How we teach **Science** at Austrey and Newton Regis CE Primary Schools

Becoming the person God made me to be: living, learning, loving.

"I praise you because I am fearfully and wonderfully made" Psalm 139:14

Autumn 2021

Curriculum Statement

At Austrey and Newton Regis CE Primary Schools we take pride in providing a knowledge-rich curriculum that is inclusive and equitable, celebrates diversity and is relevant to our school: preparing children for the fullness of life in an ever-changing world.

Our Vision

Austrey and Newton Regis Church of England Schools are small schools at the heart of their rural communities. They have a living Christian foundation that follows the teaching and example of Jesus who reached out **in love** and drew in everyone, whatever their status or struggles, beliefs or views.

Created to be like God, we are all individual, different, and precious. As school families, we treat everyone with **dignity**, seeing each person as a vital stroke in the creation of the masterpiece which is our school **community**. We **love** and welcome everyone, supporting them in the ups and downs of life and giving them **hope** for a bright future in their lives and **learning**. **Living** like Jesus, we think and act with **generous** and **forgiving** hearts in the strategic and day to day life of the schools, so that everyone can flourish. **Trusting** in God and the teaching of the bible, we are building a culture of **trust** in which everyone can feel safe; confident that their spiritual, emotional and academic needs will be met and that their **uniqueness** will contribute to the **unity and wholeness** of Newton Regis and Austrey Church of England Primary Schools.

Curriculum design

Our curriculum is ambitious and is based on the national curriculum but we recognise that this is the minimum entitlement for our children. Each subject is taught as a discrete discipline. Whilst developing these, links were considered very carefully to build on knowledge and skills within each subject, across the school and across subjects. We also carefully considered diversity, environmental awareness and health education when designing our curriculum. For the

National Curriculum Document, please click here

Our learning Behaviours

Resilience

We keep going even when things are challenging. We can remain open, flexible, and willing to adapt to change, staying positive and optimistic. We invite feedback and deal positively with praise, setbacks and criticism.

Independence

We are self-motivated and show a thirst for learning. We take and manage risks, showing responsibility, initiative, creativity and enterprise. We can organise ourselves and work out goals and priorities. We play a full role in the life of the school. We can present a persuasive case for action, proposing practical ways forward.

Reflection

We evaluate the good things about our work, and the areas for improvement, acting on the outcomes. We make changes to improve our learning and communicate our learning in relevant ways to different audiences. We try to influence others, negotiating and balancing diverse views.

Resourcefulness

We think creatively by generating and exploring relevant ideas and making connections. We find links and see relationships, trying different ways to tackle a problem. We ask 'how', 'why' and 'what if?' questions. We take informed and well-reasoned decisions recognising that others have different beliefs and attitudes.

Team Work

We work cooperatively and confidently with others and listen to and take account of their views. We take an active part in our own role, and reach agreed outcomes, adapting our behaviour to suit different situations. We show fairness and consideration towards others. We take responsible action to bring improvement for others as well as ourselves.

What is Science?

Our KS1 definition

Science gives us knowledge and understanding of the universe that we find out by doing experiments. People trained in **science** are called scientists.

Our KS2 definition

Science is a means of improving our knowledge and understanding of the universe based on the collection of observation-based evidence. In school, you will complete **science** experiments to gather this evidence. People trained in **science** are called scientists.

"A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes (DfE National Curriculum 2014)

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 specific questions about the world around them
- ✓ Are equipped with the scientific knowledge required to understand the uses and implications of science today and in the future

Intent

At Austrey and Newton Regis, our science curriculum inspires pupils to be naturally curious about the world around them. It has been developed to ensure a full coverage of the National Curriculum and more. It fosters a sense of wonder about natural phenomena. The unique, enquiry-based approach maximises a range of scientific skills such as questioning, researching and observing. All staff are committed to providing a stimulating, engaging and challenging learning environment. Throughout our schools there is consistencies across both key stages with well-planned vocabulary that builds on prior learning, broadening knowledge as children progress into "maturing scientist" ready for KS3. We celebrate scientists of all ethnic origin, gender, class or disability, relevant to our school and the current climate of our ever-changing world.

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Implementation

Science is taught as a discrete subject discipline throughout the academic year. We have long term plans that run on a two-year rolling programme to accommodate our mixed aged classes and to ensure full coverage during each key stage. Our medium term plans show clearly how each lesson links to our curriculum intent, Christian vision and values, our learning behaviours and British Values.

LONG TERM PLAN FOR Science

Cycle A 2022/23

	Y1/2	Y3/4	Y5/6
Autumn 1	Animals including humans (animals)	Living things and their habitats Food chains • The Ocean	Properties of materials
Autumn 2	Famous scientists and inventors • Ole Christensen • Louis Pasteur • Alexander Graham Bell	Rocks, fossils and soils	Fossils and Mary Anning
Spring 1	Animals including humans (humans) Staying Healthy	Forces and Magnets	Micro-organisms
Spring 2	Uses of everyday materials • Charles Macintosh • John Dunlop • John McAdam	Light and shadows	The circulatory system
Summer 1	Plants and habitats	States of matter and the water cycle	Classifying plants and animals Living things and their habitats
Summer 2	Food chains	Digestion and teeth	Lifecycles of insects and birds.

LONG TERM PLAN FOR Science

Cycle B 2021/22

	Y1/2	Y3/4	Y5/6
Autumn 1	Weather and seasons Autumn and Winter	Living things and their habitats Food Chains • Deserts	Electricity
Autumn 2	Trees and the environment	Skeletons and Muscles	Earth and space Light
Spring 1	Everyday materials	Nutrition	Adaption and classification
Spring 2	Victorian Scientists and Inventors • Margaret E Knight • George Washington Carver • William Henry Fox Talbot	Sound	Evolution and inheritance
Summer 1	Minibeasts and Lifecycles	Plants	Famous Scientists and Mathematicians • Ada Lovelace • Alan Turing • Fibonacci
Summer 2	Weather and seasons Spring and Summer	Electricity	Forces and Gravity

Examples of links

- When learning about "Microorganisms" in Year 5/6 we learn about Edward Jenner and his role is vaccinations linking to our School value "hope".
- Living things and their habitats in Year 3 and 4 links with our Geography topic Oceans and Deserts.
- Pupils learn about Rocks and Fossils in Year 3 and 4 which is then built upon by a study of Mary Anning in Year 5 and 6

Each unit of work has a knowledge organiser which is used throughout the unit of work. Each classroom also has a working wall which includes:

- The subject that the children are studying
- The unit of work that they are studying
- The knowledge organiser
- The learning journey questions from the medium term plan

Respecting the Environment

Our Science Curriculum also has strong links to how we look after and respect our environment. Examples include:

- Recycling in EYFS
- The benefits of planting trees in Year 1 and 2
- Bleaching of Coral reefs in Year 3 and 4
- Changes in Arctic/ Antarctic environment and the impact on animals in Year 5 and 6

Impact

At the beginning of each unit the children complete a quiz. At the end of the unit they repeat the quiz to show what they have learned. At the end of each lesson, teachers assess against the questions in the medium term plan. These are available to all teachers so they can revisit the learning that is needed before beginning a new unit. In order to assess if the children are committing knowledge to long term memory, we use an **'interrupting the forgetting'** strategy which will include reinforcing links to previous learning both within and across the year groups, using knowledge organisers from past learning, using quizzes from previous learning and year groups and reading books that link to previous learning to children using story time.