

West Witney Primary School and Nursery

Curriculum Information



Science

Key Stage 1 and Keys Stage 2

Introduction

We are passionate about instilling a love of science from an early age which will encourage continued curiosity and fascination with the world around them. We want the children to experience as much practical 'hands on' science as possible and to realise its importance in everyday life. It is important to us that children learn about the significant work of famous scientists in the past, both men and women, to help inspire the next generation of budding scientists.

Intent

At West Witney we use the White Rose Science scheme to provide a structured and coherent programme of learning that builds progressively through each year. Substantive knowledge and disciplinary knowledge is mapped by year group and builds year on year. Substantive knowledge is blocked in to science topics: animals (including humans), living things and their habitats, plants, materials, rocks, states of matter, electricity, earth and space, seasonal changes, sound, light, forces and magnets, evolution and inheritance. Disciplinary knowledge is blocked in to ask questions, plan, make observations, take measurements, gather, record and classify data, present findings, answer questions and make conclusions and evaluate. Year group expectations are mapped later in this document.

At West Witney Primary School and Nursery, the science curriculum has been designed so that our learners gain a coherent knowledge and understanding of all scientific areas and develop an enthusiasm and curiosity to know more about how science has developed our understanding of the world around us. Using the National Curriculum as a basis, the science programme of study has been mapped with focus, appropriateness, coherence and sequentially. There is a clear progression of substantive knowledge, Tier 3 vocabulary and links between strands of science, to ensure all pupils achieve well. New knowledge and skills build on what has been taught before, setting the foundation for future learning. Enriching experiences are planned to ignite the children's passion for science and help them gain episodic and semantic knowledge. At West Witney, we aim to deliver a science curriculum that will inspire and engage the curiosity of all children. Our programme of study is supported by White Rose Science, which helps provide a range of opportunities full of practical investigations that will

encompass their problem solving and scientific knowledge in a wide variety of contexts. The National Curriculum focuses on three key areas: developing scientific knowledge through the specific disciplines of biology, chemistry and physics; developing an understanding of the natural world through scientific enquiry; equipping the children with the ability to understand the impact of science today and for the future.

Implementation

Science teaching focuses on enabling children to think as scientists. We place an emphasis on practical activities and give children the opportunity to research, observe, experiment and evaluate in every module, focusing on skills and working scientifically to investigate questions and develop theories based on what they discover. We recognise and value the importance of curiosity and fascination in science and we encourage a love of science through Science club for Years 1 through 6 and also by encouraging families and siblings to attend an annual family science event each year. We recognise that in all classes, children have a wide range of capabilities in science, and we seek to provide suitable learning opportunities for all children, by layering the depth of learning and challenge. Emphasis is placed on the development of disciplinary knowledge alongside substantive knowledge. A variety of teaching approaches are used, including: researching information from a range of sources, practical activities to investigate a question and test a theory – e.g. building an electric circuit, investigating resources and sources of evidence such as fossils, measuring quantities, estimating and making predictions based on what has gone before, using a range of instruments and different ways of recording data, presenting information in different formats, e.g. oral presentations or posters, and evaluating findings individually and in groups. Learning experiences are delivered so children are able to develop a greater understanding of all areas of the science curriculum; the curriculum is broken down into small steps so that learning is broken into easily digestible chunks. Children gain knowledge through experiment, practice and discussion. Scientific vocabulary is a focus in every lesson and substantive knowledge is remembered by children working scientifically (disciplinary knowledge). Everyday materials and scientific equipment is used to solve science problems. Each block of learning includes an enquiry question to further enrich children's understanding of the scientific enquiry process.

Every lesson has a clear learning objective with differentiated learning statements which act as clear challenge for the children.

Impact

The evidence/ demonstration that the curriculum has been planned and delivered effectively (mainly seen through assessments, books, pupil voice

The impact of the Science curriculum at West Witney Primary School is the demonstration that the curriculum has been planned and delivered well. This can be seen through:

- Clear evidence that our children have shown progress and attainment in line with the National Curriculum.
- Our children demonstrate enthusiasm for the subject and can talk with confidence and knowledge about science.
- Our children demonstrate an understanding of a range of scientific vocabulary that can be applied, confidently.
- As scientists, our children can use their skills to pose questions, evaluate evidence and draw conclusions. They 'know more' so they can make links between their knowledge from different strands of science.

Recording

Science at West Witney is recorded in books. For the majority of lessons, learning is recorded in these books. However, in some instances, forms of learning may happen where recording in books is not possible or appropriate. Teacher, peer and self-assessment will be used to tick the depth of learning statements to record whether they have been achieved. These will be present for every lesson. Teachers will use their professional judgement to make this decision. Children will be given the opportunity to build their understanding and experiences through a variety of tasks that will allow them to show their Scientific knowledge.

Assessment

Children will have the opportunity to answer key concept questions in a verbal and written format, which will give the teachers an excellent understanding of how well children have understood the taught knowledge and skills. After each science topic, teachers will make a summative assessment of whether the child is working towards the age-related expectation, at age related expectation or working at greater depth. To develop their awareness of their knowledge and

learning, children will have the opportunity to self and peer assess against learning objectives and depth of learning statements. Many other formative assessment strategies are used, including conversations with the children and the 'products' seen as a result of their learning. Formative and summative assessment are used together by teachers to gain a good understanding of the knowledge the children have embedded.

Year	Autumn Term						Spring Term					Summer Term									
1	The Human Body		Seasonal Change	Materials		Seasonal Change	Planting	Animals		Caring for the planet	Seasonal Change	Planting	Consolidation	Plants		Planting	Growing and cooking		Seasonal change	Consodiation	
2	Animals needs for survival		Human s	Materials		Sustainability (Plastic)	Plants (Light and dark)	Living things and their habitats			Plants (Light and Dark)	Consolidation	Growing Up	Plants Bulbs and seeds		Growing up	Wildlife		Consolidation		
3	Skeletons	Movement	Nutrition and diet		Food waste	Rocks	Consolidaiton	Fossils	Soils		Light			Consolidation	Plants		Forces	Magnets		Plants	Biodiversity
4	Classifying living things		Data collection	States of matter			Consolidation	Sound		Data collection	Electricity		Energy	consolidation	Data Collection	Habitats		Deforestation	The Digestive System		Foodchains
5	Forces		Space			Global warming	Consolidation	Properties of materials		Animals including humans		Life cycles		Repro-duction	Reversible and irreversible changes		Plastic pollution		Reproduction	Consolidation	

6	Living things and their habitats	Electricity	Renewable energy	Light	Light pollution	The circulatory system	Diet, drugs and lifestyle	Variation	Adaptations	Fossils	Consolidation	Themed projects

Plants and living things	Seasonal Change	Materials and forces	Sustainability
Animals and Humans	Space	Electricity, light and sound	Rocks and soils

Plants and living things	
Children begin investigating plants in Nursery and Reception, noticing the world around them. This is further developed in Key Stage One when their knowledge and understanding of the growing process begins with learning about seeds and the different stages of growth. They will explore their local area making observations and noticing similarities and differences. In Key Stage Two, children further their understanding by learning about the different parts of a plant associated with reproduction and the role this plays in the life cycle -further embedding their knowledge of animals.	
Seasonal Change	
In Reception and KS1, children look at seasonal changes in autumn, spring and summer at the relevant time of the year. Children learn there are four seasons and observe and explore changes related to these throughout the year. They make comparisons between the seasons based on weather patterns, hours of daylight and changes in plant and animal life. The children use their local area to help them identify similarities and differences between the seasons; for example, they will go on autumn, spring and summer walks around the school grounds. In KS2 children explore seasonal changes in other modules – for example, in their Space module when thinking about Earth’s orbit and position compared with the Sun and when thinking about times of year when animals hibernate and reproduce.	
Materials and Forces	
In Key Stage One children focus on different types of materials and some of their main properties. In Key Stage two the children learn about Forces and magnets. In Upper Key Stage Two the children further investigate forces and properties of materials.	
Animals and Humans	Space
	In Upper Key Stage Two children develop their understanding of the Sun from their study of light from Key Stage One and Lower Key Stage Two. They explore how the Solar System is made up and the impact this has on each planet. They use a range of models to show their findings including the use of stop motion and group role play.

Electricity, Light and sound.	
In Year 3, children learn about different light sources and the dangers that are associated with light from the Sun. They develop the skill of observing changes over time when learning about shadows. In Upper Key Stage Two, children explore how light travels and use creative ways to present their findings. Further enhancing their understanding of Space and how the role the Sun and misconceptions about the moon link to their findings. Year 5 develop ideas around chromatography which is enhanced in Year 6 when investigating the spectrum of light. Year 4 begin learning about electricity and creating simple circuits whilst recognising limitations. In Year 6 this is further developed when beginning to use electrical symbols and develop investigations into how different numbers of bulbs/wires impact the working of a circuit. Children also learn how to make switches and how this relates to everyday life – having strong links with DT when creating a game incorporating a circuit.	
Rocks and soils	
In Key Stage Two children focus on different rock types and sort them based on their similarities and differences, exploring how they might be used in everyday life. In Year 6, this is also enhanced when studying evolution and exploring scientists work with evidence.	
Sustainability	
In Nursery, children begin developing ideas of how their behaviour has an impact on the environment. This progress throughout Year 1 where children recognise that Plastic is helpful and harmful and the ways to reduce their plastic waste. In Year 2 children identify that there are many ways to care for local wildlife and how It is important to care for plants and animals. LKS2 develop their understanding of sustainability through food waste and how a lot of food ends up in landfill sites where it rots and has a negative impact on the planet, they evaluate the different ways that food waste can be reduced. In UKS2 children develop their understanding of the greenhouse effect and how change in weather patterns and can lead to drought or flooding. This is enhanced through their learning in Geography. Year 6 further embed their understanding of light and how light pollution impacts the world and developing ideas on ways to reduce our light emissions.	

