

**Simonstone St. Peter's CE Primary School**  
**Science Policy**



**Our Mission Statement – ‘Keys to Faith and Knowledge’**

*At Simonstone St Peter's School we want every child to:  
Be confident and happy about who they are;  
Have knowledge and skills for life and to work together and make friends;  
Learn to have faith and understand differences;  
Learn through Jesus that we are loved and can love; that we can talk to others; find  
guidance to be a better and stronger person, to know right from wrong and find forgiveness;  
Show care, kindness and appreciation in the world.*

This policy document was adopted by the staff of Simonstone St Peter's CE Primary School during May 2016 . This policy outlines the guiding principles by which this school will implement Science in the National Curriculum (2016) in England - in the context of the [Local Authority's / governing body's] curriculum policy statement and its staffing, health & safety and equal-opportunities policies. It is reviewed periodically.

Our rationale for teaching science:

Science is a body of knowledge built up through experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability. Our aims in teaching science include the following.

- Preparing our children for life in an increasingly scientific and technological world.
- Fostering concern about, and active care for, our environment.
- Helping our children acquire a growing understanding of scientific ideas.
- Helping develop and extend our children's scientific concept of their world.
- Developing our children's understanding of the international and collaborative nature of science.

**Attitudes**

- Encouraging the development of positive attitudes to science.
- Building on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work cooperatively with others.

- Providing our children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

### **Skills**

- Giving our children an understanding of scientific processes.
- Helping our children to acquire practical scientific skills.
- Developing the skills of investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Developing the use of scientific language, recording and techniques.
- Developing the use of ICT in investigating and recording.
- Enabling our children to become effective communicators of scientific ideas, facts and data.

### **Aims**

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

### **Scientific knowledge and conceptual understanding**

The programmes of study in science describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points in transition, build up serious misconceptions, and /or have significant difficulties in understanding higher order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up and extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

The social and economic implications of science are important but, they are taught most appropriately within the wider school curriculum.

### **The nature, processes and methods of science.**

‘Working scientifically’ specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The National Curriculum guidance notes give examples of how working scientifically might be embedded within the content of biology, chemistry and physics, focusing 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 enquiry should include: observing over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing, controlled investigations and researching using secondary sources.

### **Spoken Language**

The national curriculum for science reflects the importance of spoken language in pupil's development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating specific concepts clearly and precisely.

### **School Curriculum**

The programmes of study for science are set out year- by- year for key stages 1 and 2. Schools are, however, only required to teach the relevant programmes of study by the end of each key stage. We therefore have the flexibility at Simonstone to introduce key stage content at an earlier or later stage than set out in the programme of study. The teachers have had meetings to discuss this and have worked out a curriculum that suits the school's needs.

The school is required to set out the curriculum for science on a year –by-year basis and has made this information available online.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programmes of study.

### **How science is structured through the school**

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of (*National Curriculum Science and science in the Foundation stage*).

Science teaching in the school is about excellence and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school.

KS1 and Foundation stage teachers should be teaching science for a minimum of one hour each week.

KS2 teachers should be teaching science for a minimum of two hours per week.

In KS 1/Foundation stage, a minimum of one third of lessons overall should include practical scientific enquiry.

In KS 2, a minimum of 50% of lessons overall should include practical scientific enquiry.

The school follows the Scheme of Work for National Curriculum Science (*in England*). The units of the Scheme of Work are taught as described below, agreed after whole-staff discussion. This ensures progression between year groups and guarantees topics are revisited. Teachers are expected to adapt and modify the model plans to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available. We must ensure that any modification does not overlook any areas of the science scheme.

***We have modified the scheme of work as follows:***

Generally, one unit may be taught in each half term.

At this moment, both key stages run a two year rolling programme to ensure there is complete coverage of the curriculum.

Some units may have been moved between years, or amalgamated, where appropriate.

Units on plants are commonly taught in the spring and summer terms.

Because of mixed-age classes in the school, some units may be taught out of their year group.

### **Key stage 1**

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. by using different types of 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 information. They should be able to use simple scientific language to talk about what they have found out and communicate these ideas to a range of audiences in a variety of ways. Most of their learning about science should be done by first hand practical experiences, but there should also be some use of appropriate secondary sources such as books, photographs and videos.

‘Working scientifically’ must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- ✚ Asking simple questions and recognising they can be answered in different ways
- ✚ Observing closely, using simple equipment
- ✚ Performing simple tests
- ✚ Identifying and classifying
- ✚ Using their observations and ideas to suggest answers to questions
- ✚ Gathering and recording data to help in answering questions

### **Programmes of study for Key Stage 1**

Year 1- Plants, animals including humans, everyday materials and seasonal changes.

Year 2 – Living things and their habitats, plants, animals including humans and uses of everyday materials.

Following discussions with Key stage one teachers, the curriculum planned to ensure continuity between year one children in class one and class two and will be on a two year rolling programme. This is a work in progress and will be monitored closely.

### **Lower Key Stage 2 – Years 3 and 4**

Our principal focus of science teaching at this stage 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, 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. They should draw simple conclusions and use some scientific language, first to talk about and, later to write about what they have found out. Pupils should now read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Statutory requirements at this age state that during year 3 and 4 the children should be taught the following practical scientific methods, processes and skills-

- ✚ Ask relevant questions and use different types of scientific enquiries to answer them
- ✚ Set up simple practical enquiries, comparative and fair tests
- ✚ Make careful observations, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- ✚ Gather, record, classify and present data in a variety of ways
- ✚ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables
- ✚ Report on findings, including oral and written explanations, displays or presentations of results or conclusions
- ✚ Use results to draw conclusions, make predictions, suggest improvements and raise further questions
- ✚ Identify differences, similarities or changes related to simple scientific ideas and processes.
- ✚ Use straightforward scientific evidence to answer questions to support their findings

At lower key stage two pupils will study –

Plants, animals including humans, rocks, light, forces and magnets, living things and their habitats, states of matter, sound and electricity.

### **Upper Key Stage 2 – Years 5 and 6**

Our principal focus here is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.

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.

At upper key stage two the pupils will study –

Living things and their habitats, animals including humans, properties and changes of materials, earth and space, forces, evolution and inheritance, light and electricity.

Key stage two Science in each class will be covered over a two year period.

### **Our Approach to Science**

The essential elements describing how science is taught in our school are described below. We have adopted the Lancashire primary science scheme, which is available for all staff. Teachers' notes and pupil task sheets have been adapted to the needs of our children. We use ICT widely in science. Children are given the opportunity to practice science skills and enhance their presentation using carefully-chosen software.

We use ICT for enquiry work, including microscopes with digital cameras, video capture of images and activities, and

We use the school's intranet to share science resources.

Other resources include selected video and wallchart resources; short video sequences and other teaching resources have been networked for interactive-whiteboard use.

The school combines these secondary sources with first-hand scientific enquiries, building children's science skills.

We actively teach science skills, and reinforce learning with selected enquiry simulations.

We encourage children to ask and answer their own questions as far as practicable.

Children complete at least two full enquiries each term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results.

We use homework to support school and class activities. This relates to the school's overall homework policy.

We use cross-curricula links to science with, for example, design and technology units.

We develop science informally through science clubs, British Association of Young Scientists membership, local Wildlife Trust membership, school visits, parent meetings and other out-of-school activities.

### **Equal Opportunities in Science**

Science is taught within the guidelines of the school's equal-opportunities policy.

We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, class, physical or intellectual ability.

Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.

We aim to teach science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds.

We draw examples from other cultures, recognising that simple technology may be superior to complex solutions.

We value science as a vehicle for the development of language skills, and we encourage our children to talk constructively about their science experiences.

In our teaching, science is closely linked with literacy and mathematics.

We recognise the particular importance of first-hand experience for motivating children with learning difficulties.

We recognise that science may strongly engage our gifted and talented children, and we aim to challenge and extend them.

We exploit science's special contribution to children's developing creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

Enhance the science curriculum at every opportunity with visitors to school, science shows, accessing funds such as the Edina Trust and excursions to science related places of interest and liaisons with local colleges and high schools.

### **Assessment and Recording in Science**

We use assessment to inform and develop our teaching.

Topics commonly begin with an assessment of what children already know.

Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of, each topic record achievement and celebrate success. For example, children at Key Stage 2 self-mark completed work with 'three stars and a wish' - identifying three good points in their work and one in which they could improve.

We mark each piece of work positively, making it clear verbally, or on paper, where the work is good, and how it could be further improved. Children's work is compared with model answers to determine its level. Work is moderated together to ensure that our levelling is consistent. Assessment records are reviewed annually.

We are introducing a tracking system to follow and accelerate children's progress. This will run alongside the English and Maths tracking that has already been successfully implemented in school, following new curriculum guide lines. The school science coordinator monitors progress through the school by sampling children's work at regular intervals and conducting book scrutinies. Children who are not succeeding, and children who demonstrate high ability in science, are identified and supported.

The school uses commercial end-of-unit tests to assess learning and point up areas where remedial work is needed using Test Base, a new tool for assessment and KLIPS ( Key Learning Indicators of Performance) This will be discussed and reviewed with the staff at staff meetings. Equally important is the continuous assessment of children's work, much of which is informal. This assessment is used to inform teaching throughout the school. Assessment is therefore both summative and formative.

Reports to parents are made verbally twice a year at parent's evenings and written once a year, describing each child's attitude to science, his/her progress in scientific enquiry and understanding of the content of science.

### **Review**

This science policy will be reviewed by the science curriculum leader and the senior management team.

Date for next review of this document Summer 2018