



## How Science is taught at Swindon Village Primary School.



Intent, Implementation and Impact

## Science at Swindon Village Primary School

### Curriculum Intent

SVPS has designed a Science curriculum which allows children to:

- 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 science enquiries that help them to answer scientific questions about the world around them
- be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

At Swindon Village Primary School, it is our intention to provide a high quality science education that provides children with the foundations they need to recognise the importance of Science in every aspect of daily life. We give the teaching and learning of Science high prominence.

Our curriculum will enable children to become enquiry based learners, collaborating through researching, investigating and evaluating experiences. It will encourage respect for living organisms and for the physical environment.

Teachers will ensure that all children are exposed to high quality teaching and learning experiences. These will hook the children's interest, enabling them to develop a sense of excitement and curiosity about natural phenomena. They will be encouraged to ask questions about the world around them and work scientifically to further their conceptual understanding and scientific knowledge.

Children will be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. It will provide opportunities for the critical evaluation of evidence and rational explanation of scientific phenomena as well as opportunity to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Children will be immersed in key scientific vocabulary, which supports in the acquisition of scientific knowledge and understanding.

Children will work through a range of exciting topics throughout their time at SVPS. Each topic has a comprehensive knowledge organiser which is used to ensure the children are able to develop their scientific knowledge and understanding (See examples of science knowledge organisers within the science KAT folder) There will be opportunities for exciting practical activities, science days and school trips which will engage children further in their studies.

Children's scientific enquiry skills will be developed in line with a clear skills progression. This document (See science curriculum document within the planning folder) enables the children to develop scientific enquiry skills each year and covers all of the strands of the NC.

The National Curriculum Expectations are:

## **EYFS**

### The Natural World

Children will explore the natural world around them, making observations and drawing pictures of animals and plants. They should know some similarities and differences between the natural world around them and contrasting environments, drawing on their own experiences. They should understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

## **KS1**

The principal 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.

## **LKS2**

The principal 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 write about what they have found out.

## **UKS2**

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena and analysing functions, relationships and interactions more systematically. They should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their

data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

## **Curriculum Implementation**

Throughout their time at SVPS, children will cover a wide range of exciting topics and develop a sense of excitement and curiosity about natural phenomena. Each unit is supported by a comprehensive knowledge organiser. They will work scientifically and develop their scientific enquiry skills in accordance with the SVPS skills progression document. This allows the children to acquire and develop scientific skills appropriate to their year group and also ensures progression throughout the school. Children are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

- Science is taught weekly throughout each term of the year.
- Where possible links are made with other subjects to enrich learning.
- During the Spring term there will be a 'Science Day' with a launch and landing experience throughout the school to develop scientific enquiry skills
- There will be an introduction to the new topic using the knowledge organiser.
- Each lesson will consist of a mini quiz to develop the 'know more, remember more' opportunities.
- Children will cover a range of the 5 scientific enquiry types throughout each topic – these are identified by the relevant coloured enquiry symbols in their books.
- At the end of each unit, children will complete an assessment task, which assesses knowledge and understanding gained throughout the unit and key information featured on the knowledge organiser.
- Children will get the opportunity to go on various trips throughout their time at SVPS – Y4 & Y2 will visit The Cheltenham Science Festival, annually

Teachers are expected to:

- Plan engaging lessons which build on prior knowledge. They need to include teaching of the skills as stated in the skills progression document.
- Engage the pupils through the use of purposeful resources and use of media to carry out practical sessions.
- Teachers will plan time for the 5 enquiry types as identified in the curriculum document – coloured enquiry stickers will be used to identify these in children's books.
- Begin each lesson with a review of the knowledge organiser (Quick-fire quiz) to support children in retaining the scientific knowledge.
- Create an engaging learning environment including a science display appropriate to the topic.
- Model and use the correct vocabulary related to each unit.

- Provide a range of engaging resources to enable the children to carry out fun and exciting experiments to deepen their learning and develop their understanding of the concept that is being taught.
- Plan exciting investigative activities, utilising scientific equipment.
- Plan opportunities for paired, group and class discussion to consolidate learning.
- Undertake end of unit assessments and add assessment data to T- Drive.
- KAT team will carry out regular monitoring to include book scrutiny and pupil interviews
- Support, encourage, foster and nurture a love of Science

SVPS ensures that all children can access learning in Science by:

- Adapted learning where necessary
- Small group or 1:1 support where and when necessary
- Afl strategies used in the classroom to assess children's learning and adapt teaching or tasks where necessary
- Providing additional activities to challenge children

SEND or EAL children are supported at SVPS by:

- Widget vocabulary mats
- Seating plans are considered and used to support where necessary
- Providing visual or practical prompts
- Work may be adapted so that all children can meet the Learning Objectives.
- Teachers to use AFL to identify which children will need support during different lessons.
- Teaching lessons using a variety of techniques to appeal to different learning styles such as visual, auditory, kinesthetic

.

\

## **Curriculum Impact**

All children in the school will be able to speak confidently about their science learning, skills and knowledge. They will have a good depth of knowledge about the units studied and will be able to apply this knowledge and skills to their learning in the future.

Children engaged in scientific learning:

- Are engaged and enthusiastic learners
- Able to ask and answer questions about scientific phenomenon
- Pose their own questions and predictions for investigation
- Draw conclusions based on observations and evidence
- Actively involved in launch and landing days and trips
- Discuss, reflect and share their learning

At SVPS we know our children are doing well by:

- Participating in lessons which are planned based on the knowledge organisers, skills progression document and prior learning
- Marking and feedback
- Photographic evidence
- Displays of work
- Book scrutiny and pupil interviews
- Questioning during lessons and investigations
- Observations of children during investigation and exploration
- Talking about their science lessons and discoveries they've made
- Using and explaining the meaning of scientific vocabulary
- Confidently explaining what they have learnt
- Formative assessment through Quick-fire quizzes from the knowledge organisers at the beginning of every lesson
- Assessment tracked at the end of each block of work

Children at SVPS will become inquisitive, reflective learners who are enthusiastic about science. They will be able to share their knowledge and skills. They will gain a deeper understanding of the world that we live in and the role that we all need to play in research, innovation, engaging practice and new techniques.