Winslow Statement of Intent for Science

Vision

At Winslow Church of England School, our vision is '**Let your light shine'**. The rainbow symbolises God's unconditional love for each individual. We seek to reflect that light in all we do: in our community, both local and wider, our communication, both word and action, with curiosity and courage, and with care and compassion for everyone, inspiring a love of learning.

Science teaching is good at Winslow C of E School when:

- there is a balance of knowledge and scientific enquiry
- lessons are informative and thought provoking
- units of work include opportunities for experiments and investigations
- children lead learning and answer their own questions
- lessons meet the needs of all children
- lessons are well resourced
- children understand and use scientific language

Aims and Purposes of Science

"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." National Curriculum 2014

Curriculum Aims

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.

Intent

At Winslow C of E School, we recognise the importance of Science in every aspect of daily life. We encourage all children to be inquisitive throughout their time in school and beyond and to develop curiosity of the world around them. We believe that every child can be successful and achieve in Science and develop a love of learning. We have high expectations for all of our children and our aim is that they become knowledgeable, investigative and enthusiastic Scientists. 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 enquiry skills are built on and developed throughout the children's time at school to ensure children are provided with a well-rounded approach to Science. Through practical lessons and tasks, we provide opportunities for our children that they may not get outside of school.

In EYFS at Winslow C of E School, we cover Science through the Knowledge and Understanding of the World unit and assess through Development Matters. Science is introduced indirectly through activities that encourage children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them. The children will explore creatures, people, plants and objects in their natural environment. Children will observe and manipulate objects and materials to identify similarities and differences. Children will also learn to use their senses during Scientific activities and make observations to learn why some things occur and change. Teachers will plan specific Science based topics but learning stems from the children's interests and regularly incorporates outdoor activities.

Our intentions in our Science teaching offers further opportunities for children to:

- 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 knowledge required to understand the uses and implications of Science, today and for the future.
- Develop the essential scientific enquiry skills to deepen their scientific knowledge.
- Use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts.
- Develop a respect for the materials and equipment they handle with regard to their own, and other children's safety.
- Develop an enthusiasm and enjoyment of scientific learning and discovery.

Additional opportunities are provided in Science, such as Science Fairs for children in the local Grammar School, whole school Science weeks and educational visits linked to the Science curriculum such as Science Oxford and the National Space Museum.

Within our whole school Science week as well as individual lessons, we explore STEM curriculum and how this is relevant to real life. We highlight different careers that are related to topics taught in school or areas of STEM that peek the children's interest. As well as this we ensure we challenge gendered attitudes around appropriate career choices for boys and girls. Our additional opportunities give children time to explore STEM in museums and in daily life. We are increasing contact with people (and parents) who work in STEM jobs by bringing them into the classroom to talk about their work.

Implementation

Teachers create a positive attitude to science learning within their classrooms and have 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:

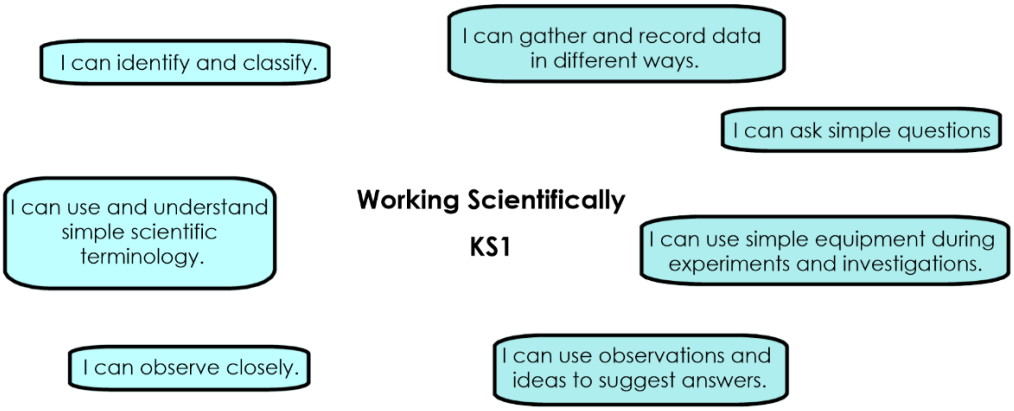
- Science will be taught following the unit blocks discussed and agreed by staff.
- There will be at least 1 Science lesson per week lasting for at least 1 hour.
- Each unit should be planned using the agreed template which shows each lesson and its content. Teachers can use a PowerPoint as a visual aid which supports teaching and learning.
- Planning must include: the learning objective (taken from the Year Group Overviews), a starter or warm up, main teaching input, independent tasks, plenary and resources.
- Teachers will create engaging lessons which incorporate practical activities in most lessons. They will use precise questioning and assess pupils regularly to identify those children with gaps in learning.
- Through our planning, we provide opportunities for:
  - developing theoretical knowledge
  - short practical tasks which help children to engage with teaching
  - investigation and experimentation to allow children to apply their knowledge and find out answers for themselves
  - using practical scientific equipment demonstrated by teachers to embed understanding where possible.
  - accessing outdoor learning to develop children's understanding of science in their surroundings
  - collaborative learning and discussions
  - the encouragement of children to ask their own questions and be able to use their scientific skills to research and discover the answers
  - building upon the knowledge and skill development of the previous years.
- Enquiry skills are embedded into lessons and feature on planning or Year Group Overviews, to ensure these skills are being developed throughout the children's time in school.
- Explorify, STEM Learning, Steps into Science, Best Evidence Science Teaching and CLEAPPS websites are used to develop teacher's subject knowledge and support pupil talk, enquiry skills as well as developing curiosity amongst children.

- Knowledge Organisers are used to recap prior knowledge, address any new or important vocabulary and to pre-teach a concept.
- Children are offered extra-curricular activities, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.
- Events such as Science Week allow pupils to come off-timetable where possible, to provide broader provision and the application of knowledge and skills. These events include families and the wider community.

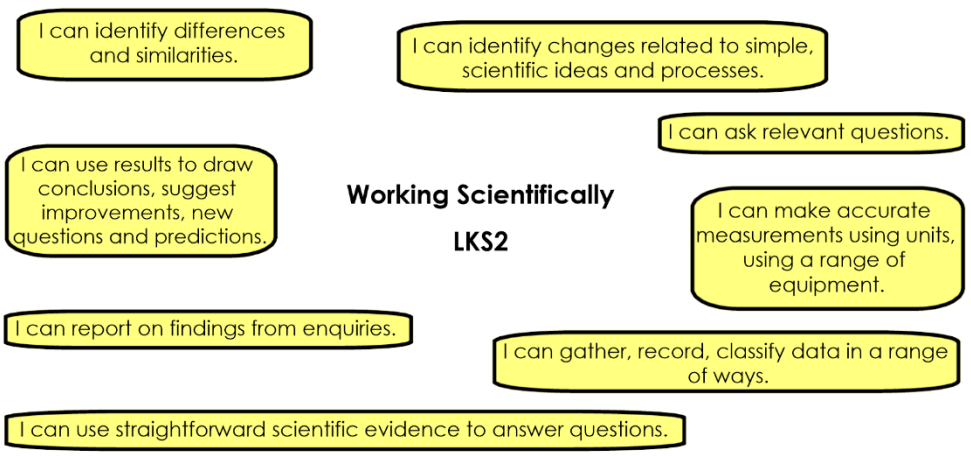
Impact

Our approach at Winslow C of E School results in a high-quality science education, which engages the children and is fun to learn. It provides children with the foundations for understanding the world. Engagement with the local environment ensures that children learn through varied and first-hand experiences of the world around them in EYFS and throughout their journey through KS1 and KS2. Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science as a result of our community links and connection with national agencies such as the STEM association. Pupil voice is used to further develop the Science curriculum, through questioning of pupil's views and attitudes to Science to support the children's enjoyment of science and to motivate learners.

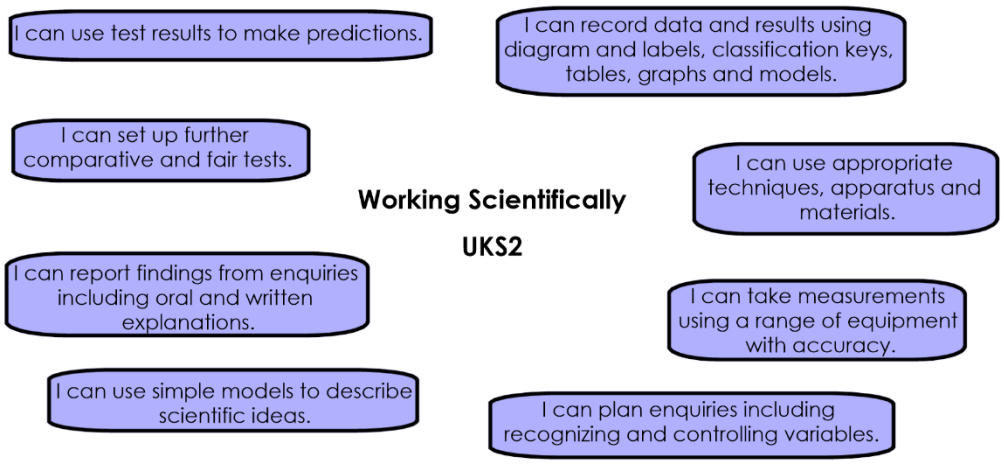
By the end of KS1, children will have covered and developed their skills in the following strands:



By the end of LKS2, children will have covered and developed their skills in the following strands:



By the end of UKS2, children will have covered and developed their skills in the following strands:



Year groups	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS – Rainbows Preschool	**Chemistry** - Materials		**Biology** – Animals including Humans and Plants	**Chemistry** - Materials	**Biology** - Plants	**Chemistry** - Materials
EYFS - Reception	**Biology** – Seasonal Change, Plants and Animals including Humans	**Biology** – Seasonal Change, Living Things and Habitats / **Chemistry** - Materials	**Chemistry** – Materials / **Biology** – Seasonal Change and Living Things and Habitats	**Biology** – Plants, Animals including Humans and Seasonal Change	**Biology** – Seasonal Change and Living Things and Habitats / **Chemistry** - Materials	**Biology** – Living Things and Habitats, Animals including Humans (PSHE) and Seasonal Change
Year 1	**Chemistry** - Materials	**Biology** – Seasonal Change (Part 1)	**Biology** – Animal including Humans	**Biology** – Animal including Humans **Biology** –Seasonal Change (Part 2)	**Biology – Plants**	**Biology** – Seasonal Change (Part 3)
Year 2	**Chemistry** - Materials	Opportunity for revision/enquiry skill development	**Biology** – Living Things and Habitats	**Biology** – Living Things and Habitats	**Biology** - Plants	**Biology** – Animals including Humans
Year 3	**Chemistry** - Rocks	**Biology** – Animals including Humans (Part 1)	**Biology** – Animals including Humans (Part 2)	**Physics** – Light	**Biology** - Plants	**Physics** – Forces and Magnets
Year 4	**Physics** – Electricity	Opportunity for revision/enquiry skill development	**Physics** - Sound	**Biology** – Living Things and Habitat	**Chemistry** – States of Matter	**Biology** – Animals including Humans
Year 5	**Chemistry** - Materials	**Physics** - Forces	**Physics** – Earth and Space	**Physics** – Light (Year 6 unit)	**Biology** – Living Things and Habitats	**Biology** – Animals including Humans
Year 6	**Biology** – Animals including Humans	**Biology** – Evolution and Inheritance	**Physics** - Electricity	Opportunity for revision/enquiry skill development	**Biology** – Livings Things and Habitats	Opportunity for revision/enquiry skill development

Assessment

Intent

Teachers use formative and summative assessment to track children's progress and attainment in Science across a unit, a term and the year. We assess in Science to inform future teaching and give teachers an understanding of the end points, inform pupils about their own learning, inform subsequent teachers and to inform parents about their child's learning and progress.

Implementation

Teachers form judgements using the Science Assessment Tracker where they highlight statements taken from the National Curriculum. If a child has achieved a

statement it will be highlighted in pink but if they have not achieved a statement, it will be highlighted in green. If a child has achieved part of a statement, part may be highlighted in pink and part may be in green. This will be completed for each unit. Teachers will also highlight the Working Scientifically statements for each child. At the end of a school year, trackers are passed onto the child's next teacher. Teachers will use this to form an overall judgement for the half term and submit the data onto OTrack. Children will be levelled as BLW (not accessing or achieving year group curriculum objectives), WTS (accessing and achieving some of the year group curriculum objectives but less than the majority) and EXP (accessing and achieving all (or the majority) of the year group curriculum objectives.

Impact

Teachers, Parents and the Subject Lead will gain a clear understanding of a child's attainment and progress throughout units across their school year and time in primary school. Teachers will be able to plan to address misconceptions or gaps in learning to support future teaching and learning. The children will know their end points in learning which will enable them to make progress and access curriculum objectives.

Special Educational Needs and Equality

At Winslow C of E School, we ensure that all children are able to access and participate in learning. Lesson plans are to be differentiated where required to ensure equality of access to all children. Children with additional learning needs may have tasks broken down into smaller steps in order for them to be able to achieve their goals. Activities should be in conjunction with the area of Science being studied. For example, it may not be appropriate for a pupil to study the chambers of the heart but work could be provided that focuses on the heart or other organs. It should also reinforce the pupil's understanding of content covered previously. When planning and teaching, staff will make reasonable adjustments to promote equality of opportunity for disabled and nondisabled pupils. This could include;

- allocating adult support
- providing additional support materials (e.g. visual aids such as photographs, Makaton symbols, concept boards)
- providing alternative resources e.g. switch technology which is easy to manipulate, use of alternative materials for pupils with sight or hearing difficulties.
- modifying tasks (e.g. working on the same objectives but with an alternative choice of media, recording work in different ways such as with a digital camera/ verbally/ with a tape-recorder)

Spiritual, Moral, Social &Cultural (SMSC) Development in Science

Spiritual

Science is using evidence to make sense of the world. It helps us understand our relationship with the world around us and opens up curiosities about what we know and what we are still yet to discover. Making new discoveries increases our sense of awe and wonder at the complexities and elegance of the natural world. For scientists, this is a spiritual experience and drives us onwards in our search for understanding.

Moral

Whether it is the ethics behind certain medical treatments, the environmental impact of industry, or how government funding is allocated to scientific projects; moral decisions are an important aspect of Science. Scientific discoveries and inventions need to be used responsibly, and decisions made based on evidence. As teachers, we encourage pupils to be both open minded and critical and to use their understanding of the world around them in a positive manner.

Social

At Winslow C of E School, we strive to develop scientists who are collaborators. Sharing ideas, data, and results is a key principle of the scientific method. We encourage pupils to work together on scientific investigations and to share results to analyse reliability and to learn from misconceptions. Science has a major impact on the quality of our lives. In Science lessons, pupils consider the social impact of science and technology.

Cultural

Science is an international activity - one that is studied all over the world. In Science lessons, we explore and celebrate research and developments that take place in many different cultures, both past and present. We explore how scientific discoveries have shaped the, beliefs, cultures and politics of the modern world.