

Science Policy

Vision statement

All of the teaching staff at St Peter's recognise that all children have potential to excel in areas of science. Our teaching aims to motivate our pupils, promote curiosity and spark their imaginations through first hand experiences. Through carefully planned lessons and activities our pupils are equipped with the skills they need to have the confidence to partake in a wide range of activities to promote independence and instill a 'love of learning'. Pupils are given the opportunity to share their views and partake in a wide range of experiments to help them to become independent learners. We would like our pupils to be scientifically literate in the field of science to explain results and concepts to others and through written work.

1 Aims

1.1 At St Peter's CE Primary School 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.
- enable children to talk about their learning using science subject specific terminology.

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, understanding and for our pupils to become scientifically literate (Intent). Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. 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. 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);
- Incorporating principles of growth mindset and allowing children to choose a differentiated task;
- 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.

3 Science curriculum planning

3.1 The school follows the National Curriculum for teaching science and uses the Cornerstones Curriculum - 'Love to Investigate' units and Twinkl schemes of work to supplement learning through a range of practical experiments. The schemes have 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. We also link our science teaching in a thematic way linked to our termly topics. It is taught mostly weekly throughout school or in a block if the topic has a creative link to our drive topic. (intent and implementation)

3.2 We carry out our curriculum planning in science in two phases (long-term and medium-term). The long-term plan maps the scientific topics studied in each term during the key stage (This is also recorded on our year group curriculum maps and whole school science map). In some cases we combine the scientific study with work in other subject areas, at other times the children study science as a discrete subject.

3.3 The class teacher is responsible for writing the medium-term plans for each unit of work. These plans list the specific learning objectives, links to sticky knowledge and make reference to the science knowledge organisers and expected outcomes of each lesson. In addition to this there is a working scientifically strand where objectives are shared between two year groups. The planning is saved on SharePoint.

3.4 We have planned the topics in science so that they build on prior learning, we value the creative curriculum in school and make creative links where possible. (intent and implementation) 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. Staff are encouraged to start new topics using concept cartoons, mind maps, KWL grids to help plan and deliver a curriculum in accordance to what the children know and want to find out. (impact)

3.5 Each unit of science work has up to 5 pieces of sticky knowledge that the children are expected to remember and apply to future topics. These statements are regularly referred to in lessons and are displayed in the classroom on the science working wall.

3.6 Our science planning includes studying significant individuals in the field of science as pupils are required to learn about scientists both past and present. A list of

the scientists we learn about can be found on year group curriculum maps and the whole school science plan.

3.7 Our curriculum is further enhanced by making links with external agencies such as The National College, STEM and providing children with the opportunity to participate in science clubs.

4 The Foundation Stage

4.1 We teach science in nursery and reception classes as an integral part of the topic work covered during the year. As the classes are part of the Foundation Stage, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs) from the EYFS curriculum which underpin the curriculum planning for children aged three to five. Topics are similar in nursery and reception with reception's curriculum building on the knowledge and skills taught in nursery. Topics include senses, materials, plants, forces and the natural world.

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 texts that the children study in lessons 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. They develop their writing skills through producing double page spreads, writing reports, projects and by recording information.

5.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways. For example, in data handling and in using and applying strands of maths. In contexts such as weights and measures, 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.

5.3 Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. Topics and cross curricular links throughout the school include aspects of personal development as well as wider issues of citizenship such as recycling and sustainability.

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. We recognise the potential role of sustainable schools in helping pupils to understand our impact on the planet; we aim to integrate sustainability into teaching and learning and also into wider school life. 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.

6 Science and Computing

6.1 Computing enhances the teaching of science in our school, because there are some tasks for which ICT is particularly useful. All classrooms have an interactive whiteboard. 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. 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.

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 working at greater depth, and those learning English as an additional language, and we take all reasonable steps to achieve this.

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 – 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 the objectives taught. This ensures that our teaching is matched to the child's needs.

7.3 Intervention through universal support may lead to the creation of an Individual Target Plan (ITP) for children with special educational needs. The ITP or Education and Health Care plan (EHCP) may include, as appropriate, specific targets relating to science.

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.

7.5 Out of school clubs also support the teaching of science and enable the children to participate in a range of fun and educational practical experiments.

8 Assessment

8.1 Assessment of children's learning in science is an on-going process through monitoring children's understanding, knowledge and skills in a range of concepts.

8.2 Children are encouraged to take an active involvement in their own learning through the use of oral and written feedback.

8.3 Staff assess science objectives termly against objectives taught and staff are required to make termly summative judgements into the school's tracking system on Insight. This allows class teachers to identify any prior gaps in learning and areas to be revisited. This also enable the subject leader and assessment co-ordinator to monitor data. (impact)

8.4 Pupil conferencing is a useful tool to gather pupil voice to move the subject forward. The responses are collated and fed back to staff to further develop teaching and learning. (Impact)

9 Resources

9.1 We have sufficient resources for all science teaching units in the school. In Key Stage 1 & 2 we keep these in a central store, FS have science topic boxes. The library contains a good supply of science topic books and computer software is used to support children's individual research. Children have a science area in their classroom including a working wall (displaying key 'sticky knowledge' and a collection of relevant science books linked to the current topic to access at various points during the week.

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 head teacher regular updates in which s/he reports on how they are moving the subject forward. The science leader will look at a range of resources to inform judgements e.g. planning, book looks, assessment, classroom environments, pupil conferencing and staff questionnaires.

11 Impact

11.1 Secure science teaching within school will equip our pupils with the skills and knowledge they require to be 'life long learners' with the aim they maybe one day aspire to jobs in the field of science.

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