St. John's C. of E.

Blackpool's First Free School 1817

Science Policy

'In everything, do to others what you would have them do to you.'
Matthew 7:12

Be Kind Be Forgiving Be a Good Friend Be Honest Love One Another

Be part of our St John's family!

Updated: Sept 2023 Next review due: Sept 2026

Introduction

Our school science policy sets out a framework within which teaching and teaching support staff can operate and gives guidance on planning, teaching and assessment. It should be read in conjunction with the National Curriculum, which sets out in detail what the children will be taught. This document is designed for all teaching staff, all staff with classroom responsibilities, school governors, inspection teams and LA adviser/inspectors. Electronic copies are available for all teachers and teaching support staff via Google Drive. Copies can be made available, on request, to supply / trainee teachers, governors and parents. Policies can also be found on our school website and paper copies are available in the Policy folder held in the main office.

'A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.' (Primary National Curriculum 2013)

Science encourages pupils to think about their own place in the world, develop a respect for their environment and how they can make an impact on everyday life, thus supporting the school mission statement:

"Everyone matters in God's world."

and reflects our ethos which, promotes, recognises, celebrates and welcomes diversity, honesty, respect and tolerance. This is rooted in our theological Christian vision: 'In everything, do to others what you would have them do to you.' Matthew 7:12

Aims

The teaching staff aim by the time a child leaves St John's CE Primary School they will have been encouraged to:

- Enquire, explore and observe so that they can retain and develop their natural sense of curiosity about themselves and the world around them;
- Develop a set of values and attitudes which promote scientific ways of thinking and also satisfies this curiosity with knowledge;
- Ask and answer scientific questions;
- Plan, carry out and evaluate scientific investigations independently using a range of scientific equipment including ICT effectively;
- Become effective communicators of scientific ideas, facts and data;
- Develop a respect for the environment and living things and for their own health and safety;
- Have an awareness of how major scientific ideas and work of scientists contribute to technological change and how this impacts on improving the quality of our everyday lives;
- Begin to build up scientific knowledge and understanding which will serve as a foundation for future enquiry.

Teaching and Planning

St John's Whole School Definition of Science:

EYFS and KS1: Science is a way to understand our world by looking at it.
KS2: Science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments.

EYFS
Understanding of the world.

The world: Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one to another. They make observations of animals and plants and explain why some things occur, and talk about changes.

Key Stage One
Pupils observe, explore and ask questions about living things, materials and physical phenomena. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They begin to evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out more about scientific ideas. They share ideas and communicate them using scientific language, drawings, charts and tables with the help of ICT when appropriate.

Key Stage Two
Pupils learn about a wider range of living things, materials and physical phenomena. They make links between ideas and explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They think about the effects of scientific and technological developments in the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They start to plan and carry out investigations independently and in small groups.

Teaching and Learning

All Science lessons have clear learning questions which are shared and reviewed with the pupils effectively throughout the lesson.

A variety of creative assessment strategies and retrieval techniques are used by teachers and support staff including questioning, discussion, concept-mapping (at the beginning and the end of the topic) and live marking in science lessons. These assessment strategies are used to assess the children's progress at different times during the topic. The information is used to identify next steps in the children's learning. The children are encouraged to devise their own scientific questions which they would like to find out during the topic and this also aids teacher's planning for the topic.

Scientific activities inspire the pupils to experiment and investigate the world around them and to help them raise their own questions such as 'why....?' 'how...? and 'what happens if...'

Activities in science lessons develop the scientific skills of enquiry, observation, locating sources of information, selecting appropriate equipment and using it safely, measuring and checking results, making comparisons and communicating results and findings.

Lessons make effective links with other curriculum areas and subjects, especially English, Maths and ICT. When appropriate, links are made with current curriculum topics.

Science activities and investigations are challenging, thought-provoking, motivating and extend pupil's learning and enjoyment of the subject.

Pupils have frequent opportunities to develop their skills in, and take responsibility for, planning investigative work, selecting relevant resources, making decisions about sources of information, carrying out activities safely and deciding on the best form of communicating their findings. In Upper Key Stage Two children are encouraged to choose their own way to record their work.

Teachers plan science units of work using National Curriculum. Lessons are evaluated which informs future planning and allows assessment to take place. Learning questions for each science lesson are a balance of scientific knowledge (substantive) and skills based (disciplinary). The pupils are taught through practical science investigations, inclusive and creative activities and use of I.C.T. Key Stage One and Two teachers plan according to the needs of the children to ensure continuity and progression of knowledge and skills. The EYFS teacher plans with consideration of the early learning goals.

The recording of Science can take various forms including:

- Photos (taken by pupils or adults) in science lessons
- Whole school 'Pink' evidence books
- Children's individual science books
- Class/Group science books
- Class science visits
- Working walls in classrooms and displays
- Practical activities e.g art/models
- Use of I.C.T
- Comments/observations by children, recorded by adults
- KS1 Nature/KS2 Field Journals (used throughout the year by the children)

Resources

Science resources are kept in each classroom where they have been grouped into topic boxes relevant to each year group. Resource opportunities are also enhanced by many opportunities throughout the year by external science visits and expertise from local high schools when available. I.C.T is used to enhance teaching and learning. These include dataloggers, microscopes, simulation software, digital cameras, I-Pads and Chromebooks.

Assessment

Throughout the year science is assessed in a variety of ways both summative and formative. Teachers assess the children's skills throughout the units of work. Science levels are reported at the end of Key Stage One and Key Stage Two. Children's progress in science is recorded by the class teachers as an ongoing process and shared with the science subject leader and the senior leadership team on a termly basis.

Health and Safety

If guidance or advice is needed teachers and support staff are advised to speak to the science leader. Safe practice as indicated in publication 'Be Safe' must be promoted at all times. Teacher must also take into account the school's Health and Safety policy. Particular attention must be given to avoiding the use of anything that aggravates individual pupils' allergies. Safety issues have been identified in medium-term planning and risk assessments must be completed in weekly planning when activities are identified that are unusual and

beyond the scope of normal safety practice. If members of staff are unsure of health and safety requirements they must speak to the science subject leader for advice as soon as possible.

Extra-curricular opportunities

There are opportunities for children to visit of scientific interest and for visitors to come into school in order to support the learning questions for units of work where relevant. In addition, the school hold an annual 'science week', the aims of which are to increase awareness of science in everyday life and to encourage curiosity and enthusiasm for science. Parents and Governors are also invited in to school during this week.

Monitoring

The science subject leader monitors scientific knowledge, skills and progression throughout the school on a regular basis. A selection of science work is collected and moderated in staff meetings and in subject leader time. Pupils may also be involved in monitoring through pupil conferences and questionnaires. A summary of science attainment, teaching of scientific skills and further developments are recorded annually to inform subsequent whole school development plans. Feedback is given by the science leader to individual teachers celebrating successes and giving clear next steps.

Parents and Carers

Parents and carers have an important role to play in helping their children learn about science. Their role is enhanced by the use of science displays around the school to raise their interest and the interest of their children in the subject. Matters of topical scientific interest are raised for parents and their children to investigate or observe together. Parents are invited to attend events during the annual 'science week'. There is also a section on the school website about science throughout the school.

Science across the curriculum

The teaching of English, Maths and I.C.T is promoted strongly in science as part of the school's drive to raise standards in English and Mathematics. Science is used to extend and enable the pupils to practise the skills of language and literacy and numeracy. Where appropriate links are made to other curriculum subjects.

English

In particular, at Key Stage One, the pupils are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At Key Stage Two the pupils are encouraged to develop their skills of writing to record their planning, predictions, observations and what they found out.

Maths

At both key stages the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their mathematical skills at levels similar to those which they are using in their mathematics lessons.

I.C.T

The pupils' ICT skills are applied as identified in the medium-term planning. At both key stages this involves the pupils using I.C.T to locate and research information, record

findings, log changes to the environment over time, gain confidence in using I-pads, digital cameras as well as using I-pads and chromebooks.

Personal, social and health education
RSE education is compulsory – aspects of which are covered in the National Curriculum for science.
Sections of the science Programme of Study relating to the human biology, life cycles or reproduction include:

Year 1 Pupils should be taught

- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Non-statutory guidance: Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.

Year 2 Pupils should be taught to:

- notice that animals, including humans, have offspring which grow into adults. Non-statutory guidance: They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.

Year 3 Pupils should be taught to:

- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Year 5 Pupils should be taught to:

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • describe the life process of reproduction in some plants and animals.
- *Non-statutory guidance*: Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals. Pupils should be taught to: • describe the changes as humans develop to old age. Non-statutory guidance: Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.

Year 6 Pupils should be taught to:

- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- *Non-statutory guidance*: They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles.

Further guidance: "In primary schools, at key stage 1 (ages 5 to 7), pupils are taught about the main external body parts. While we have not specified sexual parts of the body at this stage, teachers will be able to cover this material if they think it is appropriate to the needs of their pupils. At key stage 2 (ages seven to 11), pupils learn about changes to the human body as it grows from birth to old age. Puberty is a significant part of this and will be covered during upper key stage 2, as part of content on the human life cycle." DfE July 2015

Leadership and Management

The role of the science subject leader is to:

- Take the lead in policy development and review, including the continuing successful implementation of the science curriculum throughout the whole school.
- Support colleagues in the development of weekly plans from schemes of work.
- Keep up to date on local and national initiatives and share information with staff.
- Attend Lancashire science subject leader update meetings termly.
- Attend online and CPD science training.
- Take responsibility for the purchase and organisation of scientific resources.
- Encourage the professional development of staff.
- Lead regular staff meetings about the subject.
- Monitor science throughout the school, moderate examples of recorded work and drop into science lessons on a regular basis.