

**ST WILFRID'S RCVA PRIMARY SCHOOL**  
**SCIENCE AND STEM POLICY**  
November 2023      Written by Laura Balding



### **MISSION STATEMENT**

St Wilfrid's is a Catholic Christian family where we live together, loving and respecting each other as God's children.

### **OUR AIMS**

- With the full support of parents we will develop children's full potential in a caring Christian way.
- Children will be encouraged to develop self-discipline and take responsibility for their decisions and actions.
- To provide a broad, balanced integrated curriculum which develops the whole child.
- To strive for the highest standards in teaching and learning.
- To recognise that every individual is an important and valued member of our whole school community.

## **1 Aims of the Science policy**

**1.1** Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way in which science will affect the future on a personal, national, and global level.

**1.2** The objectives of teaching science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment (including computers) correctly;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound, and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence, and present their conclusions clearly and accurately.

## **2 Teaching and learning style**

**2.1** We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes we do this through

whole-class teaching, while at other times we engage the children in an enquiry-based research activity. We use big questions at the start of every lesson to encourage the children to analyse and think like scientists. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures, and Photographs, in addition to as many practical resources as possible. They use ICT in science lessons because it enhances their learning. They take part in role-play and discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, for example, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

**2.2** We recognise that in all classes children have a wide range of scientific abilities, and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways:

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- creating an inclusive environment, where children are given differentiated resources to allow them to achieve the task in hand.
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children around the room.
- using 'recap' sessions at the beginning of every lesson to revisit previous learning – either from a previous lesson, or a previous year group.
- using vocabulary slides at the beginning of the session to give all children a better understanding.

### **3 Science curriculum planning**

**3.1** The school uses the national scheme of work for science as the basis of its curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork, although we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

**3.2** We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each term during the key stage and specific year group. The science subject leader works this out in conjunction with teaching colleagues in each year group. The subject leader then applies any key days and cultural capital activities, related to the topic, throughout the long-term plan.

**3.3** Our medium-term plans are created by the subject lead, in conjunction with the long-term plan. Objectives are decided and ordered in a logical way, allowing children to follow and navigate natural stepping stones in science. The subject lead also ensures that any trips, local studies or workshops are included in this area.

**3.4** The class teacher is responsible for writing the daily lesson plans for each lesson (short-term plans), using provided teaching PowerPoints and suggested activities for each. These PowerPoints and activities should be appropriately adapted, depending on the needs of the children in a particular class. At times, specific objectives and activities must be followed explicitly, to allow progression of working scientifically skills throughout the year groups.

**3.5** We have planned the topics in science so that they build on prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school. We have also ensured that the time of year is included in the planning, specifically for topics, such as seasonal changes.

## **4 EYFS**

**4.1** In our school, we believe that all our children matter. We give our children every opportunity to achieve their best. The science curriculum is contained in the Early Years Framework, particularly from the understanding the world strand. Our children are encouraged to observe and handle objects in their environment from Nursery. Describing what they see and making simple predictions are early scientific skills to be fostered, and are vital as the children develop their scientific understanding.

Children will be able to have access to a computer to develop their skills, especially mouse control, by using a variety of appropriate software.

**4.2** The children will have the opportunity to regularly learn outside of the classroom, which supports the development of healthy and active lifestyles. It gives them contact with the natural world and offers them experiences that are unique to outdoors, such as direct contact with the weather and seasons.

## **5 The contribution of science to teaching in other curriculum areas**

### **5.1 English**

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the link texts that are provided in our reading spine are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments, following a natural progression through school. They develop their writing skills through writing reports and projects and by recording information, which are key elements of working scientifically.

### **5.2 Mathematics**

Mathematics is a whole-school priority at St Wilfrid's. Science, especially STEM contributes to the teaching of mathematics in a number of ways. When the children use weights and measures, they are learning to use and apply number. Through working on investigations, they learn to estimate and predict. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include numbers. During our STEM half-

term, children are able to continue to use their practical skills, such as calculating and converting measurements, making presentations using statistical skills and much more.

### **5.3 Personal, social and health education (PSHE)**

Science makes a significant contribution to the teaching of PSHE. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Our eco-councillors are consistently developing knowledge of recycling and our environment throughout school by embarking on regular projects. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to

them, such as helping the poor or homeless. Science thus promotes the concept of positive citizenship.

### **5.4 Spiritual, moral, social and cultural development**

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking, and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet, and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

### **5.5 Design Technology**

Many elements of science can be taught through design technology and vice versa. Particularly through our STEM half-term, children have many opportunities to practically design and create progressive products, using their skills from DT lessons, such as researching, designing and evaluating.

## **6 Science and ICT**

**6.1** Information and communication technology enhances the teaching of science in our school significantly, because there are some tasks for which ICT is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software is used to animate and model scientific concepts, and to allow children to investigate processes which it would be impracticable to do directly in the classroom. Data loggers are used to assist in the collection of data and in producing tables and graphs. Children use ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and on other media. They also use blogs and concept maths on Purple Mash to communicate on their scientific findings with children in other schools and countries.

## **7 Science and inclusion**

**7.1** At our school we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details see individual whole-school policies: Special Educational Needs; Disability Non-Discrimination; Gifted and Talented; English as an Additional Language (EAL).

**7.2** When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation, inclusive teaching – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs. If a child's progress is still falling outside of the expected range, discussions and cause for concern forms would be completed with our SEND lead.

**7.3** Children's individual learning plans or EHCPs may include particular science targets and objectives.

**7.4** We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (a trip to a science museum, for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## **8 Assessment for learning**

**8.1** Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it, and uses this assessment to plan and adapt future learning. Written or verbal feedback is given to the child to help guide his/her progress, using our current marking policy. Older children are encouraged to make judgements about how they can improve their own work.

**8.2** At the end of a unit of work s/he makes a summary judgement about the work of each pupil in relation to the National Curriculum levels of attainment. The teacher records the attainment using our assessment system – iTrack. We use these assessments as the basis for assessing the progress of each child, and we pass this information on to the next teacher at the end of the year as well as to parents on the end of year reports.

**8.3** Teachers assess the children's work in science at the end of Key Stage 1 and at the end of Key Stage 2.

**8.4** The science subject leader keeps samples of children's work in a portfolio, and uses these to demonstrate the expected level of achievement in science for each age group in the school.

## **9 Resources**

**9.1** We have sufficient resources for all science teaching units in the school. We keep these in two central stores, where there is a clearly-labelled cupboard of topic organised resources. There is also a collection of working scientific equipment which the children use in all areas of the STEM and science curriculum. The library contains a good supply of science topic books and computer software to support children's individual research.

## **10 Monitoring and review**

**10.1** It is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leader gives the headteacher an annual summary report in which s/he evaluates strengths and weaknesses in science, and indicates areas for further improvement. The subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work, and visiting classes to observe science teaching.

**10.2** This policy will be reviewed at least every two years.