St. Clement's C. of E. Academy

Science Policy
2022-25

 # Learning for Life, Anchored in Christ

THE CHURCH OF ENGLAND BIRMINGHAM

Our vision

Our vision is to inspire happy, courageous, independent, curious and creative, life-long learners. We aim for all to achieve their full potential, striving both academically and socially with humility and dignity.

We believe being anchored in Jesus Christ will guide us all with hope, compassion and wisdom in becoming successful members of a global community.

Rationale

Science is a systematic investigation of the physical, chemical and biological aspects of the world which relies on first hand experiences and on other sources of information. The scientific process and pupils' problem-solving activities will be used to deepen their understanding of the concepts involved. The main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014.

Through science pupils at St Clement's Academy will continue to deepen their respect, care and appreciation for the natural world and all its phenomena.

Intent

At St Clement's, we follow a topic-based science curriculum where biology, chemistry and physics are taught through high-quality lessons, thereby enabling children to build a secure foundation and understanding of the world. Children are taught through engaging lessons which excite and encourage their natural curiosity in our changing world. Scientific knowledge and key concepts empower our children to ask and answer questions about the world around them. They develop skills to explain, predict and analyse to understand the uses and implications of science for their future as well as today.

Implementation

The teaching of Science across St Clement's follows the National Curriculum through:

- comprehensive and thorough bespoke planners of topics designed for our school community.
- breadth of learning from EYFS to KS2, where knowledge and skills are developed progressively and abstract ideas/vocabulary (e.g. **materials, vertebrates and invertebrates, carbohydrates, magnetic**) are revisited and built upon with each year group
- For each year group there is a module called **Our Changing World** which is designed to be taught in every term, offering children regular opportunities to explore all aspects of their outdoor environment and build up a rich understanding of how it changes over the year.
- cross curricular links where children are encouraged to apply other learning e.g. DT, maths, geography, art, music. Our topics are cross curricular to ensure excellent links for children.
- teaching school values within each science topic. This links learning in science (and other subjects) to the wider school focus on British values, communicated namely through collective worships.
- delivery that allows children to be excited and curious, to predict, enquire, analyse and explain scientific concepts.
- collaborative learning, where children work together towards goals, exploring different roles within a team.
- explicit teaching of vocabulary for each topic.

Impact

We measure the impact of our curriculum through the following methods:

- interviewing the pupils about their learning (pupil voice) and asking key assessment questions to a range of children.
- Entry and exit quizzes/ double page spreads
- monitoring teacher planning.
- celebrating images and videos of the children's practical learning.
- measuring assessment standards against written evidence in books.

Objectives

The following aims will form the basis of our decisions when planning a scheme of work. Assessment will also be related to these objectives:

- to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life.
- to develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including recognition of scientists from different cultures and 'scientists just like me' including a mini unit – Smashing stereotypes in science.
- to encourage pupils to relate their scientific studies to applications and effects within the real world
- to develop a knowledge of the science contained within the programmes of study of the National Curriculum.

To build on pupils' curiosity and sense of awe of the natural world

- to develop in pupils a general sense of enquiry which encourages them to question and make suggestions
- to encourage pupils to predict the likely outcome of their investigations and practical activities
- to develop respect for the environment and living things

To use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science

- to provide pupils with a range of specific investigations and practical work which gives them a worth-while experience to develop their understanding of science
- to develop progressively pupils' ability to plan, carry out and evaluate simple scientific investigations and to appreciate the meaning of a 'fair test'.

To develop the ability to record results in an appropriate manner including the use of diagrams, graphs, tables and charts

- to introduce pupils to the language and vocabulary of science
- to give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science
- to develop pupils' basic practical skills and their ability to make accurate and appropriate measurements
- within practical activities give pupils opportunities to use a range of simple scientific measuring instruments such as thermometers and force meters and develop their skill in being able to read them.

To develop pupils' use of IT and computing in their science studies

- to give pupils opportunities to use ICT (video, digital camera, data logger) to record their work and to store results for future retrieval throughout their science studies
- to give pupils the chance to obtain information using the internet.

To introduce pupils to the language and vocabulary of science

To develop pupils' basic practical skills and their ability to make accurate and appropriate measurements
To extend the learning environment for our pupils via our environmental areas and the locality and to equip the pupils for a sustainable future.
To promote a 'healthy lifestyle' in our pupils.

Other attitudes which teachers should seek opportunities to develop are the importance of curiosity, originality, co-operation, perseverance, open-mindedness, self-criticism, responsibility, independence of thinking and self-discipline.

Inclusion

All children have equal access to the science curriculum and its associated practical activities. All staff are responsible for ensuring that all children, irrespective of gender, learning ability, physical disability, ethnicity and social circumstances, have access to the whole curriculum and make the greatest possible progress. Where appropriate, work will be adapted to meet pupils' needs and, if appropriate, extra support given. More able pupils will be given suitably challenging activities. Gender and cultural differences will be reflected positively in the teaching materials used. The grouping of pupils for practical activities will take account of their strengths and weaknesses and ensure that all take an active part in the task and gain in confidence

Breadth and Balance

Pupils will be involved in a variety of structured activities and in more open-ended investigative work:

- activities to develop good observational skills
- practical activities using measuring instruments which develop pupils' ability to read scales accurately
- structured activities to develop understanding of a scientific concept
- open ended investigations.

On some occasions pupils will carry out the whole investigative process themselves or in small groups.

Wherever possible science work will be related to the real world and everyday examples will be used.

Some topic areas link to the Cornerstones Curriculum. Where topics do not link to the science curriculum, lessons are taught discretely. Each class will have one taught science lesson per week.

Cross-curricular skills and links

Science pervades every aspect of our lives and we will relate it to all areas of the curriculum. We will also ensure that pupils realise the positive contribution of both men and women to science and the contribution from those of other cultures. We will not only emphasise the positive effects of science on the world but also include problems, which some human activities can produce. We hold a 'Science week' every year where all curriculum areas are linked to an aspect of Science and real life contexts. Parents are invited to some sort of science workshop to work alongside their child. This week culminates in a school Big Book and a Science Fayre type event for parents to look at their child's learning.

SMSC in Science

Sometimes science and spiritual ideas do cause conflict but in a modern society it is important to understand why these conflicts arise so we can respect the views of others and move forward. Science involves the search for meaning and purpose in natural and physical phenomena. It is the wonder about what is special about life, the awe at the scale of living things from the smallest micro-organism to the largest tree and the interdependence of all living things and materials of the Earth. It concerns the emotional drive to know more and to wonder about the world and aesthetically appreciate its wonders including for example the enormity of space and the beauty of natural objects or phenomenon, plants, animals, crystals, rainbows, the Earth from space etc. It helps us understand our relationship with the world around us how the physical world behaves, the interdependence of all living things.

When carrying out modelled, intermediate or an independent investigation the children will be able to decide which variable to use to ensure the test remains fair. When carrying out an investigation children will take responsibility for their own and other safety. They are aware of the consequences of their behaviour and actions could jeopardise the results of the investigation. At the start of an investigation the children will offer reasoned views about their predictions for the test and will listen carefully to the viewpoints of others. Moral education in Science encourages children to become increasingly curious, to develop open mindedness to the suggestions of others and to make judgments on evidence not prejudice.

Scientists are collaborators. Sharing ideas, data, and results for further testing and development by others. This is a key principle of the scientific method. We encourage pupils to work together on scientific investigations and to share results to improve reliability. Pupils must take responsibility for their own and other people's safety when undertaking practical work. Science has a major impact on the quality of our lives. In Science lessons, pupils consider the social impact, both positive and negative, of science and technology.

It is important that the children understand that scientific development comes from all across the world, from people of all backgrounds and cultures. Some of science's most important discoveries have come from other parts of the world and it's important for students to understand this as many believe that progress comes largely from the UK or America. It is also important to understand how the different cultures around the world can have different impacts on the planet and what impact more economically developed countries have on poorer areas. This will also be vital into the future as we need to monitor the impact of quickly developing cultures around the world on our environment.

Continuity and Progression

EYFS

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

ELG: The Natural World Children at the expected level of development will:
- 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.

Pupils in Key Stage 1 will be introduced to science through focused observations and explorations of the world around them. These will be further developed through supportive investigations into more independent work at Key Stage 2. The knowledge and content prescribed in the National Curriculum will be introduced throughout both key stages in a progressive and coherent way.

By careful planning, pupils' scientific skills and knowledge gained at Key Stage 1 will be consolidated and developed during Key Stage 2.

Health and safety

Pupils will be taught to use scientific equipment safely when using it during practical activities. Class Teachers and Teaching Assistants will check equipment regularly and report any damage, taking defective equipment out of action. A simple risk assessment will be carried out for all practical activities any perceived hazards will be reported to the Science lead who will determine the appropriateness of said activity.

Marking (see policy)

Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms thus making marking different. It is, however, important that written work is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self-assess or peer assess their own or other's work.

Resourcing

Science is resourced with topic boxes that cover the general resource needs of the statutory objectives within the Primary National Curriculum 2014. We also have published materials to support and reinforce learning; The library has a selection of science books, which can be borrowed by class teachers to aid teaching and encourage independent learning and research. For staff CPD, NC coverage planning and skills & knowledge progression, the school subscribes to Collins-Snap Science. All staff have online access to this.

Review

The effectiveness of this policy will be reviewed and discussed in the Spring Term 2025, alongside any new guidance/resources schemes. Any consequent revisions to the policy will be presented to the governing body for discussion at their termly meeting in the Summer Term 2025.