# St John's Upper Holloway CE Primary School

# Science policy

**November 2020**

**Our Vision**

*Jesus said: 'Love each other as I have loved you'.* John 15:12
As we are loved, so we shall love.
As we are taught, so we shall teach.
As we are nurtured, so we shall flourish.

**Our Mission**

St John's is a small, caring Church of England Primary School. It is committed to supporting our pupils to be happy, successful and fulfilled throughout their lives. We believe that everyone is unique and valued by God. We aspire to be a high achieving school that provides an outstanding education:

- promoting the highest standards of teaching and learning, with excellent leadership
- being inclusive, celebrating diversity and valuing all religions, faiths, cultures and backgrounds
- providing a rich and stimulating curriculum that will inspire and challenge
- being a happy, healthy and safe place
- providing excellent care, guidance and support with a strong partnership between school, parents and the community.

**We seek to promote six Christian values of creativity, thankfulness, truthfulness, friendship, perseverance and courage, each linked by our core value of love. We believe these help to prepare our children for a successful and fulfilling life, so being:**

- considerate and respectful with excellent manners
- confident, happy, independent and self-motivated
- co-operative and collaborative
- honest and trustworthy
- resilient, hardworking and determined
- highly principled with moral, spiritual, cultural and social awareness, including shared British Values.

# SCIENCE POLICY

Policy approved by staff and governors Nov 2020
Date for review Nov 2022

**CONTENTS**



## 1. Aims and Objectives for the teaching and learning of science

We want our children to have opportunities to explore the awe and wonder associated with the world around them, to ask and reflect on 'big questions' and to gain the skills and confidence to work with greater independence and precision. Our science curriculum should be inspiring and challenging and enable learning to take place beyond the classroom. Our school vision, based on love for one another, extends to our science curriculum, which provides opportunities for children to explore how we can care for the natural world and everything within it.

Science is a core subject within the National Curriculum. The aims of the science curriculum are to ensure that all our children:

- 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
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

The teaching of science should also help develop the key scientific skills (working scientifically) of;

- Planning and carrying out investigations.
- Using equipment correctly.
- Communicating ideas, verbally and through a variety of written and recorded means.
- Observing over time.
- Pattern seeking.
- Identifying.
- Classifying and grouping.
- Comparative and fair testing (controlled investigations).
- Researching using secondary sources.
- Evaluating results and drawing conclusions.

Through developing science skills pupils should acquire knowledge and understanding of:
- Plants
- Animals including humans
- Evolution and inheritance
- Living things and their habitats
- Seasonal change
- Earth and space
- Light
- Sound
- Electricity
- Forces
- States of matter
- Properties and changes of materials

Science also provides opportunities for children to develop key skills of:
- Communication in a variety of contexts through promoting the skills of reading, writing, speaking and listening.
- Application of number through the use of weights and measures, handling data, estimating and predicting.
- Use of computing to measure, record, present and interpret Data where appropriate, use of the internet and CD Roms.
- Working cooperatively with others.
- Problem solving.

## 2. Curriculum Planning

At St John's CE School we use Snap Science as the primary resource for planning supported by other resources as appropriate.

Science is planned for in two ways at St John's:

1. **Through weekly lessons**
2. **Through "blocking" times** in the weekly timetable for a series of weeks and teaching the science topic as a "unit of work".

The topics in science build sequentially on prior learning and are based on the national curriculum programme of study. Children are given the opportunities to develop their skills and knowledge in each unit. Progression is built into the science curriculum maps to ensure that children are increasingly challenged as they move through the school. The learning that is to take place within each science unit, as well as the core vocabulary and assessments that will be undertaken, are clearly set out in 'knowledge organisers' and these are used by both the pupils and teachers to help them reflect on their learning as the unit progresses.

**Long Term Planning**

- The Long term curriculum overview maps for each year group outline the units to be covered during each term. Units are arranged to ensure breadth and balance of the content areas across both key stages. These plans are reviewed and updated yearly.

**Medium Term Planning**

- Medium term plans include key objectives for each unit.
- They also include opportunities for working scientifically and highlight assessment activities, displays, trips and links to previous work when applicable.

**Short Term Planning**

- Weekly science plans and/or "blocked unit" plans provide more detail about each lesson and include an outline of the introduction, main activity, plenary, suggestions for differentiation, resources, key questions, vocabulary and evaluation.

## 3. Teaching and Learning styles

A variety of teaching styles are used to teach science. The main focus is to provide practical and investigative activities that enable the children to develop their knowledge, understanding and skills through first hand experience.

This will involve:

- Reviewing prior learning and recapping on how the learning for each lesson relates to the 'Big Question'
- Whole class teaching activity linked to the learning objective and steps to success
- Enquiry based research activity.
- Discussion between pupils and teacher.
- The opportunity to use a variety of data such as statistics, graphs, pictures and photographs, etc.
- Use of computing to enhance learning.
- Role play.
- Presenting reports to the rest of the class.
- A wide range of problem solving activities.
- Carrying out practical experiments and analysing the results.

Because we know our children have a wide range of abilities and needs, we ensure that we provide suitable learning opportunities for all, by:

- Setting common tasks which are open ended and can have a variety of responses.
- Setting tasks of increasing difficulty.
- Grouping children in a way that will enhance learning opportunities. This may not be based on their ability to work collaboratively and provide mutual support for each other.

- Providing resources of different complexity, matched to the ability of the child.
- Using teaching assistants to support and extend the work of individual children or groups of children.
- Where appropriate, planning lessons with support teachers to support children with SEND (Special Education Needs and Disabilities) or who speak English as an additional language (EAL).

At the end of each lesson children should be given the opportunity and support to reflect on their own learning in relation to the LO and steps to success. They should also relate their learning to the 'Big Question' for that unit and consider how the lesson has provided them with additional knowledge and understanding to answer the question.

## 4. Teaching in the Early Years Foundation Stage

Science is covered in the EYFS by the "Exploration and Investigation" strand of "Understanding the World", one of the seven curriculum areas. We aim to provide an 'enabling environment' that will enable children to learn through play and exploration. Such provision will also provide opportunities for children to develop their characteristics of effective learning ie

- **playing and exploring** - children investigate and experience things, and 'have a go'
- **active learning** - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
- **creating and thinking critically** - children have and develop their own ideas, make links between ideas, and develop strategies for doing things

Children may explore science independently, for example; by playing with magnetic materials, observing how objects float or sink in water or by creating simple electrical circuits and a typical week would provide opportunities to do so, both inside and outside of the classroom. Adult-led science based activities could include discussing the changes that take place during cooking and longer term projects such as growing plants and observing the life cycle of a butterfly.

We teach science in Nursery and Reception classes as an integral part of the topic work covered during the year. As these classes are part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in Development Matters and the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to developing a child's knowledge and understanding of the world, for example through investigating what floats and what sinks when placed in water.

## 5. Science and Inclusion

At St John's we teach science to all children, taking into account 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 SEND (special educational needs), those with disabilities, those with special gifts and talents, and those learning English as an additional language.

When attainment 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, and differentiation – so that we can take some additional or different action to remove or limit possible barriers to learning. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

Children with the greatest barriers to learning ie those with an education and health care plan (EHCP) should still have access to the science unit being studied. This requires the class teacher and 1:1 teaching assistant to plan activities carefully that will match the cognitive ability of that child. Assessments should also be undertaken to inform their progress in relation to the goals from their EHCP as well as subject specific goals.

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.

## 6. Assessment

Science can be assessed in a variety of ways over a variety of time scales.

Science is assessed using the new National Curriculum guidelines. This will identify whether pupils have met the objectives of each unit, are working towards them or have exceeded them. We use the knowledge organisers in each pupil's book to highlight the extent to which the objective has been achieved. This judgement is based on on-going evaluations within each lesson as well as end of unit assessments.
Science will be reported on at termly parent meetings and formally at the end of each academic year (in report form).
Ongoing assessment to inform day to day teaching and learning will be undertaken by the teacher in the following ways:

<u>Marking</u>
Marking should be specific to the learning objective. This may explain how a child approached the task and if they have displayed any specific skills or progress. They also act as a teaching device to inform the teacher where the gaps are in each child's progress, and help to assess where a child is in relation to national curriculum objectives.

## 7. Cross-curricular links

### English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. The children develop oral skills in science lessons through discussions (for example about the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information in a variety of ways.

### Mathematics

Science contributes to the teaching of mathematics in a number of ways. When the children use weights and measures, they are learning to use and apply number. Through working on investigations they learn to estimate, make predictions and recognise trends and patterns. They develop accuracy in their observation and recording change over time. Many of their answers and conclusions include numbers and this provides good foundations for formulae work later in life.

### Personal, social and health education (PSHE+C) and citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children learn factual information about legal and illegal drugs, and can also discuss the impact that they have on individual lives and wider society. Secondly, the subject gives children numerous opportunities to debate and discuss. Science thus promotes the concept of positive citizenship.

### 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. 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.

### Computing

Information and communication technology enhances the teaching of science in our school significantly, because there are some tasks for which computing is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software and the internet are used to animate and model scientific concepts, and to allow children to investigate processes which it would be impractical to do directly in the classroom. Children use computing 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 can use this to enhance their learning. We use a variety of websites to enhance and support the teaching of science in our school.

## 8. Resources

Science resources can be located in the following places:

- Science topic boxes/general resources – stored in the learning room between Year 5 and 6
- Published teacher materials, including resource packs and teacher guides, are kept on the shelves in the staff room.
- Online planning resources (Snap science) – each teacher has a log in to access all planning and linked resources

The science subject leader has an inventory of all equipment held in the school and this can be found in the subject leader file. Teachers should inform the science subject leader if equipment is damaged, depleted or needs replacing. They can also request additional topic resources should they intend to embark on a special project and the science budget is managed to enable this.

## 9. Monitoring and review

The Headteacher, Deputy Headteacher and the science subject leader will monitor the effectiveness of the policy.

Approved by staff _____ (head) on _____

Approved by Governors _____(chair of C&S committee) on _____

Review: October 2022