



Buckland Primary School

SCIENCE POLICY



AIMS AND OBJECTIVES

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life.

The aims of the science curriculum are to ensure that all 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

TEACHING & LEARNING

We use a variety of teaching and learning styles in science lessons to develop children's knowledge, skills and understanding. This may be achieved through whole-class teaching or by engaging the children in paired or small-group enquiry-based research activities. We encourage the children to ask, as well as answer, scientific questions.

Working scientifically is embedded within science lessons. This encompasses observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources.

We aim to provide activities that are practical, challenging, motivating and extend pupils' learning. 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; making observations and comparisons; measuring and checking results; and deciding on the best form of communicating their findings.

Where possible we provide science enrichment opportunities; we have links with our local secondary school as well as Surrey University, both of whom provide workshops for our KS2 children.

We recognise that there are children of differing scientific abilities in all classes. To ensure all children are able to succeed we use the following strategies:

- Use mixed ability groupings to provide peer to peer support - sometimes with defined roles for each member of the group (particularly in UKS2)
- Use additional adults to support the work of individual children or small groups
- Provide challenge through questioning and/or extension tasks
- Use scrap books (KS1) to record whole class science experiences, with quotes from the children

EXPECTATIONS

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

They should also be able to use, understand, read and spell the associated scientific vocabulary. At KS1, children are only expected to read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge.

SCIENCE CURRICULUM PLANNING

In Reception, the children follow the Early Years Foundation Stage (EYFS) curriculum, where science makes a significant contribution to achieving the Early Learning Goal for Knowledge and Understanding of the World.

The rest of the school follows the programme of study for science outlined in the 2014 National Curriculum, which is mapped out on a long-term plan to show when the relevant blocks of knowledge are taught within each year group and how these fit together across the key stages to ensure progression. Where possible, science is linked to class topics but may sometimes be taught as discrete units and lessons to ensure coverage. Careful consideration has been given to the sequencing of science topics both to ensure coherence in learning and to fit in with the seasons (plants, habitats, light).

Our medium term plans are broken down into discrete, detailed, weekly lessons which identify the learning objectives, success criteria, science activities, investigations, assessment opportunities, key vocabulary, key questions, cross curricular opportunities, SMSC and safety issues.

The first lesson of each block of work is allocated to determining the children's prior learning through mind-mapping (either individually or as a whole class) and what they want to know/ find out about.

CROSS-CURRICULAR LINKS TO SCIENCE

The teaching of English, mathematics and computing is promoted strongly in science as part of the school's drive to raise standards. Art, D&T and drama may also be taught through science on occasion.

ENGLISH

Pupils are actively encouraged to develop their scientific vocabulary and their oral communication skills. They develop their skills of writing to record their planning, what they observe and what they found out. There may be opportunities for practising different genres of writing, such as writing instructions, persuasive writing, recounts and explanations. The children also develop their scientific thinking and understanding through whole class reading of scientific texts.

MATHEMATICS

Pupils are expected to use their knowledge and understanding of pattern seeking, measurement and data handling at appropriate levels.

COMPUTING

The pupils' computing skills are applied as identified in the medium-term planning. At both key stages this involves the pupils using computers or I-pads to: locate and research information; record findings (using text, data and tables) and log changes to the environment over time (sensing equipment). The children MUST follow the school's E-safety code when using computers. Pupils are also expected to become confident in using calculators, video cameras, digital cameras, and voice-recorders/microphones – opportunities for using this equipment should be identified in the medium-term planning.

SPIRITUAL DEVELOPMENT

Spiritual development is encouraged through reminding pupils of the mystery and wonder of science and the effect of scientific discoveries on the modern world. Topical scientific issues and the Darwinian Theory in relation to Creationism are also discussed when and where appropriate.

PERSONAL SOCIAL & HEALTH EDUCATION (PSHE) & CITIZENSHIP

Science makes a valuable contribution to the teaching of PSHE and citizenship. The children learn to work together collaboratively and they develop a sense of global citizenship by looking at the impact of scientific developments (such as medicine) across the world.

Health education is taught within *Animals, including humans* and includes learning about teeth and eating; moving and growing; keeping healthy and life cycles. Changes associated with puberty are taught in Upper KS2 as part of Sex and Relationships Education. Correct scientific terminology is used to name the body parts and to describe how bodies work. We ensure the children are supported in their understanding and learning of this vital topic through teaching them the relevant factual knowledge appropriate for their age.

INCLUSION

All children at Buckland are given equal opportunities in all areas of science. We monitor the attainment and engagement of all groups of children to ensure there are no patterns of attainment causing concern.

ASSESSMENT, RECORDING AND TRACKING

Teachers assess children's work in science by making informal judgements during lessons, monitoring children's completed work and making formal assessments of pupils' knowledge and enquiry skills at the end of each block of work. Teachers help children to retain information through the use of regular low stakes retrieval practice activities. Class over-view tracking sheets for scientific knowledge and for working scientifically are kept on the school server.

The science subject leader keeps samples of the children's work in a portfolio to demonstrate the expected level of achievement in science for each age group in the school.

LEARNING RESOURCES

Science learning resources are kept centrally in both Key Stages. Class teachers are responsible for the safe collection and replacement of any equipment needed for their science lessons. The resources are generally organised in boxes which are linked to themes and should be returned in this way.

In addition, teachers have access to high quality online science resources and film clips at www.tigtagworld.co.uk and www.explorify.co.uk. They also have access to detailed planning support through the ASE Plan resources and www.pzaz.online.

High quality software for teaching and learning (eg Concept Cartoons, Spellbound Science, Discovery Dog puppet-based investigations etc) and Rising Stars assessment software are available through the school's own shared network. Documents providing support for planning, teaching and assessment may also be found on the network.

Copies of the children's science magazine Whizz Pop Bang are available in Swifts' class.

THE LEARNING ENVIRONMENT

The profile of science should reflect its place as a core subject. All classrooms should have a science display showing the work being taught and incorporating a prominent display of the relevant scientific vocabulary and key questions.

Resources for the block of work being covered should be appropriately accessible.

THE OUTDOOR ENVIRONMENT

Pupils in all year groups should have plenty of opportunities to use the local environment within the science scheme of work. Within the school grounds we have a variety of habitats, including a wildlife pond, a wooded area (Forest School), a large field, hedges and vegetable patches.

SAFE PRACTICE

Safe practice as indicated in The Association of Science Education publication, "Be Safe!" (copy in Swifts' class) must be promoted at all times. Teachers 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 are 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.

CLEAPSS guidance for school may be accessed here: <https://primary.cleapss.org.uk/Resources/Doing-Things-Safely/>. The user name and password change every year – please ask.

It is important that children are taught the rules of safety when undertaking experiments and investigations. It is the teacher's responsibility to make sure that all helpers (TAs, parents etc.) are aware of safety implications connected with any science activity they are undertaking.

LEADERSHIP AND MANAGEMENT

STAFF DEVELOPMENT AND TRAINING OPPORTUNITIES

The science coordinator attends termly network meetings for science and disseminates relevant information to staff through twilight INSET. Staff are encouraged to attend CPD courses as required. Furthermore, all staff have access to Imperial College's online science subject knowledge CPD at www.reachoutcpd.com.

MONITORING & REVIEW

The monitoring of the standards of the children's work and of the quality of teaching in science is the responsibility of the science subject leader and the Leadership Team. The science subject leader is also responsible for supporting colleagues in the teaching of science, for keeping them informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school.

Policy reviewed by staff February 2022