SUBJECT ON A PAGE Science

AT ST PAUL'S WE BELIEVE CHILDREN SHOULD BE INQUISITIVE AND MAKE OBSERVATIONS, ASK QUESTIONS AND INVESTIGATE THE WORLD WE LIVE IN.

Intent : We aim to ...

At St. Paul's Catholic Primary School, we recognise the importance of science in every aspect of daily life. Science provides children with the opportunity to understand the world around them as well as provides an exciting context to apply many of the other skills and disciplines they learn at school.

Science aims to increase pupils' knowledge and understanding of our world, and with developing skills associated with science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence. We believe that children learn science best by doing and seeing; by providing our children with a range of opportunities to actively carry out different types of scientific enquiry, we ensure that working scientifically and application of knowledge is embedded into the heart of our science curriculum. We make use of our Eco-area and other outdoor learning spaces wherever possible to generate memorable and comprehensive experiences which scaffold long-term learning.

Our inclusive practice enables all pupils to have the opportunity to explore, question and investigate.

We want our pupils to develop a sense of excitement and curiosity and a strong understanding of the world around them.

Substantive knowledge is developed as topics are revisted throughout the school to enable children to develop their schema in biology, chemistry and physics.

The emphasis is on the children learning by doing and progressively developing the skills associated with working scientifically.

We want children to make links in their learning.

Teach children subject specific vocabulary and how to use it.

A St. Paul's Scientist...

- conducts investigations and fair tests to answer questions
- makes links between disciplines
- observes the world around them
- makes links between disciplines
- asks questions
- Reaches conclusions

Key Skills

recognise, notice, identify, describe, observe, classify, suggest, ask questions, gather, record, compare, present, report, conclude, predict, explore, investigate, construct, interpret, measure, find patterns, demonstrate, explain, give reasons, associate

Implementation : How do we achieve our aims?

At St. Paul's we have developed our own Science Scheme of work to support our planning. This scheme has a clearly indicated progression in the key scientific knowledge and concepts. Science is taught in half termly units. The progression of science, within our school, allows for children to build upon their prior knowledge, as well as employ a range of skills when working scientifically. When beginning a new unit, children are exposed to pioneering scientists within this field as well as key vocabulary. Children are encouraged to ask questions, carry out investigations and are exposed to predicting, generating, recording and interpreting data in a variety of ways. Teachers plan effective hooks for each unit of work and base each lesson around questions, prompting children to think and work scientifically. Teachers link lessons to real life and utilise the resources we have access to, such as the Eco-school area and school grounds, which are often used to develop and conceptualise learning, for example during the 'Living things and their habitat' unit.

Rationale for curriculum organisation: The science curriculum has been designed to allow for cross curricular links. This gives pupils the opportunity to apply scientific ideas through a range of writing opportunities, such as recording the steps of a scientific investigation. Furthermore, the science curriculum has also taken into account seasonal changes and availability of natural resources and materials, such as growing in the summer and seasonal changes topics throughout the year. Our curriculum promotes a community of pupils who are informed about relevant and topical themes which allow them to link their knowledge and understanding to real life. The range of topics are broad and balanced and develop children's intellectual curiosity, scientific language and investigative skills.

Implementation : How do we achieve our aims?

In the EYFS

In EYFS, the prime area of learning covered in science is 'Understanding the World'. Children are exposed to some scientific equipment. Children explore the natural world around them including animals and plants. They begin to recognise similarities and differences between the natural world around them and contrasting environments and begin to understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

In Key Stage 1 & 2

In KS1 and KS2, biology related topics include Living things and their habitats, Evolution and Inheritance and Animals including Humans. Chemistry related topics include Properties and Changes in Materials. Physics oriented topics include Forces and Magnets, Light, Electricity, Earth and Space. In KS1, the emphasis is on learning through practical activities, observations and the use of some secondary sources. In KS2, scientific enquiry skills are taught as part of each unit of work and linked to the science content.

The successful approach to science at St. Paul's results in a fun, engaging, high-quality science education that provides children with the foundations for understanding. Our engagement with the outdoor spaces we have at school and locally, ensures that children learn through varied and first-hand experiences of the world around them. So much of science lends itself to working practically and outdoors, so we provide children with opportunities to experience this. Through planned workshops and interactions with visitors, children gain the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science through planned opportunities with the STEM programme. Pupil's voice is used to further develop the science and eco-schools curriculum, through questioning of pupil's views and attitudes to science to support the children's enjoyment of science and to motivate learners.

Impact : How will we know we achieved our aims?

SMSC

Spiritual education in science at St. Paul's involves the search for meaning and purpose in natural and physical phenomena. It is the wonder about what is special about life, an awe at the scale of living things from the smallest microorganism 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 appreciate it's wonders; including the enormity of space and the beauty of natural objects or phenomenon, plants, animals, crystals, rainbows, the Earth from space. **Moral education in science** at St. Paul's encourages pupils to become increasingly curious, to develop open mindedness to the suggestions of others and to make judgements on evidence not prejudice. Pupils realise that moral dilemmas are often involved in scientific developments. When considering the environment, the use of further natural resources and their effect on future generations is an important moral consideration. **Social education** at St. Paul's involves group practical work which provides opportunities for pupils to develop team working skills and to take responsibility. Pupils must take responsibility for their own and other pupil's safety when undertaking practical work. Science has a major effect on the quality of our lives. Pupils are encouraged to consider the benefits and drawbacks of scientific and technological developments and the social responsibility involved. **Cultural education** in science at St. Paul's involves thinking of scientific discoveries as as much a part of our culture as great music and films. Credit is given to scientific discoveries of other cultures. Science is also seen as a contemporary activity and developments are made all over the modern world. It is therefore an activity undertaken by a wide range of people in many different cultures both now and in the past.

British Values

The Rule of Law: Pupils are taught the requirement for rules to ensure they are working safely with scientific equipment. They learn the importance of the need to protect their and other peoples' safety. They learn that their actions will have consequences and we encourage personal responsibility and the need to accept the consequences if they break rules. **Democracy & Individual Liberty:** In science we believe that everyone has the right to hold an opinion on a matter connected to science. We recognise that other opinions need not necessarily match our own but we support the right that everyone is free to hold these personal beliefs. In lessons, we allow pupils the opportunities to express their views and we encourage the view that everyone's contributions are equally valid when working in a team. **Tolerance of Other Faiths & Beliefs:** Scientific facts remain the same, no matter what the culture, language or religious beliefs of individuals. Pupils learn that scientific understanding transcends boundaries and scientific contributions from different cultures are equally valid and are all needed to form an understanding of our world. **Mutual Respect:** Pupils learn that living in our society today involves sharing a common goal and responsibility to look after our planet. Where appropriate ethical and ecological issues are discussed which are relevant to the topic. Pupils learn the importance of working collaboratively and cooperating when working in groups. They learn the need to accept differences in the knowledge, understanding and ways of working of others. They learn to treat everyone in the class with respect when putting their personal views forward.

Assessment

Science is reported on a half-termly basis and is assessed topic by topic. As the topic is taught, assessments are recorded on Target Tracker, so that teacher judgements are accurate and timely. Summative data is collated at the end of each Key Stage. End of year data analysed to allow for the monitoring and impact of SDP targets against last year's results and particular pupil groups such as PP, SEND and EAL.

Children are keen, inquisitive scientists who have developed a good understanding of the world we live in.

Children build on prior knowledge and embed procedural knowledge into long term memory. They have good substantive knowledge.

Children develop disciplinary knowledge by asking relevant scientific questions and answer them using a range of scientific equipment.

Children make use of cross curricula knowledge to support their learning in science e.g. they use mathematical knowledge to collect and present data.

Children use increasingly challenging subject specific vocabulary accurately.