Dunham-on-Trent C of E Primary School

Subject Focus- Science

At Dunham-on-Trent C of E Primary School, we give the teaching and learning of Science high prominence. Our children are SCIENTISTS! Our intent is to give every child a broad and balanced Science curriculum that enables them to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in. We want our children to love science. We want them to have no limits to what their ambitions are and grow up wanting to be astronauts, forensic scientists, toxicologists or microbiologists. We want our children to remember their science lessons in our school, to cherish these memories and embrace the scientific opportunities they are presented with! To achieve this, teachers will ensure that all children are exposed to high quality teaching and learning experiences. These will hook the children's interest, enabling them to develop a sense of excitement and curiosity about natural phenomena.

At the heart of our progressive science curriculum is scientific investigation. Wherever possible we intend to deliver lessons where children learn through varied systematic investigations, leading them being equipped for life to ask those key scientific questions. They will understand how science can be used to explain what is occurring around them, predict how things will behave and apply their mathematical knowledge to their understanding of science, including collecting, presenting and analyzing data. Children will be immersed in key scientific vocabulary, which supports in the acquisition of scientific knowledge and understanding.

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:

The Early Years Foundation Stage

The Early Years Foundation Stage Curriculum supports children's understanding of Science through the planning and teaching of 'Understanding the World'. Through a broad range of teacher-led, child-initiated and continuous learning opportunities, children will be taught to find out about objects, materials and living things using all of their senses looking at similarities, differences, patterns and change. Both the environment and skilled practitioners foster curiosity and encourage explorative play, children are motivated to ask questions about why things happen and how things work. Our children are encouraged to use their natural environment around them to explore. Children enjoy spending time outdoors exploring mini-beasts and their habitats, observing the changing seasons, plants and animals. Children regularly participate in cookery and baking sessions which allows them to experience changes in state as ingredients are mixed, heated and cooled.

Key Stage 1 and 2

In Key Stage 1 and Key Stage 2, Science is taught by the class teachers. This ensures that the quality of Science teaching through these key stages remain consistent. Science is taught every week for 2 hours for KS2 and 1.5 hours for KS1. Additional sessions will be taught where and when possible. Science is guided by the Programmes of Study set out in the National Curriculum.

The following topics are covered throughout Key Stage 1:

- Animals including Humans
- Every day materials and their uses
- Plants
- Seasonal Changes
- Living Things and their Habitats

The following topics are covered throughout Key Stage 2:

- Animals including Humans
- Properties and Changes of Materials
- Plants
- Living Things and their Habitats
- Rocks
- Light
- Electricity
- Sound
- Earth and Space
- Evolution and Inheritance
- Forces and Magnets.

Our Science curriculum is progressive. We build upon the learning and skill development of the previous years, which is tested through 'pre-learning quizzes', where teachers can identify any misconceptions that need addressing as well as any gaps in the children's learning. As well as 'pre-learning quizzes', at the end of each topic, key knowledge is reviewed by the children and rigorously checked by the teacher and consolidated if necessary.

At the beginning of each lesson, teachers plan opportunities for pupils to recall prior learning. This enables pupils to consolidate their previous learning, while also preparing them for future learning, in line with the sequence of lessons. This is particularly important for our SEND children, who may need more opportunities to retain and embed scientific vocabulary and concepts.

Through our planning, we 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 are given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating practical, engaging lessons, often involving high quality resources to aid understanding of conceptual knowledge. We believe in a hands-on approach where children learn by doing it for themselves. Therefore it is our commitment to ensure our curriculum lends itself where possible to being practical, explorative and investigative. This approach encourages our children to build resilience and become creative, critical thinkers. Science tasks are selected and designed to provide appropriate challenge to all learners in line with the school's commitment to inclusion.

Teachers encourage children to use a developing scientific vocabulary as they progress through each year group. Time is spent during lessons introducing and reinforcing age appropriate scientific vocabulary. Children are given opportunities to consolidate their use of scientific vocabulary as they move through the year groups. They are encouraged to use the vocabulary, both written and verbal, to explain their ideas and make sense of their observations and findings.

Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed through the children's school journey 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 and develop scientific understanding.

The impact of our curriculum will lead to outstanding progress over time, across key stages, relative to a child's individual starting point and their progression of skills. We hope that through our lessons and any science opportunities that arise during their learning journey, children will be enthusiastic science learners and understand that science has changed our lives and that is it vital to the world's future prosperity.

Assessment at our school is teacher based and formed using formal strategies (e.g. periodic year group assessment tasks, quizzes) and informal strategies (e.g. use of concept maps, verbal/written outcomes, reflection tasks)

Formative assessment is used as the main tool for assessing the impact of Science at Dunham-on-Trent CofE School as it allows for misconceptions and gaps to be addressed more immediately rather than building on insecure scientific foundations.

Children at Dunham-on-Trent CofE School will:

- Demonstrate a love of science work and an interest in further study and work in this field.
- Retain knowledge that is pertinent to science with a real-life context.
- Be able to question ideas and reflect on knowledge.
- Be able to articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science.
- Demonstrate a high love of mathematical skills through their work, organising, recording and interpreting results.
- Work collaboratively and practically to investigate and experiment.
- Achieve age related expectation in Science at the end of their cohort year.

We expect children will know more, remember more and understand more about Science capital through the lessons delivered at Dunham-on-Trent CofE School. Overall, we want to empower our children so they understand they have the capability to change the world.