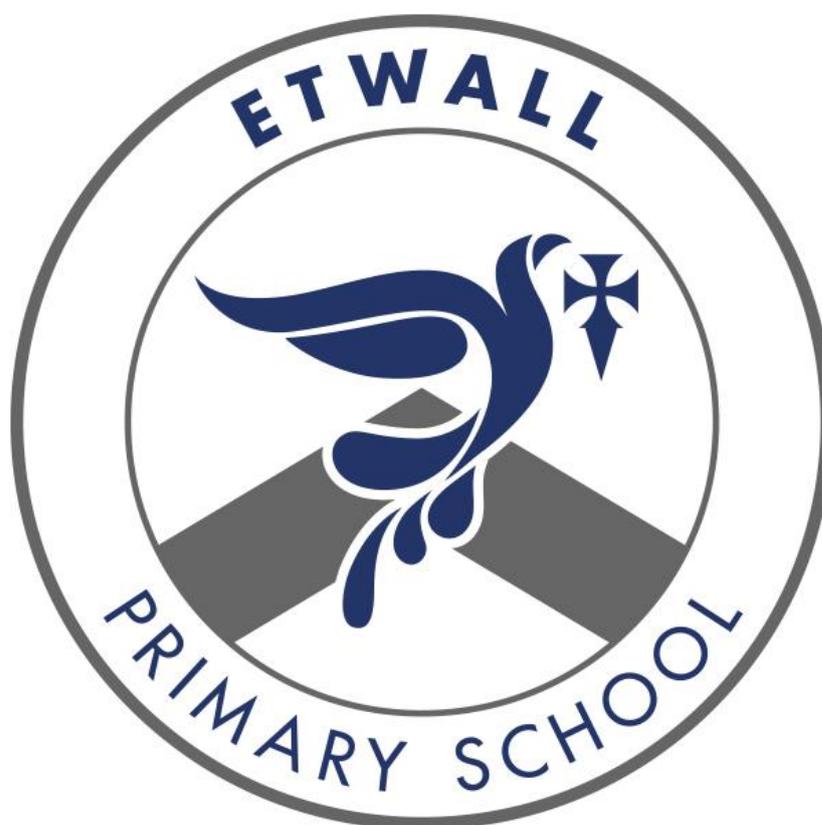


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Science

Intent, Implementation and Impact

Intent

At Etwall Primary School, we believe that a high quality science education provides the foundations for understanding the world through the three key areas of biology, chemistry and physics. We strive to allow our pupils to acquire specific skills and knowledge to enable them to think scientifically, to gain an understanding of scientific processes and also provide them with an understanding of the uses of science for both today and in the future.

Delivered as part of a broad and balanced curriculum, Science lessons endeavour to engage the children and stimulate their learning, building both investigative skills and scientific knowledge. Children are encouraged to predict how things might behave; collect and present findings; apply scientific knowledge and arrive at conclusions to explain what is occurring. Throughout this process, every child is encouraged to question, appreciate and relate to the universe to which they are a part of.

Through our curriculum provision, we endeavour to embrace a child's natural curiosity about the universe around them, whilst simultaneously promoting a respect for all living organisms and the environment. Our aim is to deliver an engaging and exciting curriculum where children are challenged to achieve their best. We aim to develop children's curiosity about what they observe, experience and explore; promote a desire to ask; answer scientific questions using scientific vocabulary and a love of the subject.

Curriculum Implementation

At Etwall Primary School, within Key Stage One and Key Stage Two, children have weekly science lessons over one afternoon, allowing them the required time to develop their scientific skills and build upon their prior knowledge. Within the Early Years Foundation Stage, science is taught through 'Understanding the World', allowing all pupils to start gaining scientific experiences from the beginning of their school journey. This allows children to consistently experience high quality science lessons, which advance their expertise and understanding throughout the entirety of their primary school education.

Across Years 1-6, Science is taught in explicit units, in line with the National Curriculum. Where feasible, cross-curricular links are made to the year group's topic for each term. Links are made with other STEM subjects wherever possible. Led by the science lead, staff have created their own medium term plans to match their children's interests and abilities, as well as to incorporate a wide range of investigative activities. At Etwall Primary School, some science topics are also taught discretely if this is more appropriate.

- Topics are planned being mindful of links with computing, mathematics and technology.
- Lessons are planned to enable all children to access the objectives and make progress building on skills and knowledge.
- Opportunities are created for purposeful outcomes.
- Teachers will provide guidance and feedback so that all children are challenged and supported to reach their potential.
- Teachers will take into account the children's interests and address misconceptions and prior knowledge.

- The full Science curriculum is provided to all children and planned over a two-year cycle due to having mixed age classes.
- Teachers have a secure knowledge of the curriculum.
- Sufficient time is allowed for reading so children can access all areas of the curriculum.
- Medium term planning documents are produced for each unit of work, ensuring clarity of coverage with a strong emphasis on progression of knowledge and skills.
- Enrichment opportunities are provided to enhance children's learning such as visitors, trips and workshops.
- Children develop independent learning skills and the ability to design their own investigations and take measurements with increasing accuracy.
- Children are taught to read, spell and pronounce scientific vocabulary accurately.
- Children learn through questioning and discussing and teachers take this opportunity to pick up on misconceptions.
- Teachers use **Assessment for Learning** to develop children's confidence, learning and independence through: questioning (What if...? Why...? Explain...? Tell me more about...? How...? Describe...? What would happen if...? What would change if...? Is this always the case...?), discussing, marking, feedback, self-assessment and peer- assessment.
- Science is taught consistently, once a week for up to two hours, but is also taught in many different contexts throughout all areas of the curriculum. For example, through English, i.e. biography of a famous scientist's life, through maths when learning to record data.
- We have implemented 'writing at length' where children must complete an extended piece of writing related to the topic currently being learned.

Impact

The impact and measure of this is to ensure children not only acquire the appropriate age related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

All children will have:

- A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.
- A richer vocabulary which will enable to articulate their understanding of taught concepts.
- High aspirations, which will see them through to further study, work and a successful adult life.

The successful approach at Etwall Primary School results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. So much of science lends itself to outdoor learning and so we provide children with opportunities to experience this. 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.

Skills Progression

Teachers have identified the key knowledge and skills of each scientific unit and consideration has been given to ensure progression across topics throughout each year group across the school to build upon the knowledge acquired by children throughout their time at Etwall Primary, with a particular focus on providing children with the opportunity to develop their scientific enquiry skills from EYFS to the end of Key Stage 2. See Appendix 1 for Science Skills Progression.

Assessment

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Key scientific knowledge is taught to enable and promote the development of children's knowledge and skills.

Assessment is supported by use of the following strategies:

- Observing children at work, individually, in pairs, in a group and in class during whole class teaching.
- Using differentiated, open-ended questions that require children to explain their understanding.
- Providing effective feedback, including interactive marking, to engage children with their learning and to provide opportunities for self-assessment, consolidation, depth and target setting.

Formal, summative assessment takes place at the end of Years 5 and 6 and a formal judgement is made at the end of Year 2. Each term, teachers complete science skills and knowledge grids which will show where the class are and the progression they make over the year. There are separate knowledge grids for each year group and separate skills grids for each key stage – KS1, Lower KS2 and Upper KS2.

Early Years

Early Years explore scientific themes and content through the Understanding of the World strand of the EYFS curriculum. This involves guiding the children to develop sense of their physical world, as well as 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. Working scientifically is a significant element of the science curriculum and children have the opportunity to develop and apply these skills from the beginning of their school journey in Reception. The requirements for working scientifically within Reception have been included in our school's science skills progression.

SMSC Development

Spiritual education in Science inspires awe and wonder of the natural world: encompassing the three scientific disciplines of biology, chemistry and physics. Spiritually, Science is using evidence to make sense of the world, helping children to understand their relationship with the world around them. **Morally**, we teach our children how to use scientific equipment responsibly, whilst considering the impact that different discoveries/inventions have had on the world around them and whether they have made a positive or negative impact. The subject of Science allows pupils to develop **socially** through the use of collaborative work. Whilst completing investigative activities, our children share ideas, data and results and working together is greatly encouraged at Etwall Primary. Within science lessons, children look at how different discoveries over time have impacted the world around them and they understand that research and discoveries have shaped some beliefs of the modern world. In order to make science relevant to our pupils, teachers discuss modern day scientists from a range of **cultures** and backgrounds, another way in which SMSC is developed within the subject area of science.

Diversity

Innovations from science have positively touched nearly every aspect of human life. Through science, children understand that scientific developments do not arise of their own accord and that each ideology is brought forward by an individual scientist and that these scientists come from a range of gender, race, religion, culture and backgrounds. Children understand that science has no limitations

and that discoveries can come from a wide range of sources if perseverance and hard work are applied rigorously.

Equal Opportunities

At Etwall Primary, we are committed to providing a teaching environment which ensures all children are provided with the same learning opportunities regardless of social class, gender, culture, race, special educational need or disability. Teachers use a range of strategies to ensure inclusion and also to maintain a positive ethos where children demonstrate positive attitudes towards others. Support for specific individuals is well considered and planned for, with consideration given to how greater depth and further challenge can be provided for and demonstrated by children who require further challenge.

Inclusion

All pupils are entitled to access the science curriculum at a level appropriate to their needs. To ensure inclusion, teachers use a range of strategies. Independent tasks, as well as teaching, are also well adapted to ensure full accessibility, as well as to provide appropriate challenge to different groups of learners. The school makes full use of additional adults who are deployed effectively to ensure that identified children are able to make progress in each curriculum area, according to their full potential. Through establishing what the children already know and what they wish to find out prior to each topic, teaching takes account of children's own interests to ensure topic relevance to all individual learners and promote pupil engagement, enabling all pupils to be immersed within an exciting scientific curriculum.

Health and Safety

The curriculum will be delivered in a safe and healthy manner and every effort will be taken to identify risks associated with the teaching and learning of Science (such as field trips and educational visits) and the appropriate control measures will be implemented. Pupils will be educated about health and safety issues as and when the opportunity arises throughout the course of normal teaching. Risk assessments will be submitted for all educational off-site visits with a Science link via the Evolve system at least 5 days prior to the visit taking place.