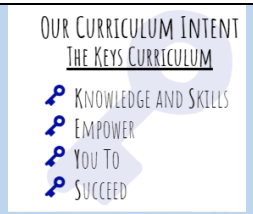
Science at Cronton C.E Primary School



At Cronton CE Primary School our KEYS Curriculum is built around the National Curriculum, enriched to reflect the children and community we teach in. As a church school our Christian ethos and school values are the heart of everything we do.

We believe every child can be their BEST with our **Vision statement** reflecting this. **"I can do everything through God who gives me strength"**

INTENT – AIMS

The main aims of our Science curriculum at Cronton C.E. are:

Through our inclusive science curriculum, we aim to:

- Provide interesting experiences, with plenty of opportunity for exciting scientific enquiry that will challenge the children's own ideas and any misconceptions that they may have, to help them todevelop as scientists.
- Foster an enthusiastic, open-minded attitude towards science based on the skills of curiosity, independence of thought, co-operation, perseverance and self-criticism.
- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics, in a progressive manner which encourages all children to retain knowledge across year groups.
- Foster an awareness of the links between biology, chemistry and physics and environmentalscience to help develop a respect for the environment and living things.
- Develop an understanding of the nature, processes and methods of science (plan, do, review) through the different types of science enquiry: Identifying and classifying, modelling, pattern seeking,researching, observing over time and comparative and fair tests.

INTENT STATEMENT

The intention of our Science curriculum is for all of our children to develop an age-appropriate understanding of the knowledge, methods, processes and uses of Science, through the specific disciplines of biology, chemistry and physics. Understanding 'The Bigger Scientific Picture' of their learning will allow our children to develop their own understanding of the impact of Science upon the world around them and answer deepening scientific questions– comprehending that this has implications both today and in the future. It will take our children beyond the National Curriculum and promote their science capital in as many diverse ways as possible to help them understand the uses and implications of science, today andfor the future.

The science topics have been carefully mapped out across biology, chemistry and physics, as shown below, to allow a revisit of content, concepts and skills, in increasing depth and with greater challenge, as the children progress through each year group. By consistently building on prior knowledge and skills, it will maximise the likelihood that the children will remember it over time.

IMPLEMENTATION EYFS

Learning starts in EYFS

Children use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. IN Reception children explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them.

IMPLEMENATATION HOW CURRICULUM SEQUENCED AND KEY CONTENT PRIORITISED

Science is taught as a discrete lesson for 1.5 hours in KS2 and 1 hour in KS1each week and where appropriate cross curricular links are formed. The curriculum is organised into six topics per year group, one of which is an environmental science topic that runs alongside our school Eco-Avenger initiative. Topics are taught across six weeks, apart from environmental science topics which are completed over three weeks.

To ensure that our children are exposed to an increasing challenge across science topics, teachers use medium term plans that have been produced for each year group, to inform lesson planning. These plans are accessed online through the teacher share point. Through the "KEYS" our children will be able to clearly see the expectations in knowledge for each topic. The keys will be given to the children at the beginning of each topic and referred to during a science lesson. They will also be sent home to encourage further independent learning and research.

The science curriculum ensures that our children will have a greater understanding of how the world works: based on the scientific disciplines of biology, physics and chemistry, and through environmental science will be aware of, why we need to, and how we can help to, take care of the Earth.

Children working at the expected level (knowledge) will have a good understanding of the key knowledge listed on medium term plans for each topic. All children will have made progress from their starting point and have the opportunity at working within the expected level (knowledge). The children will have a clear view of our expectations from their topic Keys.

CULTURAL CAPITAL

Cultural capital is the accumulation of knowledge, behaviours, and skills that a child can draw upon and which demonstrates their cultural awareness, knowledge and competence; it is one of the key ingredients a pupil will draw upon to be successful in society.

Through our Science Curriculum we build cultural capital through:

Children learning about areas of significant scientific interest such as biology, chemistry and physics and understand the impact of Science all around them.

Children being fully immersed in scientific enquiry throughout the school, thinking like a Scientist within each lesson delivered. Lessons allow for a wide range of scientific enquiry and children are encouraged to 'work like a scientist' at KS1 and 'work scientifically' at KS2. Children will be taught to describe processes and key characteristics in a common language across school. From Y1, to help the children decide how they are going to carry out an enquiry and remember the different enquiry types, the children are introduced to our school science enquiry characters which are linked to famous scientists.

- Isaac Identifier (Isaac Newton)
- Modelling Marie (|Marie Curie)
- Pearl Pattern (Pearl Kendrick)
- Rosalind Researcher (Rosalind Franklin)
- Orville Observer (Orville Wright)
- Fair Test Faraday (Michael Faraday)

PEDAGOGICAL APPROACH TO TEACHING AND LEARNING (LESSON STRUCTURE)

Key Principle	Name of part of lesson
Recap/ Review previous learning	Retrieval
Warm Up Task	Warm up task and Formative Assessment
KEY Vocabulary	Vocab Lab
Focused Teaching	Focused Teaching
Independent or Group Work	Working Scientifically
Plenary/Exit Task- KEY learning from this lesson	Exit Task

Keys to Success

Key knowledge organisers are provided for each topic. These clearly show:

Key Knowledge

Key Skills

Key Vocabulary

Through the "KEYS" our children will be able to clearly see the expectations in knowledge for each topic. The keys will be given to the children at the beginning of each topic (after pre-assessment) and referred to during a science lesson. They will also be sent home to encourage further independent learning and research.

ASSESSMENT

Pre/post learning sheets/Vital Vocabulary.

Assessment is an integral part of the teaching and learning of science at Cronton and is a continuous process. Teachers use a variety of methods to assess the children and these include:

- Observing children at work (individually, in pairs, in a group and in classes).
- Questioning, talking and listening to children's discussions or oral presentations.
- Discussing 'The Big Question' for each topic regularly to show development in understanding.
- 'Quick quizzes' and games for assessment and retrieval at the start of a lesson.
- End of unit quizzes and working scientifically TAPS assessment lessons to show attainment.
- Regular marking of written, pictorial or graphical work- analysing errors and picking up on any misconceptions; adding questions to correct or extend learning where needed.
- In the Foundation Stage we assess children's knowledge and understanding according to the EYFS Learning and Development Stages.

These ongoing assessments inform future planning and teaching. Lessons are adapted readily and short term planning evaluated in light of these assessments. The Teacher assessments are placed on an Excel sheet to support the Subject Leader and assess progress. At the end of each year teacher's make a formal comment on each pupil's progress in science on their end of year report.

MEETING THE NEEDS OF ALL LEARNERS

At Cronton, we ensure that all children are challenged at a level appropriate to their ability. Science lessons are inclusive to pupils with special educational needs and disabilities and teachers have a responsibility to provide support for children with SEND: In science this can be in the form of:

- TA support.
- Questioning to address misconceptions.
- Using graphic word mats to help with retention of key topic vocabulary.
- Pre-learning.

At Cronton we provide sufficient challenge for children who are working at greater depth by:

- Asking them to make connections between different areas of science to build larger concepts.
- Fostering greater independence in enquiry— referring to working scientifically skills in higher year groups.
- Applying their knowledge in new and unfamiliar contexts.
- Encouraging deeper thinking through questioning.

Greater depth in science at Cronton relates to how the children use their knowledge and skills to build ideas, speculate and enquire i.e. enquiry skills rather than learning facts are extended.

IMPACT

The Impact of our Science Curriculum is that the children know more and remember more.

They have opportunities to build upon knowledge and skills that can be clearly evidenced within pre and post learning activities. Progress is clear from all starting points.

At Cronton, We have high aspirations for all children.

There is a clear developing independence when working scientifically with fewer scaffolds provided. The children are shown a variety of ways to work scientifically.

A wider understanding of the impact of Science all around us and within our lives.

Children are engaged within Science lessons and curious to discover, learn and remember more.

We have secured the PSQM for the last 10 years ensuring science is high profile in the school. We complete Science based weeks.

Links with universities to share the practise of science. After school clubs show good uptake in attendance.

STAFF CPD

We have a Collaborative approach to planning and sequencing the curriculum.

LDST 'STEM' CPD programme

CPD throughout this academic year in staff meetings based on the science curriculum.

LDST networking on Science curriculum, including with 'School Improvement Liverpool' curriculum updates.

Subject Leader training

Subscription to ASE

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GOVERNOR COMMUNICATION

Our History Link Governor is:

Chris Davey