



School Vision:

Children leave Eastbury Farm having been inspired to become confident and successful learners, ready to explore their future as resilient and responsible individuals.

Science Vision:

Children leave us inspired to explore and discover the scientific world around them. Using their transferrable skills including observation, communication, problem solving and team work they will continue as lifelong learners. We create young scientists who are inquisitive and apply scientific thinking.

Intent:

Throughout our Science curriculum, we encourage children to be inquisitive throughout their time at the school and beyond. The science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living things. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

We want our children to develop a mastery of the following **working scientifically skills**:

KS1:

- Asking questions
- Performing simple tests and using equipment
- Saying why a test is fair
- Observing and measuring
- Using books, videos, the internet, people and photos to find answers
- Recording information
- Looking for patterns- sorting and grouping
- Explaining results- saying what we found out

LKS2:

- Asking relevant questions
- Setting up enquiries and choosing equipment
- Setting up fair tests (with help)
- Carefully observing and accurately measuring
- Recognising when to use other sources of information to find answers
- Choosing how to record information- tables, tally charts, Venn and Carroll diagrams and bar charts
- Looking for patterns- identifying and classifying
- Explaining results- drawing conclusions and using results

UKS2:

- Using scientific knowledge to ask questions
- Planning different types of enquiry controlling the variables necessary

Implementation:

How do we effectively develop working scientifically skills to ensure progression?

What is our teaching approach to delivering Science?

Teachers create a positive attitude to science learning within their classrooms reinforcing an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- A cycle of lessons for each subject, which carefully plans for progression and depth;
- Through our planning, we involve problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons using our chosen scheme 'Snap Science' for KS1 and 'Developing Experts' for KS2, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that all children keep up;
- Spaced retrieval questions create a deeper level of processing any previously learned content into children's long term memory;
- We build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence;
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching and knowledge organisers. This is developed through the years, in keeping with the topics;
- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning whenever possible;
- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class;
- Annual events such as Science Week allow all pupils to come off-timetable, provide broader provision and allow for the acquisition and application of knowledge and skills. These events often involve families and the wider community;

Impact:

Children will have an embedded level of scientific knowledge and working scientifically skills to help them to explore, maintain curiosity and understand the purpose of science around them in everyday life.

Children's knowledge and skills will develop progressively as they move through the school, not only to enable them to meet the requirements of the National Curriculum but to prepare them to become competent Scientists throughout their education and lives.

This will be evidenced through continuous monitoring carried out by the Subject Leader including:

- Learning Walks
- Pupil Voice
- Book Look
- Planning Scrutiny (that it is

- Accurately taking measurements using scientific equipment
- Recognising when to use other sources to answer questions and separating opinion from fact
- Recording data, taking repeat measurements where necessary and calculating a mean
- Using and developing keys to identify and classify living things and materials
- Using scientific language to draw conclusions
- Evaluating plans and results and suggesting improvements

These skills will be evident through investigation, thinking, questioning, drawing and writing.

We understand that it is important for lessons to have a skills-based focus, as well as a deep rooted understanding of each topic and that the knowledge can be taught through this.

- Develop **scientific knowledge** and conceptual understanding through the specific disciplines of biology, chemistry and physics
- Develop **understanding** of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- Be **equipped with the scientific skills** required to understand the uses and implications of science, today and for the future
- **Explain and Evaluate:** giving reasons for why things happen and begin to justify these

Through the specific study of:

<p>Cycle A In Reception Reception Autumn 1- All about me Autumn 2- Superheroes and me Spring 1- All creatures great & small Spring 2- Let's celebrate Summer 1- Once upon a time Summer 2- Me and my world</p> <p>In Year 1.2 Everyday Materials (Materials and Objects) Animals Including Humans (Common Animals, Plants, Diets) Seasonal Changes (Weather and Seasons) Plants (Wild and Garden)</p> <p>In Year 3.4 States of Matters (Solid, Liquid, Gas) Rocks (Types, Rocks and Soils)</p>	<p>Cycle B In Reception Reception Autumn 1- All about me Autumn 2- Superheroes and me Spring 1- All creatures great & small Spring 2- Let's celebrate Summer 1- Once upon a time Summer 2- Me and my world</p> <p>In Year 1.2 Uses of Everyday Materials (Materials for Different Uses) Living Things & Local Habitats (Living, Dead, Never Alive, Habitats) Animals Including Humans (Growth, Survival & Health) Plants (Seeds & Bulbs)</p> <p>In Year 3.4 Electricity (Circuits & Components) Sound (Vibrations & Features)</p>
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Our Teaching/Learning Sequence:

Inspire

- Immerse the children in the subject/new learning theme and excite them about the unit ahead to make the learning more meaningful and relevant
- Find out what the children already know about the subject and how this links to what have they learnt in previous units using whole class KWI grids and working walls
- Encourage the children to be curious and want to question and find out new information
- Link to knowledge of current and historical scientific developments



Enquiry and Plan

- Encourage the children to be curious, inspired and fascinated by the new topic by introducing them to a problem that they need to investigate and provide potential solutions for
- Teach the skills children need to help them to investigate a problem. This could be building on previous learning from other year groups or cross-curricular learning
- Plan and hypothesize about the problem and identify the resources needed to find an appropriate solution
- Develop the children's knowledge and understanding, working both independently and collaboratively



Apply Skills and Investigate

- Children will use the taught skills and resources to help them develop and deepen their understanding of scientific processes and how to work scientifically
- Children acquire the skills to understand, present, analyse and communicate a range of information in a variety of ways
- Children can choose the best way to present their findings and share their conclusions
- Children can make relevant suggestions as to their results can be used and developed as a next step in learning
- Topics are relevant and taught in progressive way to build on previous learning, knowledge and skills
- Children know the components to working scientifically by using key stage science wheels



Connect it all Together

- Bring together the new knowledge and understanding that has been gained throughout the unit so that children are able to confidently talk about their learning
- Link this to existing knowledge and understanding



Concluding

- The children have learnt new knowledge and skills through the unit that has built on previous learning
- Children can apply their learning, understanding and skills to a range of investigations across the three key sciences
- The children have been excited, engaged and curious to learn about science and its significant role within society

progressive and builds upon children's existing skills and knowledge)

Living Things & Their Habitats
(Classification & Human Effect on
Environment)
Plants (Parts and Growth)
Light (Shadows and Refelction)

In Year 5.6

Evolution & Inheritance (Evolution,
Adaption & Inheritance)
Forces (Gravity, Friction &
Mechanisms) Inheritance)
Animals Including Humans
Light (How Light Travels)
(Circulation and Health)
Animals Including Humans (Growth,
Development and Puberty)
Animals Including Humans
(Circulation & Health)

Forces & Magnets (Movement &
Magnets)

Animals Including Humans (Food,
Diet, Skeletons & Muscles)

Animals Including Humans
(Digestion, Teeth & Food Chains)

In Year 5.6

Properties & Changes of Materials
(Dissolving, Reactions &
Separation)

Earth & Space (Solar System,
Movement of the Moon, Day &
Night)

Living Things & Their Habitats (Life
Cycles, Reproduction of Plants &
Animals)

Living Things & Their Habitats
(Classification: Plants, Animals &
Microbes)

Electricity (Changing Circuits and
Symbols)

Subject Leader Expectations:

- 1.5 hrs per week in KS1 and 2 hrs per week in KS2 taught as a minimum
- Cross-curricular links are developed wherever possible, particularly in English and Mathematics
- Where possible, skills should be taught through investigation and enquiry and include practical 'hands on' activities
- Clear adaptations to be evident for all learners
- Planning to show evidence of AfL such as assessing prior knowledge e.g. vocab retrieval quiz, use of learning partners, peer and self-assessment
- Questioning to be used in marking to clarify or deepen understanding
- At the end of each unit, teachers should assess children into these categories: on track to be pre key stage, on track to be WTS, on track to be EXS, on track to be GDS based on their performance throughout the unit
- Science-based school trips encouraged in each year group
- Visitors to school are encouraged in order to reinforce learning (e.g. K'Nex Challenge for Year 5's from STEM ambassadors)
- Science resources used to enhance teaching and learning
- Science working walls or display to be evident in every classroom
- Class teachers to inform Science SL when resources are missing or stock needs replenishing
- Photos to evidence use of outdoor spaces in science