chemist</p>	<p style="text-align: center;"><b>Properties and changes of Materials</b></p> <p>Sir Humphrey Davy- Separating gases</p> <p>Jamie Garcia (BP website)- Invention of a new plastic</p> <p>Becky Schroeder - fluorescence material</p> <p>Spencer Silver, Arthur Fry and Alan Amron - Post-It Notes</p> <p>Ruth Benerito - Wrinkle-Free Cotton</p>	<p style="text-align: center;"><b>Evolution &amp; Inheritance</b></p> <p>Hippocrates -The Father of Medicine</p> <p>Charles Darwin- Evolution</p> <p>Alfred Russell Wallace – naturalist</p> <p>Rosalind Franklin – DNA</p> <p>Nettie Stevens – Geneticist</p> <p>Professor Alice Roberts - Evolutionary biologist</p>

<p><b>Seasonal Changes</b></p> <p>Dr Steve Lyons (Extreme Weather)</p> <p>Holly Green (Meteorologist)</p>	<p><b>Uses of Everyday Materials</b></p> <p>Charles Macintosh- Waterproof material</p> <p>John MacAdam- Tarmac</p>	<p><b>Light</b></p> <p>Justus Von Liebig Mirrors</p> <p>James Clerk Maxwell (Visible and Invisible Waves of Light)</p>	<p><b>Sound</b></p> <p>Alexander Graham Bell -Invented the telephone</p> <p>Aristotle - Sound Waves Gailileo Galilei - Frequency and Pitch of Sound Waves</p>	<p><b>Earth and Space</b></p> <p>Margaret Hamilton- Computer scientist (Moon Landings)</p> <p>Stephen Hawking- Black Holes</p> <p>Mae Jemison – Astronaut</p> <p>Claudius Ptolemy and Nicolaus Copernicus - Heliocentric vs Geocentric Universe</p> <p>Neil Armstrong- First man on the Moon</p> <p>Helen Sharman- GB astronaut</p> <p>Caroline Herschel- First to find a comet</p> <p>Valentina Tereshkova-Cosmonaut</p>	<p><b>Light</b></p> <p>Thomas Edison -Invented electric light bulb</p> <p>Patricia Bath (BP website)- saving sight</p> <p>Thomas Young (Wave Theory of Light)</p> <p>Ibn al-Haytham -Light and our Eyes</p> <p>Percy Shaw - The Cats Eye</p>
		<p><b>Forces &amp; Magnets</b></p> <p>Andre Marie Ampere- Electro-magnetism</p> <p>The Wright Brothers Airplanes</p> <p>Henry Ford- Cars</p>	<p><b>Electricity</b></p> <p>Michael Faraday- Discovered relationship between magnets and electricity</p> <p>Thomas Edison- Lightbulb</p> <p>Joseph Swan- Incandescent Light Bulb</p>	<p><b>Forces</b></p> <p>Isaac Newton- Gravity Albert Einstein- The Theory Of relativity</p> <p>Galileo Galilei - Gravity and Acceleration</p> <p>Archimedes of Syracuse- Levers</p>	<p><b>Electricity</b></p> <p>Nikola Telsa -AC electric system</p> <p>Alessandro Volta- Electrical Battery Nicola Tesla- Alternating Currents</p> <p>Edith Clarke -Electrical engineer</p>

# PUPIL VOICE

## What do our children like about science in school?

I like that we discover things.

Y3

I like that we get to experiment.

I loved learning about magnets.

I liked forces when we did the car experiment.

I liked learning about animals.

Doing experiments – growing plants, friction, magnets.

Experiments

Y4

Fun – I like the tasks

I like experimenting.

We had a vote in class and all the children have voted for birds at the investigation station, this has been their favourite topic, joining in the Big Garden Bird Watch.

YR

Electricity

Y2

Materials

Growing plants

Learning about scientists

Learn something new

Trying out new experiments

Interesting

Fun stuff

Measuring

It's like maths

Making stuff

Exciting

Doing experiments and finding out things. Like using different equipment.

Enjoyed electricity and finding out about the ear.

Y5

I get to experiment and have fun. I can figure out what happens. You can work together to create something new. You don't know if it will work or not.

- Doing experiments
- Learning about the human body
- Working together to share ideas
- Learning things we didn't already know
- Trial and error to see if we are correct

Y6

Experiments

Working together

Learning about scientists

Fun stuff

Exciting

Discovering things

Using different equipment

Not knowing if something will work or not

I like learning about plants

Y1

Doing investigations and tests

# PUPIL VOICE

## How could science be improved in school?

If we could do it on a laptop.

Y3

If we could do more experiments.

If we can learn about dogs, birds and sloth.

If we can grow plants.

If we could make slime.

Having someone come and do big experiments with us. More science outside doing experiments.

- Broader range of experiments
- More experiments
- Class vote to decide on next topic
- More group work

Y6

More school trips

Y1

“toys

“books

“explosions

“making some things”

“potions”

YR

Making potions

More experiments

Exploding experiments

Dissecting a frog to see what’s inside

Coke and Mentos experiment

Y2

More experiments

No book work

More drawings

More outdoor learning

Y4

More experiments. Mixing things in test tubes.

Y5

More experiments

Use the outside for experiments

More interactive lessons

Have a lesson for an experiment, then the following lesson is for writing.

Make more things to help understand/remember.

### We would like:

After-school experiments club

Research on the laptop

Learn about their own interests

Outdoor science

Broader range of experiments in class

Allow a whole lesson for an experiment

More equipment – test tubes

Science themed school trips



In science, we identified and compared different materials suitable for preventing leaks. We plugged the four holes in a plant pot, using blue tack, clay, play dough, wax, a plastic bag and sponge and poured 1000ml of water into the plant pot. We then measured the amount of water that leaked into the container. The play dough was the best because it was more malleable and sticky. The wax and sponge did not work at all.

9 likes 33 views



In science, as part of our uses of everyday materials topic, we tested the flexibility of bottles. We measured the distance the water squirted in footsteps. We found out that the bottles that originally held shampoo was more flexible than the water bottle. We think this was because shampoo is a lot thicker than water. The ketchup bottle wasn't very flexible but we think this might be because we wouldn't want ketchup squirting out too quickly over our food.

 **Our Lady of the Rosary Catholic Primary School**  
Published by Susan Jones · September 15, 2021 ·

In Science, Year 2 have been exploring the properties of everyday materials. Firstly, we predicted whether we thought each material was magnetic, would float or be stretched. Then we tested each material and recorded our findings. Some of our predictions were accurate and we could explain our reasoning behind our predictions.



We use Facebook and Dojo to share our practical lessons.



In science, we are learning about plants. Our first lesson was all about where plants come from. We dissected a broad bean seed and a crocus bulb and then drew each one and labelled each part. The bean seed had three parts and the bulb had five parts. Before we could dissect the bean seed, we had to soften it in a damp paper towel stored in a sealed container because the seed coat was too hard.

We have had a class full of electricians today. In small groups, we made a circuit using 2 wires, a battery, a bulb and bulb holder. We even had to do a bit of problem solving in order to find out which equipment wasn't working, just like a real electrician. We also have been thinking about what life would be like without electricity and some members of the class have had first hand experience of this, because of storm Arwen.



**Our Lady of the Rosary Catholic Primary School**

Published by Lee Bowdler · October 20, 2021

Today, Year 5 looked at the different sizes of a baby during the prenatal stage of human development.

They used fruit and vegetables and compared it to the size of a foetus at different points in the pregnancy. We then added some statements to understand how the baby was developing.



**Our Lady of the Rosary Catholic Primary School**

Published by Amy Bowdler · October 19, 2021

Today, Year 6 planned and conducted a science experiment related to Darwin's Theory of Natural Selection. Like the finches on the Galápagos Islands, they tested a range of 'beaks' to identify which was the most effective for collecting 'food'! Excellent scientific explanations were given by all and super teamwork demonstrated!



**Our Lady of the Rosary Catholic Primary School**

Published by Amy Bowdler · September 21, 2021

Today, in Year 6's science lesson, the children explored genetic code and the link between DNA and genes. They wrote their own genetic code to make their very own 'Reebops'. Super scientific knowledge displayed and lots of fun had!





## Courses

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## Lower Primary

- Planet Earth and Space
- Plants
- Light and Sound
- Humans and Other Animals
- Energy
- Living Things and Habitats
- Everyday Materials
- Seasonal Changes

## Upper Primary

- Food and Feeding
- Body Systems
- Rocks and Soils
- States of Matter
- Forces and Magnets
- Life Cycles
- Future of Energy
- Environments and Habitats
- Changing Materials
- Light
- Evolution and Inheritance
- Plants and Growth
- Classification
- Sound
- Earth and Space
- Electricity

## Skills-based

- Working Scientifically 1 unit done 3 to go
- Outdoor Science
- Science Classroom Management
- Science Across the Curriculum
- Assessment and Progression
- Future Scientists