St John's Catholic Primary School, Bridgnorth

Science Policy

Reviewed on: May 2024

Reviewed by: Mrs Vanessa Burn

Next review date: 2026

Mission Statement

" I am the vine and you are the branches"

Introduction

Science makes an increasing contribution to all aspects of life. Children are naturally fascinated by everything in the world around them and Science makes a valuable contribution to their understanding.

Children learn by playing with things in their world. They pick up clues about what they see, touch, smell, taste and hear in order to makes sense of it all. Eventually they come to conclusions which they match up with all the experiences they have had.

Teachers and parents/carers can help children to take a second, careful look at the world. By talking together children can be encouraged to explore and observe so that they can group objects and events and look for similarities and differences. They will need to measure and record the things they have found out in ways that make sense to them so that later they can talk to other people about what they have discovered. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Intent

Our science curriculum aims to develop a sense of excitement and curiosity about natural phenomena and an understanding of how the scientific community contributes to our past, present and future. We want pupils to develop a complex knowledge of Biology, Chemistry and Physics, but also adopt a broad range of skills in working scientifically and beyond. Our science curriculum is inclusive and meaningful, so all pupils may experience the joy of science and make associations between their science learning and their lives outside the classroom. Studying science allows children to appreciate how new knowledge and skills can be fundamental to solving arising global challenges.

Our curriculum aims to encourage critical thinking and empower pupils to question the how's and whys of the world around them.

At St John's we encourage:

- A strong focus on developing knowledge alongside scientific skills across Biology, Chemistry and Physics.
- Curiosity and excitement about familiar and unknown observations.
- Challenging misconceptions and demystifying truths.
- Continuous progression by building on practical and investigative skills across all units.
- Critical thinking, with the ability to ask perceptive questions and explain and analyse evidence.
- Development of scientific literacy using wide-ranging, specialist vocabulary.

Curriculum

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 skills** required to understand the **uses and implications** of science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this

As a school, we have recently chosen to teach Science using the Kapow Science scheme of work from Year 1 to Year Six. With some planning ideas also for Early Years. A detailed progression map of the Science curriculum is included to support the scheme of work. Pupils can learn Scientific skills at their own pace, developing independent learning skills with opportunities to continually review

and revisit the skills covered, our pupils can access resources and content suitable for their individual ability and needs. Teachers can learn about topics covered and how to apply within teaching by watching the tutorials provided by Kapow. Please click on the link below for a detailed map of the science curriculum coverage

Science: National curriculum coverage mapping document - Kapow Primary

EYFS

In the Early Years Foundation Stage Curriculum Science does not feature as a stand-alone subject within the framework. The Foundation Stage delivers science content through the 'Understanding of the World' strand of the EYFS curriculum. This involves guiding children to make sense of their physical world and 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.

The children have a broad, play-based experience with a variety of scientific experiences and they are given the opportunity to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants.

• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Implementation

Our science curriculum has a clear focus on Scientific knowledge and understanding of:

- Biology - living organisms and vital processes.
- Chemistry - matter and its properties.
- Physics - how the world we live in 'works'.
- Working scientifically - processes and methods of science to answer questions about the world around us.
- Science in action - uses and implications of science in the past, present and for the future.

Our Science scheme is a spiral curriculum, with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on their previous learning. A range of engaging recall activities promote frequent pupil reflection on prior learning, ensuring new learning is approached with confidence. The Science in action strand is interwoven throughout the scheme to make the concepts and skills relevant to pupils and inspiring for future application. Cross-curricular links are included throughout each unit, allowing children to make connections and apply their science skills to other areas of learning. Each unit is based upon one of the key science disciplines; Biology, Chemistry and Physics and to show progression throughout the school we have grouped the National curriculum content into six key areas of science:

Plants
Animals, including humans
Living things and habitats
Materials
Energy Forces,

Earth and space.
Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the 'working scientifically' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills.

Impact

The expected impact from our science curriculum is that the children:

- Develop a body of foundational knowledge for the Biology topics in the National curriculum: Plants; Animals, Including Humans; Living Things and Their Habitats; Evolution and Inheritance.
- Develop a body of foundational knowledge for the Chemistry topics in the National curriculum: Everyday Materials; Uses of Everyday Materials; Properties and Changes of Materials; States of Matter; Rocks.
- Develop a body of foundational knowledge for the Physics topics in the National curriculum: Seasonal Changes; Forces and Magnets; Sound; Light; Electricity; Earth and Space.
- Be able to evaluate and identify the methods that 'real world' scientists use to develop and answer scientific questions.
- Identify and use equipment effectively to accurately gather, measure and record data.
- Be able to display and convey data in a variety of ways, including graphs. ● Analyse data in order to identify, classify, group, and find patterns.
- Use evidence to formulate explanations and conclusions.
- Demonstrate scientific literacy through presenting concepts and communicating ideas using scientific vocabulary.
- Understand the importance of resilience and a growth mindset, particularly in reference to scientific enquiry.
- Meet the end of key stage expectations outlined in the National curriculum for Science.

Progression

Please use the link below to see what progression in Science looks like.

Science: Progression of skills and knowledge (kapowprimary.com)

Assessment

- Use of retrieval practice
- Prior teaching
- Use of knowledge organisers/topic covers
- Wall displays to aid independence.
- Checking in lessons for misconceptions, and instantly address
- Interventions
- Developing and adapting unit plans
- Summative Assessment: end of unit quizzes
- Issues identified, noted, and acted upon

Inclusion

At St John's we aim to meet the needs of all our children by including adaptive teaching strategies in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This involves providing opportunities for SEND children to complete their own work, with support, to develop speech and language skills, as well as scientific skills and knowledge. This will enable children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through adaptive teaching activities. By being given enhancing and enriching activities, more able children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

Monitoring and Feedback

Monitoring will be achieved through:

- Work scrutiny via Science pupil books.
- Learning walks.
- Observations.
- Pupil voice.
- Teacher voice.
- Reflective teacher feedback.
- Learning environment monitoring.

Health and Safety:

- A risk assessment will be made, as part of the planning process, before any potentially dangerous scientific activity is undertaken.

- Children will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves.

- Children will be shown how to use scientific equipment safely.

- Safety glasses will be used where appropriate.