Science Policy

September 2022

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1. Subject Statement

Intent

The 2014 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 scientific 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.

At St Peter's Academy Alton, our vision is to engage the natural curiosity of our pupils, to ignite a passion for exploring and discovering the world around them with confidence, so that they have a deeper understanding of the world we live in.

We believe in a hands on approach to science with exciting practical, explorative and investigative lessons at the heart of our curriculum.

Through this type of learning we aim to foster a thirst for knowledge and confident life-long learners.

We recognise the importance of science in every aspect of daily life. As one of the core subjects, we give the teaching of science the prominence it requires. We aim to equip pupils with knowledge, skills and understanding and to encourage children to be inquisitive throughout their time at St Peters. Throughout the programmes of study the children will acquire and develop the key knowledge that has been identified within each unit and across the year group. We will ensure that the Working Scientifically skills are built on and developed throughout a pupil's time at the school so that they can apply their knowledge of science when using equipment, building arguments and explaining concepts confidently. We will encourage them to continue asking questions and to be curious about the world around them.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

. Science will be taught in planned and arranged blocks. The blocks will follow a rolling programme and where possible will link with other curriculum subjects.

. Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves, Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves creating engaging lessons, involving quality resources to aid understanding of conceptual knowledge and skills and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up.

. We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

. Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Opportunities are found to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

. Children experience a range of extra activities, visits and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

. Other events such a Science Week, Wow Week, Projects Days and our 50 Things Venture allow children to come off timetable, to provide broader provision and the acquisition and application of knowledge and skills.

Impact

The successful approach at St Peters results in a fun, engaging, high-quality science education that provides children with the foundations and knowledge for understanding the world. Our children love Science!

Children will know more, remember more and understand more about the curriculum. Children retain prior learning and explicitly male connections between what they have previously learned and what they are currently learning.

All children will have:

. A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills

. A richer vocabulary which will enable them to articulate their understanding of taught concepts

. Confidence and a love of learning for all things science

2. Teaching and Learning

Early Years Foundation Stage

In the Foundation Stage, children are taught Science through the key areas of learning set out within the EYFS Framework.

Through a broad range of teacher-led, child initiated and continuous learning opportunities, children will be taught to;

. Use their senses to investigate a range of objects and materials

. Find out about, identify and observe the different features of living things, objects and worldly events

. Look closely at similarities, differences, patterns and change

. Ask questions about why things happen and why things work

. Develop their communication and co-operation skills

.Talk about their findings, sometimes recording them

.Identify and find out about features of the place they live and in the natural world around them

Key Stage 1 and Lower Key Stage 2

In Key Stage 1 and Lower Key Stage 2 Science is taught by the Science Co-ordinator. This ensures that the quality of Science teaching throughout these Key Stages remains consistent. Science is taught every week for 2 hours with additional sessions being taught where and when possible.

Science is taught in planned and arranged blocks. This is a strategy to enable the achievement of a greater depth of knowledge, Throughout our planning we involve problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and to research to discover answers.

The heart of Science teaching at St Peters is our commitment to practical, explorative and investigative learning. We believe in a hands on approach where children learn by having a go themselves. This approach encourages our children to build resilience and become creative, critical thinkers.

Our teaching and learning supports our curriculum by ensuring that lessons build on prior learning and provide opportunities for guided and independent practice.

At the start of each planned block the children are introduced to a scientist related to the topic they are studying. During the course of each block they will learn how their scientist has had an impact on the world. Vocabulary plays an important part in all science lessons and our children are taught to talk like a scientist. At St Peters science lessons provide a quality and variety of subject specific language to enable the development of children's confident and accurate use of scientific vocabulary and their ability to articulate scientific concepts clearly and precisely. They are encouraged and assisted in making their thinking clear, both to themselves and others, and teachers ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

3. Working Scientifically

Working scientifically specifies the understanding of the nature, processes and methods of science for each year group and this is embedded within lessons and focusses on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping, comparative and fair testing; researching using secondary sources. Pupils are given opportunity to seek answers to questions through collecting, analysing and presenting data.

Working Scientifically is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study,

4. Assessment

Children's progress is continually monitored throughout their time at St Peter's School and is used to inform future teaching and learning. By the end of each Key Stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the statutory requirements to extend our children and provide an appropriate level of challenge.

Children receive effective feedback through teacher assessment. Assessment for learning is continuous throughout the planning, teaching and learning cycle.
Children are assessed by a variety of methods;
. Observing children at work, individually, in pairs, in a group, and in classes
. Questioning, talking and listening to children
. Considering work/materials/investigations produced by children together with discussion about this with them

At the start of each lesson children also complete a scientific flashback of knowledge from the previous lesson. This work is recorded in personal books.
All other science work is recorded in a year group floor book.

At the end of each blocked science topic, key knowledge is checked. This assessment might be checked as individuals or as part of a group.

5. Planning and Resources

We use the DFES Science scheme of work and we have recently introduced Developing experts where all of their resources are mapped against the national curriculum, with a sustained focus on scientific skills and progression. The developing experts platform also allows the children to have their own logins where they can access assigned lessons and complete quizzes and wordsearches.

The key knowledge and skills of each science topic is also informed by the Associate of Science Education's Planning Matrices. There is also access to other resources such as Hamilton resources and Explorify.

Further evidence of 'good science' taking place in classrooms includes:

. An active learning environment with relevant Working Scientifically posters for age phase on the working walls and the scientist of the half term/term displayed alongside the appropriate vocabulary

. Children being encouraged to ask and answer questions and discuss their work and ideas

. Children devising and conducting their own investigations within the context of the relevant curriculum content, as well as being given opportunities to develop their working scientifically skills

. Children recording their findings in different ways

. Children showing enjoyment in the activities they are undertaking

. The cross curricular of science

Resources are kept in a cupboard in the hall and are replaced or updated as required. The library contains a number of books scientific related.

6. Organisation

Science will be taught in planned and arranged into topic blocks. We operate on a rolling programme basis.

Year A	Autumn	Spring	Summer
Class 2 (Year 1 and 2)	Animals including humans	Living things and their habitats	Living things and their habitats

Year A	Autumn	Spring	Summer
Class 3 (Year 3 and 4)	Living things and their habitats Rocks and Soils	Forces and Magnets Animals including humans	Plants Living things and their habitats

Year B	Autumn	Spring	Summer
Class 2 (Year 1 and 2)	Changing Seasons	Materials	Plants

Year B	Autumn	Spring	Summer
Class 3 (Year 3 and 4)	Animals including humans States of Matter	Sound Electricity	Light and dark

The principle focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of secondary sources, such as books, photographs and videos.

The principle focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first to talk about and, later, to write about what they have found out.

The Foundation Stage deliver science through the ‘Understanding the World’ area of learning. This involves guiding children to make sense of their natural world through opportunities to explore, observe and find out about people, places, technology and the environment. They are assessed according to Development matters.

7. Equal Opportunities

At St Peters we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

8. Inclusion (eg EAL/SEN/PPG/Provision for HA)

In school we aim to meet the needs of all of our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This involves providing opportunities for SEBD children to complete their own projects, 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 differentiated 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. Planning will be used to ensure that a range of strategies are used which include and motivate all learners, ensuring that optimum progress is made throughout each part of the lesson.

9. Role of the Subject Leader

The subject leader monitors books, floor books, resources and organises scientific activities for science week and wow days.

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