



Science scheme of work



Claude

- "The scientist is not the person who gives the right answers, they are the ones who ask the right questions." - Levi-Strauss

Christian values underpinning learning: *Together we are compassionate, co-operative, happy, resilient and respectful.*

Intent

At Fletewood, our intent for Science is to provide a curriculum that engenders a deep understanding and love for the subject, enabling students to develop scientific knowledge, skills, and attitudes that will lay a strong foundation for their future aspirations.

We aim to foster a sense of wonder and curiosity, critical thinking, and scientific literacy among our students to equip them with the necessary skills to contribute actively to the world around them. At Fletewood, our Science curriculum is designed to ensure all students develop a deep understanding of fundamental scientific concepts and be able to apply them in real-world contexts. We also place a strong emphasis on promoting scientific enquiry and the development of scientific skills, such as observations, experimentation, analysis, and evaluation.

Implementation

- High quality teaching and learning will enable students to actively engage with the world around them and to develop a lifelong love of learning.
- Our teachers will create a supportive and inclusive learning environment that encourages students to ask questions, pose problems, make connections, and test their ideas through hands-on investigation.
- By using a range of teaching strategies, including inquiry-based learning, project-based learning, and technology-enhanced instruction, students will be empowered to explore their interests and develop the skills they need to become independent learners.
- Children will find out about the achievements of important scientists within the fields of science that they are learning about, focussing particularly on notable scientists and the achievements of female scientists as well as lesser-known scientists those from minority groups.
- As they engage in scientific inquiry, students will learn to think critically, solve problems, and communicate their ideas effectively, all of which will help to prepare them for success in their future academic and professional pursuits.

The implementation of the science curriculum at Fletewood School will be based on a combination of high-quality teaching and a range of learning resources. We make use of the Chris Quigley Essentials Curriculum, which is separated into Milestone 1 for KS1, Milestone 2 for LKS2, and Milestone 3 for UKS2. For the

Foundation Stage, Science is covered in the Understanding the World part of the EYFS curriculum. At Fletewood School, Science is introduced indirectly through activities that encourage every child to explore, problem-solve, observe, predict, think, make decisions, and talk about the world around them.

Teaching and Learning Resources

To support teaching and learning in science, we mainly make use of TWINKL and TigTag to support with planning and resourcing units of work. In addition, we sometimes make use of other online resources, including BP and BBC Bitesize. Our teachers will adapt these resources to plan and deliver lessons that meet the diverse needs of all students while promoting scientific inquiry, critical thinking, and problem-solving skills.

Children's interest in Science and STEM will be further nurtured through participation in special science activities, including British Science Week, STEM Live, as well as a variety of online Live Lessons.

As well as being taught specific scientific knowledge within the strands of Biology, Chemistry, and Physics, children are taught specific scientific enquiry skills within the 'Working Scientifically' strand. This develops the progression of methodologies within the strand of science. For example, observing closely with simple equipment or performing simple tests in Foundation and KS1, to planning enquiries, including recognizing and controlling variables using a range of scientific equipment to take measurements in UKS2. To assist with the development and progression of skills, children and teachers use skills wheels in their science books to record when they have made use of each scientific skill.

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All pupils including those with SEND will be provided with high quality teaching and resources adapted to meet their individual needs. Where appropriate, pupils may be supported 1:1 or in a small group to enable them to access the curriculum.

Subject overview:

Year A

Class	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
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Class 1 (EYFS)	Understanding the World – <i>People, Culture & Communities;</i>		Understanding the World – <i>Past and Present</i>		Understanding the World – <i>The Natural World</i>	
<p>Class 2 (Y1/2)</p>	<p>Our Universe- Planet Earth In this unit, the children learn that:</p> <ul style="list-style-type: none"> -The Earth’s spin creates day and night. -The side of Earth facing the Sun experiences daytime, and the side of Earth facing away from the Sun experiences night-time and that some animals are nocturnal. -The Earth experiences different types of weather. They will understand that thunderstorms are storms with thunder and lightning, and usually heavy rain and that rain is produced when a cloud is full of water and it falls to the Earth’s surface. -The Earth’s surface is covered by land and water, that there are various landforms found on Earth and that humans can live in lots of different places on Earth. - What lies beneath the surface of Earth and know that Earth is made of different layers. That volcanoes are landforms that can erupt with magma from beneath Earth’s surface. 	<p>Living things- My incredible body Human body parts Senses In this unit, children will find out that:</p> <ul style="list-style-type: none"> -The human skeleton is made up of hundreds of bones, gives our bodies their shape and muscles move our bones. - The heart is a muscle, its location, protection and its function. -Digestion and how it involves breaking down food into small enough particles that can be absorbed into the bloodstream. - Food provides us with energy and it travels from the mouth, into the stomach and then through the intestines. - The skin is an organ with the primary function of acting as a barrier to the external environment, protecting the internal organs from injury and disease. -Blood comprised of three main components: red and white blood cells and platelets. -In the event of a cut, platelets work to clot blood, allowing a scab to form, followed by new skin. -The five main senses; sight, hearing, smell, taste, and touch and that these senses work together to help us experience the world. - Different activities engage different senses and our brain plays a crucial role in interpreting information provided by sense organs, including the eyes, ears, nose, tongue, and skin. 	<p>The world around us- Light and sound The Light and Sound Unit will teach children that we are able to see because light rays reflect off objects and into our eyes. They will learn that an object that gives out (emits) light is called a light source and that an object that reflects light is called a reflector. They will learn that the Moon is a reflector and it reflects light from the Sun. The unit will go on to introduce the idea that a shadow is an area where light cannot reach and that this means that shadows form wherever light is blocked. They will learn that shadows take a similar shape to the object that is blocking the light. They will be introduced to the idea that sound energy travels in waves from its source and Sounds are made by tiny movements called vibrations. They will find out that without a vibration there is no sound and that these vibrations travel out from the sound source in all directions. Children will be taught that some sounds are loud and some sounds are quiet. They will learn that the humpback whale is one of the loudest animals on Earth and that whale song travels through water and can be heard over great distances.</p>	<p>Our universe Space adventure In this unit, children will learn that the Sun provides Earth with energy in the form of light and heat and that it is vital to all life on Earth. They will be taught that the Moon is much smaller than the Sun and that astronauts have travelled to the Moon in spacecraft, learning about the first moon landing. They will be taught that there are eight planets in the Solar System: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune, that the Sun is at the centre of the Solar System with the planets, including the Earth, orbiting around it. They will find out that our solar system isn’t the only solar system in space and that there are distant stars that also have planets orbiting them. They will learn that Mars, Venus, Earth and Mercury are rocky planets, mainly consisting of rock and about the Curiosity robot. They will also learn that Jupiter, Saturn, Uranus and Neptune are gas giants, mainly consisting of gas and about the Cassini-Huygens mission was sent to explore the gas giant Saturn</p>	<p>The world around us: Exploring materials This unit will teach children about everyday materials including wood, plastic, metal, water and rock. Children will learn to identify and name everyday materials and will have the opportunity to explore the properties of these materials. Children also will carry out a simple investigation to help them decide which material would be most suitable to use for an umbrella. At the end of the unit children apply their knowledge of everyday materials to sort objects by their properties. A range of learning activities are used in this unit including, discussions, labelling and matching activities, games, and an investigation to encourage where children have the opportunity to ask and find the answers to questions.</p> <p>Scientists/ inventors: Charles Mackintosh -waterproof fabric</p>	<p>Story of life In this unit, the children will learn about the vast universe, which includes everything on Earth and in space, as well as the theory of the Big Bang that started our universe. They will use a timeline to visually represent the sequence of events. The unit will explore the lengthy history of life on Earth, highlighting key milestones in its development. The children will investigate and discover that early humans had different physical appearances and behaviours than modern humans. Dinosaurs, which came in numerous shapes and sizes, lived long ago, and children will be able to provide examples of other contemporaneous animals. They will also learn about their extinction, believed to be caused by a colossal asteroid colliding with Earth. Furthermore, the children will learn the meaning of a fossil, understand different types of fossils, and describe the process of fossilisation. Fossils give scientists an idea of what life was like in the distant past. Scientists/ Inventors: Mae Jemison –astronaut.</p>

<p>Class 3 (Y3/4)</p>	<p>Plants Parts of plants Reproduction in flowering plants Fertilisation and dispersal This 'Plants' unit will teach the class about everything they need to know about plants. They will learn the names of different parts of plants, and the jobs they do. The children will work scientifically and collaboratively to investigate what plants need to grow well and will present their findings to their classmates. Furthermore, they will have chance to predict what will happen in an exciting investigation into the transportation of water within plants. They will work in a hands-on way to identify the parts of a flower and will explore the different stages of the life cycle of a flowering plant.</p> <p>Scientists/Inventors: Sir Joseph Banks, David Douglas, Jeanne Baret and Tom Hart Dyke -botanists/horticulturalists</p>	<p>Light What is light? Light/Dark Reflection/Mirrors Sun safety Shadows This 'Light' unit will teach children about light, reflections and shadows. They will learn about different sources of light, and that we need light to see. The children will work scientifically and collaboratively to investigate reflective materials, in the context of designing a new book bag. They will work in a hands-on way to play a range of mirror games, finding out more about reflective surfaces. Furthermore, they will learn that the sun's light can be dangerous and will create an advert for a pair of sunglasses or a sun hat that they have designed. The children will have chance to test which objects are opaque in an exciting investigation to design the most effective curtains and will find out how shadows change when the distance between the object and light source changes. They will develop their scientific enquiry skills, making observations, predictions and conclusions. Scientists/Inventors: Arthur James Wilson- car wing mirrors.</p>	<p>Sound What is sound? Changing pitch How does sound travel? Sound proofing Making Music This 'Sound' unit will teach the class about how vibrations cause sounds and how sounds travel, as well as how sounds can change pitch and loudness. The children will learn about how sounds are made, carrying out demonstrations of vibrations, and completing a sound survey of their school. They will work in groups to create a human model of the way particles pass sound vibrations on and write and star in their own documentary explaining how sound travels. The children will work in a hands-on way to explore pitch and will use their understanding of how high and low sounds are made to create their own set of pan pipes. They will have the opportunity to make a string telephone and will use this to investigate how sounds change over distance and through different materials. The children will work scientifically and collaboratively to investigate the best material for soundproofing, in the context of making a music studio quieter. Finally, they will demonstrate their learning from the whole unit by designing and creating their own musical instrument that will play high, low, loud and quiet sounds.</p> <p>Scientists/Inventors: Alexander Graham Bell - telephone and work with deaf</p>	<p>Living things and their habitats Grouping Classifying vertebrates Invertebrate hunt Classification keys Invertebrate habitat hunt In this unit children explore a variety of ways to identify, sort, group and classify living things. They learn how animals are split into 'vertebrates' and 'invertebrates' and begin to consider the differences between living things within these classifications. They use and create classification keys to group, identify and name living things from the local habitat and beyond. This unit also introduces children to the idea that environments are subject to human-made and natural changes, and that these changes can have a significant impact on living things. Throughout the unit children work scientifically by gathering, recording and presenting information in different ways.</p> <p>Scientists/inventors: Gerald Durrell -conservationist</p>
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				people, Helen Keller, James West and Gerhard M. Sessler -the microphone	
Class 4 (Y5/6)	<p>Living things and their habitats - Sexual reproduction in plants Life cycle of mammals Sexual reproduction in mammals Metamorphosis Comparing lifecycles This 'Living Things and Their Habitats' unit will teach children about the process of reproduction and the life cycles of plants, mammals, amphibians, insects and birds. The children will explore reproduction in different plants, including different methods of pollination and asexual reproduction. The children will have the opportunity to take cuttings from plants, creating clones of the parent plant. They will learn about different types of mammals and their different life cycles, making life cycle wheels to present their learning. They will explore metamorphosis in insects and amphibians, comparing their life cycles. Finally, the children will explore the life cycles of birds, and will write and star in their own wildlife documentary comparing the life cycles of different living things. Furthermore, the children will find out about Jane Goodall and her work with the now-endangered chimpanzees in Africa and about Eva Crane and her work in understanding about the lifecycles and importance of bees.</p>	<p>Living things and their habitats - Classifying Linnaen system Characteristics of different types of animals Micro-organisms This 'Living Things and Their Habitats' unit will teach children about the classification of living things, including micro-organisms. The children will build on their work in Year 4 by sorting animals into groups based on their similarities and differences. They will extend their learning to find out about the standard system of classification first developed by Carl Linnaeus, choosing an animal and researching its classification. The children will have the opportunity to design their own 'curious creature' and classify it based on its characteristics. They will learn about micro-organisms and conduct an investigation into the growth of mould on bread. Furthermore, the children will use play dough to create a new single celled micro-organism and explain how it is classified and why. Finally, the children will put their learning into practice by creating a field guide to the living things in their local area, showing how and why each one is classified. They will find out about the life and work of Alexander Fleming -Bacteria and anti-bacterials. Libbie Hyman -zoologist-vertebrates and invertebrates</p>	<p>Earth and Space: The solar system Sun, Earth and Moon The Moon Children will learn about the celestial bodies of the Sun, Moon and Earth and how they are related to one another. They will learn that each of them is a roughly spherical shape and investigate and define the word 'orbit'. They will use these scientific words in a brief description of the Sun, Earth and Moon's movements around each other and that the rotation of Earth on its axis is what creates day and night. They will conduct an investigation using torches and light meters to and make observations on what they record throughout the experiment. Children will learn about how the seasons are created because of the tilt of Earth's axis. They will learn how Earth is split into its Northern and Southern Hemispheres and how the seasons are different for the two halves of the planet. They will identify the seasons for the Northern Hemisphere based on the location of Earth in its orbit. Children will be guided through the lunar month and the eight phases of the Moon that can be seen as the Moon orbits Earth. They will learn to identify the shapes of each phase and the names of these shapes, including if the phase is waxing or waning. They will create their own</p>	<p>Properties and changing materials - Thermal conductors and insulators Electrical conductors and insulators Reversible and irreversible changes This 'Properties and Changes of Materials' unit will teach children about different materials, their uses and their properties, as well as dissolving, separating mixtures and irreversible changes. The children will sort and classify objects according to their properties. They will explore the properties of materials to find the most suitable material for different purposes. The children will work scientifically and collaboratively to investigate the best thermal insulator to make a lunch box, making predictions and forming conclusions. Furthermore, they will have chance to find the best electrical conductor, in the context of making floodlights brighter. They will have the opportunity to work in a hands-on way to explore dissolving, identifying the different variables in their own investigations. They will find out about different ways to separate mixtures of materials, using filtering, sieving and evaporating. Finally, they will learn about irreversible changes, and participate in two exciting investigations to create</p>	<p>Light: How we see Reflecting light Refraction Light spectrum Seeing colours Shadow theatre This 'Light' unit will teach the class about light, how we see, shadows, reflection and refraction. The children will learn how light travels and how this enables us to see objects. They will demonstrate their knowledge by making and starring in their own television programme. The children will have the opportunity to make a functioning periscope, finding out about mirrors and the angles of reflection and incidence. They will work scientifically and collaboratively to investigate refraction, carrying out some fascinating experiments into the effects of bending light. Furthermore, they will have chance to predict what will happen in an exciting investigation into the visible spectrum. They will work in a hands-on way to explore how light creates the colours we see, designing coded messages. Finally, they will learn about Isaac Newton and his theory of light and colour, performing a shadow puppet play about his discoveries and ideas. Scientists/Inventors: Galileo Galilei Stonehenge -astronomical calendar/clock</p>

		David Attenborough – conservationist	<p>spinning diagram of each of these phases.</p> <p>Children will learn about and discuss how the ideas about the solar system developed and changed over the years until we arrived at the model we have today. The children will compare the similarities and differences between a geocentric and heliocentric model of the solar system.</p> <p>Children will conduct their own research into the planets within our solar system. They will discuss the objects in our solar system as a class, including natural satellites, comets, asteroids (and the asteroid belt), planets and dwarf planets. They will work to create their own fact book or model of the solar system.</p> <p>Scientists/Inventors: Stephen Hawking -astrophysicist Neil Armstrong, Buzz Aldrin, Margaret Hamilton -astronauts Neil deGrasse Tyson- astrophysicist</p>	<p>new materials, including casein plastic and carbon dioxide.</p> <p>Scientists/ inventors: Stephanie Kwolek -plastic, bullet proof vests</p>	
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Year B

Class	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Class 1 (EYFS)	Understanding the World – <i>Past and Present</i>		Understanding the World – <i>The Natural World</i>		Understanding the World – <i>People, Culture & Communities;</i>	
Class 2 (Y1/2)	<p>Our universe Sharing our Earth.</p> <p>Food and water.</p> <p>Looking after Earth.</p> <p>In this 'Sharing the Earth' unit, children will learn to value the importance of caring for the environment. They will gain an</p>	<p>The world around us</p> <p>Inventions changing lives.</p> <p>Children will discover that electricity is a form of energy that powers most household items. They will explore how it can be generated using various</p>	<p><u>Living things.</u></p> <p>Amazing Plants</p> <p>Growing beans.</p> <p>Garden and wild plants.</p> <p>Trees.</p> <p>Parts of plants.</p> <p>How do plants grow.</p>	<p>Living things</p> <p>Animal Kingdom</p> <p>Where do animals live?</p> <p>What do they eat?</p> <p>Offspring.</p> <p>Life cycles.</p> <p>Growing up</p>	<p>Forces</p> <p>This unit teaches children that Forces can make things move, speed up and/or change direction. They will learn that there are two kinds of force: pushes and pulls. They will learn</p>	<p>Living things</p> <p>Our senses</p> <p>The children will learn that there are five main senses which together help us to experience the world around us and that we use different senses when</p>

	<p>understanding that people have the power to act in ways that protect other living beings. Additionally, children will learn the meaning of the term 'endangered', and they will be able to provide various examples of endangered animals. They will also gain knowledge about farms as a location where food is grown and the multiple uses of water. Ultimately, the core message that children will take away from this unit is that all living creatures and humans alike must work together to share and preserve the finite resources of the Earth.</p>	<p>methods. Furthermore, they will gain insight into the history of transportation and the invention of the aeroplane. They will understand the evolution of this technology since its inception. The students will also have an opportunity to comprehend the broad range of applications of computers in modern society. They will gain a sense of appreciation for the development of more powerful and compact machines over time. Additionally, children will learn about the programming of robots to carry out complex tasks. Finally, students will learn about the advancements in the development of medicine and healthcare. They will recognize how vaccines are designed to combat diseases. Furthermore, they will understand the critical importance of good hygiene practices to prevent the spread of germs.</p>	<p>Children will learn to name the basic parts of a plant, including seeds. They will have the opportunity to plant their own seeds and to make observations of how they grow over time. Children will also learn to identify, name and describe a variety of garden and wild plants as well as evergreen and deciduous trees. In their final lesson, the children will use all of their knowledge gained throughout the topic to identify, compare and classify plants.</p> <p>Scientists/ Inventors Tim Smit- Eden project, sensory garden.</p>	<p>Survival, Exercise Healthy Living Children will find out that:</p> <ul style="list-style-type: none"> - Animals live in different types of homes, places where animals can reproduce and raise their young, hide from predators, and shelter from weather. - Some animals use their home to catch food. Spiders, for example. -Different types of animals eat different things, specifically herbivores, carnivores and omnivores. -Carnivores hunt other animals for food. -Animal young and comparing them to their adults. -Animals change as they grow up. -The life cycles of several varied common animals, including humans. - How humans change as they grow older, drawing on their own observations. -The three basic needs of animals for survival (water, food and air). - Apply knowledge, alongside research, to suggest ways to look after pets. -Healthy lifestyles, including the importance of exercise, healthy eating and hygiene. <p>These healthy living lessons develop 'working scientifically' skills through investigating the impact of exercise on our bodies and how handwashing is essential for good hygiene.</p> <p>Scientists/ Inventors: Rachel Carson - Oceanologist/marine biologist Scientists/ Inventors: Vets</p>	<p>about friction causing a moving object to slow down and stop and investigate friction on smooth and rough surfaces. They will learn that how fast something moves is called its speed and a number of different factors affect how fast or slow something moves. They will be taught that the stronger something is, the bigger the force it can use to push or pull things. Children will learn that gravity is a force that pulls everything down to the ground and that it is experienced differently in space.</p> <p>Scientists/ Inventors: Hero of Alexandra, James Blyth - Wind power.</p>	<p>engaging in different activities. They will understand that our brain helps us to interpret the information provided by our sense organs. They will find out that our eyes allow us to see the world around us and that some things are too small to see with our eyes, so we use tools to enhance our sight. They will discover that our taste buds are on our tongue and that they help us to identify different flavours. Children will learn that taste is closely connected to the sense of smell and that some animals use their sense of smell to detect prey. Finally, children will learn that we have receptors on our skin that help us to feel things that we touch. They will find out how seals use receptors in their whiskers to help them to find food in the ocean.</p> <p>Scientists/ Inventors: Linda Brown Buck – odorant receptors.</p>
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				George Mottershead -Chester Zoo		
Class 3 (Y3/4)	<p>Rocks Types of rocks. Grouping rocks. Fossils. Mary Anning Soil formation Soil profiles</p> <p>In this unit, children will discover the different types of rocks and how they are formed. Children will compare and group rocks based on appearance and simple properties. They will learn how fossils are formed and learn about the contribution of Mary Anning to the field of palaeontology. Children will understand how soil is formed and then investigate the permeability of different types of soil. Scientists/Inventors: William Smith- Geologist Inge Lehmann- Seismologist and Geophysicis.</p>	<p>States of matter Solids, Liquids, Gases Changes of state-heating and cooling The water cycle</p> <p>This ‘States of Matter’ unit will teach the class about the differences between solids, liquids and gases, classifying objects and identifying their properties. The children will work scientifically and collaboratively to investigate the weight of a gas. Furthermore, they will have chance to find the ideal temperature to melt chocolate. They will explore in-depth how water changes state, exploring melting, freezing, condensing as well as a particular focus on evaporation. Finally, they will learn about the stages of the water cycle, creating mini water worlds and an interactive water wheel to represent the different stages.</p> <p>Scientists/Inventors: Antoine Lavoisier, Joseph Priestly- Oxygen Lord Kelvin- Absolute Zero</p>	<p>Animals including humans Diet and exercise. Human skeleton. Joints and muscles.</p> <p>This unit recaps the children’s learning from year 2 about how animals survive and stay healthy and helps children to learn more about what makes a healthy, balanced diet. They learn about the nutrients that different foods provide and how these nutrients help our bodies. They also explore how different animals eat different types of foods and need different proportions of nutrients. They understand what food labels on packaging show and gather information from food labels to help them to answer questions. In this unit, children also explore the different types of skeletons that animals have and compare these. They learn some names of bones in the human body and carry out an investigation to explore if people with longer femurs jump further. They discuss how to plan a fair test and measure and record accurately. Children learn about how muscles help us to move and make a simple scientific model which they use to explain to a partner how skeletal muscles work. In the final lesson, children apply their ‘working scientifically’ skills to design and carry out an investigation of their own, based on the human skeleton.</p> <p>Scientists/Inventors: Marie Curie- x-rays</p>	<p>Digestive system Teeth</p> <p>In this unit about <i>Animals Including Humans</i>, children will expand on their learning from year 3 about how animals, including humans, need to get nutrition from what they eat. They will explore the different organs of the digestive system in humans and the functions of teeth in both humans and animals. Firstly, children will learn about the different types of teeth and the importance of good dental hygiene, before planning and carrying out an investigation into tooth decay using an egg as a model tooth. They will then learn about the parts and functions of individual organs of the human digestive system and carry out their own scientific demonstration of the process using everyday household items. Children will then learn more about herbivores, carnivores and omnivores in the context of teeth, digestion and food chains. They will extend their understanding of food chains from key stage 1 to include more complex chains, using the terms ‘consumers’ and ‘producers’ and compare food chains in different habitats. Finally, children will compare the teeth of different types of animals and apply their understanding to make links with their role in the food chain.</p> <p>Scientists/Inventors:</p>	<p>Forces and magnets</p> <p>This ‘Forces and Magnets’ unit will teach the class about forces, friction and magnetic attraction. They will learn about forces in the context of pushing and pulling and will identify different actions as pushes or pulls. The children will work scientifically and collaboratively to investigate friction, by exploring the movement of a toy car over different surfaces. They will work in a hands-on way to identify magnetic materials. Furthermore, they will conduct an investigation into the strength of different types of magnet. The children will have chance to explore the way magnetic poles can attract and repel in an exciting activity, making their own compass and using it to find hidden items. The children will use their understanding of magnetic attraction to design and create their own magnetic game. They will develop their scientific enquiry skills, making observations, predictions and conclusions.</p> <p>Scientists/ Inventors: Electromagnets.</p>	<p>Electricity Series and parallel Conductors Dangers of electricity Conductors and insulators Switches</p> <p>In this year 4 unit about electricity, children will learn about common electrical appliances and how to construct simple series circuits. They will become familiar with the key words linked to the topic and how to apply them appropriately. Children will learn about cells, wires, bulbs and buzzers and about the different types of switches. They will be able to troubleshoot and identify whether a bulb will light in a simple series circuit and be able to identify a complete circuit. The children will also learn about conductors and insulators and know that metals are very good electrical conductors.</p> <p>Scientists/Inventors: Thomas Edison, Lewis Latimer</p>

				Washington Sheffield-Toothpaste.		
Class 4 (Y5/6)	<p>Forces: Air and Water resistance. Gravity Friction Gears and pulleys. This 'Forces' unit will teach the class about types of forces such as gravity, friction, water resistance and air resistance. Children will also learn about the use of mechanisms such as levers, gears and pulleys. The children will identify forces and find out about Isaac Newton and his discoveries about gravity, completing a comprehension about his life and his work. The children will look for patterns and links between the mass and weight of objects, using newton meters to measure the force of gravity. They will also work collaboratively to investigate air and water resistance, participating in challenges to design the best parachute and boat. They will have the opportunity to work in a hands-on way to explore friction, developing their own brake pad for a tricycle or scooter. During some of the practical science work, the children will discuss how variables other than the one being tested can be kept the same to help make a test fair. Finally, they will find out about different mechanisms, including levers, gears and pulleys, and will design their own marvellous machine.</p> <p>Scientists/Inventors: Leonardo Da Vinci -Air Machine.</p>	<p>Electricity: Investigations Circuit symbols This unit builds on from the Year 4 Electricity unit. Children will learn to represent circuits using symbols in a diagram. They will learn about two of the most important scientific inventors in the field of electricity – Thomas Edison and Nikola Tesla. Children will get the opportunity to develop their understanding of what electricity is and how to measure it. As well as conducting their own investigation, they will get the opportunity to create their own torch!</p> <p>Scientists/Inventors: Steve Jobs-Technology in the public domain.</p>	<p>Animals including humans: Human development timeline. Growth of babies. Puberty. Changes in old age. Gestation periods. Life Expectancy. This unit focuses on the changes that human beings experience as they develop to old age. It tackles some sensitive subjects including puberty and death. As such, it is advisable to consult your school sex and relationships education policy prior to teaching this unit. Children will learn about the life cycle of a human being. They will investigate the development of babies and compare the gestation period of humans and other animals. They will learn about the changes experienced during puberty and why these occur. The final investigation will be about the changes to the body as humans get older, as well as comparing the life expectancy of different animals.</p>	<p>Animals including humans The circulatory system Transporting water and nutrients Healthy lifestyle, Exercise Drugs and Alcohol This unit recaps the children's learning from year 4 about how animals survive and stay healthy and helps children to learn more about how different organ systems work. This unit teaches the importance of diet, exercise and lifestyle in the way that bodies function. In this unit, they learn about the three main parts of the circulatory system and the job of the heart. They also learn about what blood is comprised of and how it is transported around the body. Children carry out an investigation to explore how heart rate is affected by exercise. They discuss how to plan a fair test and measure and record accurately. Children learn the importance of exercise and conduct a survey to find the most popular exercise in their class. They then apply their understanding by discussing different people's lifestyles and how this can affect their bodies. Finally, children will learn about drugs and alcohol and how they can have an impact on our bodies, specifically in relation to the circulatory system.</p> <p>Scientists/Inventors: Daniel Hale Williams -Heart Surgeon.</p>	<p>Evolution and inheritance: Inheritance. Adaptation. Evolution. Human intervention This unit builds on the children's learning from the Year 3 Rocks unit as well as the Animals including Humans and Living Things and their Habitats units. As such, it is important that children have the appropriate understanding of fossils, habitats and human development in order to grasp the concepts and ideas presented to them in these lessons. Children will learn about variation and adaptation. They will be able to explore how both Charles Darwin and Alfred Wallace separately developed their theories of evolution. They will examine the scientific evidence from plants and animals that has been gathered to support the theory of evolution.</p> <p>Scientists/Inventors: Mary Leaky -Evolution of humans. Darwin</p>	

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Impact

As a result of the provision above, all pupils including those with SEND will develop confidence and resilience in the classroom and will demonstrate high levels of engagement. All pupils will make progress from their starting points. They will develop both as independent and interdependent learners.

Long Term:

The impact of science teaching at Fletewood School will be significant and long-lasting. Our students will develop a deep understanding of key scientific concepts and principles, as well as the skills needed to think critically, solve problems, and communicate scientific ideas effectively. They will be equipped with the knowledge and confidence needed to pursue further study in science and to apply their scientific understanding to real-world situations. Moreover, our students will develop a lifelong love of learning and a sense of wonder about the world around them, inspiring them to continue to explore and understand the natural world. The combination of high-quality teaching, engaging learning resources, and a supportive learning environment will ensure that our students leave Fletewood School as scientifically literate and informed citizens, ready to make a positive impact in their communities and in the world.

Assessment

Teachers monitor student responses within lessons to formatively assess student understanding and skills in science. Each unit begins with the use of a 'Defining Thinking Frame' in which students can work collaboratively to share their existing knowledge and pose questions about the topic. These thinking frames are added to as children make discoveries during science lessons and investigations.

Additionally, we will regularly assess students' progress using End of Unit Quizzes and Chris Quigley Depth of Learning statements to ensure that they are meeting the expected outcomes of the science curriculum.

This approach aims to not only ensure that children acquire the appropriate age-related knowledge linked to the science curriculum, but also acquire skills that equip them to progress from their starting points and apply their learning in their everyday lives.

- Children will achieve age related expectations in Science at the end of their cohort year.
- Children will retain knowledge that is pertinent to Science with a real-life context.
- Children will be able to question ideas and reflect on knowledge.
- Children will work collaboratively and practically to investigate and experiment.
- Children will be able to explain the process they have taken and be able to reason scientifically.

- Children will gain a wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.
- Children will achieve a richer vocabulary which will enable to articulate their understanding of taught concepts.
- Children and teachers will have high aspirations, which will see them through to further study, work and a successful adult life.

Assessment and Monitoring in Science:

The impact of our Science curriculum is measured through the monitoring cycle in school:

- Lesson observations, book monitoring and learning walks
- Pupil voice – to check understanding, understanding of key skills and knowledge, progression, confidence in discussing Science
- Children's work shows a range of topics and evidence of the curriculum coverage for all science topics.
- Children are becoming increasingly independent in science, selecting their own tools and materials, completing pupil lead investigations and
- choosing their own strategies for recording.
- All children are making progress, including EAL and SEND children.

Role of the co-ordinator:

- To ensure coherence and consistency across the school.
- To organise /lead INSET in Science.
- To facilitate relevant CPD.
- To support other staff members in their teaching of Science.
- To work closely with all stakeholders to monitor the impact of Science teaching at Fletewood School.