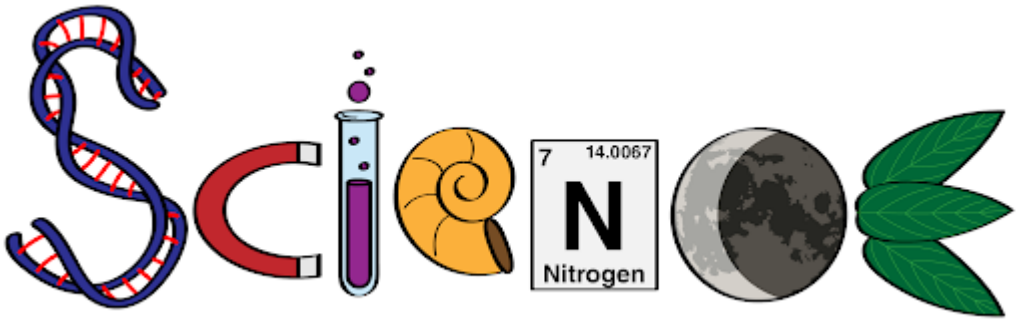
Lea Endowed CE Primary School



Policy

Renewed: September 2023
Due for Review: July 2023

'LET EVERYONE SHINE'

At **L**ea **E**ndowed Church of England Primary **S**chool we provide an excellent education for our children. We follow God's example, by loving Him, and each other, in all that we do. Our whole school family is encouraged to achieve their full, God given potential and **shine** in their own special way.

"Let your light shine."
Matthew 5:16

Lea Endowed CE Primary School
Curriculum Rationale

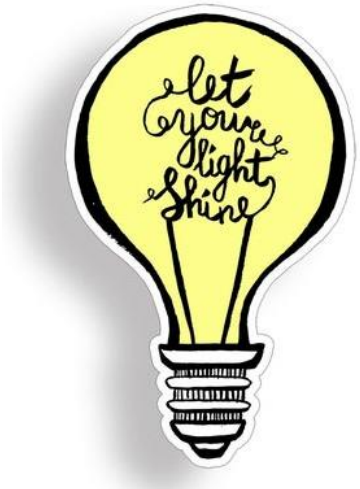
The curriculum at Lea Endowed is designed to provide a deep and wide education that meets the needs of all children and gives them the skills, knowledge and understanding to prepare them for their future lives. We want to help each child become a caring, confident and curious young person who has a passion for learning and achieving. Children are encouraged to follow God's example and to achieve their God given potential in all aspects of the curriculum.

The curriculum ensures that academic success, creativity and problem solving, reliability, responsibility and resilience, as well as physical development, well-being and mental health are key elements that support the development of the child and promote a positive attitude to learning.

The curriculum supports the children's spiritual, moral, social and cultural development through its distinctively Christian character and its celebration of individuality, skills, knowledge and the cultural wealth of the wider school family.

Lea Endowed CE Primary School
Curriculum Statement of Intent

We provide a Deep and Wide curriculum which supports a lifelong love of learning for every **unique** and individual child, underpinned by our distinctively Christian ethos. The teaching and learning of the Science curriculum is **inspirational** and **relevant** to promote **creativity** and the **courage** to ask Life's Big Questions, as scientists have done through the ages. Through positive **challenge**, children will **flourish** and become both **independent** and **collaborative** learners as they discover how God's world works.



1. Science Curriculum Statement

Intent

The National Curriculum for Science aims to ensure that all pupils:

- 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;
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

At Lea Endowed, we believe that Science is a body of knowledge built up through experimental testing of ideas as well as being a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

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. 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 the school so that they can apply their knowledge of Science when using equipment, conducting experiments, building arguments, explaining concepts confidently asking curious questions about their surroundings.

We believe that a deep and wide Science education is the entitlement of all children. Our aims in teaching Science include the following:

- Preparing our children for life in an increasingly scientific and technological world.
- Fostering concern about, and active care for, our environment, both living and non-living.
- Helping our children acquire a growing understanding of scientific ideas.
- Helping develop and extend our children's scientific concept of their world.

- Encouraging the development of positive attitudes to Science.
- Building on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work collaboratively with others.
- Proving our children with an enjoyable experience of Science, so that they will develop a life-long interest and may be motivated to Science further.

- Giving our children an understanding of scientific process.
- Helping our children to acquire practical scientific skills.
- Developing the skills of investigation – including observing over time, measuring, predicting, experimenting, communicating, interpreting, explaining and evaluating.
- Developing the use of scientific language, recording and techniques.
- Developing the use of ICT in investigating and recording.
- Enabling our children to become effective communicators of scientific ideas, facts and data.

Implementation

Teachers create a positive attitude to Science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in Science. Our whole school approach to the teaching and learning of Science involves the following:

- Science will be taught in planned and arranged subject knowledge blocks by the class teacher, using Medium Term Plans supplied by the subject leader; ensuring that both knowledge and skills are taught.
- Through our planning, teachers give accurate explanations, involve problem solving opportunities that allow children to apply their knowledge, and find out answers 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. Planning involves teachers creating engaging lessons, 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 pupils regularly to identify those children with gaps in learning, so that all pupils keep up.
- We build upon the knowledge 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. 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.

2. Teaching and Learning

At Lea Endowed, 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. Teachers ask a range of questions which enable all children to take part, listening carefully to answers and taking learning forward, using open and closed questions and allowing children time to think. Planning involves teachers creating engaging lessons, 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 pupils regularly to identify those children with gaps in learning, so that all pupils keep up. New vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career. The key knowledge for each topic and across each year group is mapped across the school and checked at the end of each science topic. 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 by accessing outdoor learning.

Scientific knowledge and conceptual understanding

The National Curriculum describes a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Teachers identify children's knowledge at the beginning of each science topic which is then checked at the end of a unit of study in line with the key knowledge identified prior to the teaching block. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary and teachers ensure that this is developed within each lesson and throughout each science topic. The Science curriculum ensures that children are provided with regular opportunities to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

The nature, process and methods of Science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focuses on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils are given opportunities to seek answers to questions through collecting, analysing and presenting data.

Spoken language and oracy

The National Curriculum for Science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. At Lea Endowed, Science lessons provide a quality and variety of subject specific language to enable the development of children's confident and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probing and remedying their misconceptions.

3. How Science is structured throughout our school

Planning and Resources

Planning is a process in which all teachers are involved. Weekly planning is uploaded to the Teachers' Share server. Medium Term Plans are developed to ensure each class teaches the National Curriculum whilst adapting their teaching and learning to suit our composite class structure. The Medium Term Plans are informed by the Associate of Science Education's 'Planning Matrices' and Primary Science Teaching Trust TAPs Tasks.

Further evidence of Science teaching and learning taking place in classrooms includes:

- An active learning environment, showcasing Lea Endowed's life-long learning principles, and relevant Working Scientifically objectives for age phase during Science topic coverage.
- Children being encouraged to ask and answer questions and discuss their work and ideas.

- Children devising and conducting their own investigations within the context of the relevant curriculum content, as well as being given opportunities to develop their working scientifically skills.
- Children recording their findings in a variety of ways.
- Children showing enjoyment in the activities they are undertaking.
- The cross curricular teaching of Science.

We have sufficient, high-quality Science resources to aid and support the teaching of all units and topics taught, from EYFS to Y6. We keep these in a central store, where they will are labelled and easily accessible to all staff. The library contains a good supply of Science topic books to support children's individual research.

Organisation

Science will be taught in planned and arranged into subject knowledge blocks and cycled through according to our composite class structure. We have created a programme of study specific for our school situation ensuring that all children access their entitled curriculum. Science is taught in as found below:

Lea Endowed Church of England Primary School

SCIENCE Long Term Plan

EYFS	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A	BIOLOGY Animals, inc. Humans	PHYSICS Seasonal Change / Forces / Sound	PHYSICS Seasonal Change / Earth and Space	CHEMISTRY Materials	BIOLOGY Plants / Living Things and their Habitats	PHYSICS Seasonal Change / Light
PSTT Taps Tasks	EYFS Plan: Brown Apples EYFS Plan: Taste Test	EYFS Do: Scavenger Sort	EYFS Do: Scavenger Sort	EYFS Plan: Egg Spider Shelter EYFS Do: Frozen Balloons	EYFS Do: Scavenger Sort	EYFS Review: Butter

Year 1, 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A	CHEMISTRY Everyday Materials 1	BIOLOGY Plants 1	PHYSICS Seasonal Change 1	CHEMISTRY Uses of Everyday Materials 2	BIOLOGY Plants 2	Scientific Skills & Famous Scientists
PSTT Taps Tasks	1 Plan: Reflection Test 1 Plan: Transparency 1 Do: Floating and Sinking 1 Do: Bridge Testers	1 Do: Structure Leaf Look	1 Do: Seasonal Change	2 Plan: Waterproof 2 Do: Rocket Mice 2 Do: Materials Hunt 2 Review: Boat	2 Plan: Daisy Footprints 2 Do: Compare Growth	1 Do: Teddy Zipline 2 Plan: Separating Colours
Cycle B	BIOLOGY Animals, inc. Humans 1	PHYSICS Seasonal Change 1	BIOLOGY Living Things and their Habitats 2	Scientific Skills & Famous Scientists	BIOLOGY Animals, inc. Humans 2	PHYSICS Seasonal Change 1
PSTT Taps Tasks	1 Review: Animal Classification 1 Review: Human Body Parts	1 Do: Shades of Colour	2 Do: Woodlice Habitats 2 Do: Nature Spotters	2 Do: Ice Escape 2 Review: Living and Non-living	2 Review: Handprints	1 Do: Seasonal Change

Year 3, 4, 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A	PHYSICS Forces and Magnets 3	CHEMISTRY States of Matter 4	PHYSICS Earth and Space 5	BIOLOGY Plants 3	PHYSICS Forces 5	Scientific Skills & Famous Scientists
PSTT Taps Tasks	3 Plan: Shoe grip 3 Do: Magnet Tests 3 Do: Cars Down Ramps 3 Review: Balloon Rockets	4 Plan: Drying Materials 4 Do: Measure Temperature 4 Review: Dunking Biscuits	5 Do: Craters 5 Review: Solar System Research	3 Do: Measuring Plants 3 Review: Function of Stem	5 Plan: Paper Planes 5 Plan: Zipline Testing 5 Do: Spinners 5 Do: Bottle Flip 5 Review: Aquadynamics 5 Review: Marble Run	3 Plan: Cupcake Parachutes 4 Plan: Cornflour Slime 3 Do: Ice Cream 3 Review: Eco Action 3 Review: Egg Drop Packaging
Cycle B	BIOLOGY Animals, inc. Humans 3	CHEMISTRY Rocks 3	BIOLOGY Animals, inc. Humans 4	PHYSICS Electricity 4	BIOLOGY Animals, inc. Humans 5	Scientific Skills & Famous Scientists
PSTT Taps Tasks	3 Plan: Investigating Skeletons	3 Review: Rock Reports	4 Review: Teeth (Eggs) in Liquids	4 Do: Circuit Products 4 Review: Conductors	5 Do: Growth Survey	
Cycle C	BIOLOGY Living Things and their Habitats 4	PHYSICS Sound 4	CHEMISTRY Properties and Changes of Materials 5	CHEMISTRY Properties and Changes of Materials 5	PHYSICS Light 3	BIOLOGY Living Things and their Habitats 5
PSTT Taps Tasks	4 Do: Local Survey	4 Plan: Investigating Pitch 4 Review: String Telephones	5 Plan: Dissolving 5 Plan: Nappy Absorbency 5 Plan: Insulation Layers	5 Do: Sugar Cubes 5 Review: Champion Tapes	3 Do: Making Shadows	5 Review: Life Cycle Research

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle A	BIOLOGY Evolution and Inheritance	PHYSICS Electricity	BIOLOGY Living Things and their Habitats	Scientific Skills & Famous Scientists	BIOLOGY Animals, inc. Humans	PHYSICS Light
PSTT Taps Tasks	6 Review: Fossil Habitats 6 Review: Egg Strength	6 Plan: Bulb Brightness 6 Do: Conductive Dough	6 Do: Outdoor Keys 6 Review: Invertebrate Research	6 Plan: Bridge Engineers 6 Do: Titanic Pulleys	6 Plan: Heart Rate 6 Do: Tentific Testers	6 Plan: Light Questions 6 Do: Investigating Shadows

"Let Everyone Shine"

4. Assessment

Children's progress is continually monitored throughout their time at Lea Endowed CE Primary School and is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the non-statutory requirements to extend our children and provide an appropriate level of challenge.

Children receive effective feedback through teacher assessment, both orally and through written feedback. Children are guided towards achievement of the main objective through the use of process based 'Working Scientifically' objectives, provided by and explained by the teacher. Children will have these to refer to in the lesson, where they will be evident in their books and used to identify areas of difficulty by children and teachers when reviewing and assessing work.

Assessment for Learning is continuous throughout the planning, teaching and learning cycle. However children are more formally assessed in KS1 and KS2 using a variety of methods:

- Observing children at work, individually, in pairs, in a group, and in class settings.
- Questioning, talking and listening to children.
- Considering work / materials / investigations produced by children together with discussion about this with them.

At the end of each Science unit, children are assessed on their knowledge acquisition as well as their application of skills. Skills will develop throughout the year as they are revisited in different contexts. In EYFS, we assess the children's Understanding of the World according to the Development Matters statements.

5. Early Years Foundation Stage (EYFS)

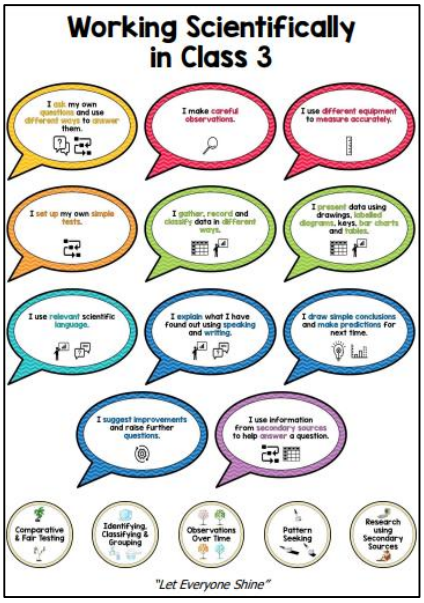
The Foundation Stage deliver science content through the 'Understanding of the World' strand of the **EYFS** curriculum. This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to the Development Matters attainment targets.

6. Key Stage 1

The principal focus of science teaching in **Key Stage 1** is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about Science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

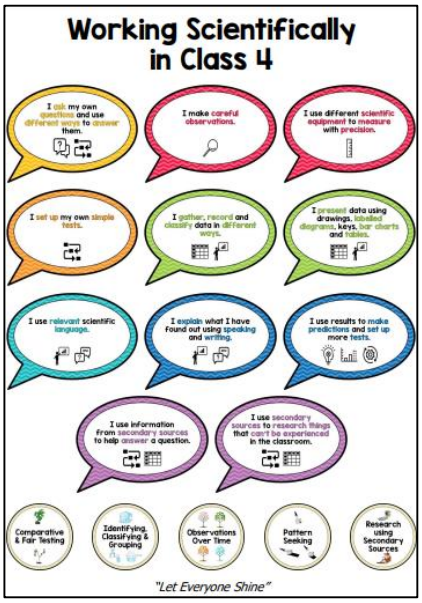
'Working Scientifically' is taught through and clearly related to the teaching of Science content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge in KS1.

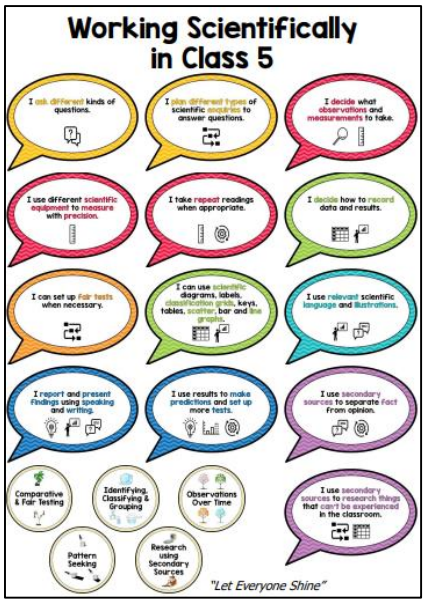
7. Key Stage 2



The principal focus of Science teaching in **Lower Key Stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working Scientifically' is taught through and clearly related to the teaching of Science content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.





The principal focus of Science teaching in **Upper Key Stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At Upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer Science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working Scientifically' is taught through and clearly related to the teaching of Science content. Pupils should read, spell and pronounce scientific vocabulary correctly.

8. Equal Opportunities & Inclusion

At Lea Endowed CE Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class. In school, we aim to meet the needs of all our children by differentiation in our Science planning and in providing a variety of approaches and tasks appropriate to ability levels. This involves providing opportunities for SEND children to complete their own projects, with support, to develop speech and language skills, as well as scientific skills and knowledge. This will enable children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, more able children will be able to progress to an appropriate level of knowledge and understanding, linked to their learning plan targets. Teachers will use the school's inclusion planning key to ensure that a range of strategies are used which include and motivate all learners, ensuring that optimum progress

is made throughout each part of the lesson. This will ensure that every child is able to reach their full potential.

9. Review

This Science policy will be reviewed by the Science curriculum leader and the Senior Leadership Team.

The date for next review of this document: **July 2023**