Dream big, shine bright
St NICHOLAS
C of E Primary School, Alcester

Science:
Curriculum Intent, Implementation and Impact

Statement

Intent

At St. Nicholas C.E. Primary, **we believe that: "if you dream big, you will shine brightly".** Our science curriculum vision promotes a hands-on, investigative approach with memorable moments and challenge for all. Through this, children develop high expectations and aspirations for themselves, curiosity, and a passion to drive their own learning. Science aims to stimulate and excite pupils' interest and empower them to become independent and resilient. We embrace collaboration, perseverance, mutual respect and reflection as core virtues not only in science but throughout all areas of the curriculum.

In Science, we aim to provide children with opportunities to ask questions, make observations, investigate their ideas and ultimately improve their understanding. By providing a range of practical experiences, we develop pupils' investigative skills and allow children to take risks and learn from their mistakes. Using '3B4Me' promotes a growth mindset, empowering pupils to move their learning forwards. We aim to inspire children to be the best that they can be, striving to stimulate their natural curiosity of the world in which they live in a nurturing environment. We believe having high expectations is key to each child reaching their full potential. The science curriculum is broad, balanced and rich allowing for every child to grow an enquiring mind in a safe and exciting manner, promoting a thirst for learning.

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** - **substantive**
- 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 - **disciplinary**
- Are equipped with the **scientific knowledge** required to understand the uses and implications of science, today and for the future.

Our teaching of Science is inclusive and planned, making adaptations as required, to ensure all pupils:

· develop lively, enquiring minds and the ability to question.
· learn scientific skills (disciplinary learning) and knowledge (substantive learning) with progression throughout the Key Stages.
· build on their natural curiosity; enabling them to understand and care for the world in which they live.
· are provided with a stimulating environment, where they can work in an investigative way and can communicate their findings in a variety of ways.
· learn to use equipment safely and sensibly.
· develop potential scientific links with all other areas of the curriculum.

Implementation

See also:

a) **Long, mid and short-term plans**
b) **Science Non-negotiables document**
c) **Progression of Skills Document**

Early Years Foundation Stage

In the Foundation Stage, children are taught Science through the key areas of learning set out within the EYFS Statutory Framework.

Through a broad range of teacher-led, child-initiated and continuous learning opportunities, children will be taught to:

- Use their senses to investigate a range of objects and materials
- Find out about, identify and observe the different features of living things, objects and worldly events
- Look closely at similarities, differences, patterns and change
- Ask questions about why things happen and why things work
- Develop their communication and co-operation skills
- Talk about their findings, sometimes recording them
- Identify and find out about features of the place they live and in the natural world around them

Key Stage 1 and 2

The vast majority of science is taught discretely but staff make meaningful links across subjects to deepen children's learning. Science planning includes:

- A long-term plan, ensuring coverage throughout the year, showing topic titles
- Mid-term plans which map out progression of learning (EYFS-Year 6), disciplinary and substantive learning expectations for each year group, key questions and core vocabulary
- Short-term plans are used to set out the learning intensions for each lesson, identifying engaging activities and resources which will be used to achieve them. Science lessons are usually weekly although there is flexibility in the timetable to allow for Science days, Science Week and visits or events such as those within our Ogden Primary Partnership.

In Key Stage 1 and 2, progressive lessons are planned using a range of materials including:

- Developing Experts
- Plan materials
- Explorify
- STEM materials
- TAPs
- Ogden Trust
- Engaging Science
- Concept Cartoons
- Twinkl
- TES
- BBC
- Rising Stars
- Hamilton Trust
- CGP materials
- Oak Academy Trust
- Collins SNAP Science

Key Stage 1 and 2 Topics

The following topics are covered throughout Key Stage 1:

- Animals, including Humans
- Everyday Materials
- Plants
- Seasonal Changes/Weather
- Living Things & their Habitats

The following topics are covered throughout Key Stage 2:

- Plants
- Living Things & their Habitats
- Animals, including Humans
- Rocks
- States of Matter
- Light
- Electricity

- Sound
- Properties and Changes of Materials
- Earth & Space
- Evolution & Inheritance
- Forces & Magnets

During 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 EAL and SEND children, who may need more opportunities to retain and embed scientific vocabulary and concepts.

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 and develop their use of scientific vocabulary as they move through the year groups. Children are encouraged to use scientific vocabulary, both written and verbal, to explain their ideas and make sense of their observations and findings. This enables AFL and misconceptions to be identified and addressed making appropriate adaptations to support learning.

Working Scientifically

In addition to the scientific knowledge and conceptual understanding (substantive) taught through each topic, children will also be provided with opportunities to develop their scientific enquiry skills (disciplinary). These skills are identified within the 'Working Scientifically' element of the National Curriculum. Children will be given opportunities to:

- Ask questions
- Hypothesise and predict
- Plan and carry out successful investigations
- Use apparatus effectively and accurately
- Observe and measure
- Record data in various ways
- Present results in a variety of ways, including the use of ICT
- Compare and evaluate results and identify patterns and trends
- Draw effective conclusions

Opportunities are also planned to enable children to:

- Develop investigative skills, including the use of IT
- Consider the nature of scientific ideas and the role of Science in everyday life
- Communicate effectively using appropriate scientific vocabulary
- Assess risks and develop an awareness of Health and Safety

Impact

The impact of our Science curriculum is measured through the monitoring cycle in school. The impact is seen by:

- Children enjoying science and are enthusiastic about it in our school.
- A clear progression of children's work and teachers' expectations in our school.
- Children's work showing a range of topics and evidence of the curriculum coverage for all science topics.
- Children becoming increasingly independent in science, selecting their own tools and materials, completing pupil lead investigations and choosing their own strategies for recording.
- A balance of practical investigative work (disciplinary) to promote and develop scientific knowledge (substantive).
- Attainment and progress shown on INSIGHT.
- Misconceptions identified and addressed.
- Inclusion of all children to enable them to reach their potential, including EAL and SEND children, against age related expectations, through making appropriate adaptations.

This is measured by:

- Data tracking (Insight)
- Assessments-AFL, summative and formative.
- Discussions with pupils–pupil voice
- Book looks
- Learning walks/drop ins
- Discussions with class teachers
- Moderation of work

Monitoring is related to the SIP and the resulting Action Plan for science. It is also used to identify gaps in the curriculum that may need to be addressed across the school, or within individual year groups. Monitoring is an ongoing cycle, which is used productively to provide the best possible Science curriculum for all children. Impact is monitored by the science lead. Findings from monitoring is gathered, reviewed and leads to meaningful discussions with SLT and Teachers; resulting in actions for future improvements and adapted provision.