



Name of Policy:

Science Policy

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Aims and objectives

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national and global level.

The aims of science are to enable children to:

- ask and answer scientific questions
- plan and carry out scientific investigations, using equipment correctly
- evaluate evidence and present their conclusions clearly and accurately
- communicate and apply scientific ideas, facts and data
- know and understand the life processes of living things
- know and understand the physical processes of materials, electricity, light, sound and natural forces
- know about the nature of the solar system, including the earth
- understand the principles of evolution and inheritance.

Teaching and learning style

We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skill, and understanding. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. They use computing technology in science lessons where it enhances their learning. They take part in discussions and they present their findings to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in 'real life' scientific activities, for example, researching the local environment using our Eco area, or carrying out a practical experiment and analysing the results linked to reading books, being studied or in class. This is celebrated in whole school science displays throughout the school.

We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses
- setting tasks with varying equity (we use ongoing formative and summative assessment to attribute this)
- providing resources of different complexity, matched to the ability of the child
- using additional classroom adults (when available) to support the work of individual children or groups of children.

Science curriculum planning

The school uses the science National Curriculum to ensure sufficient coverage of skills and knowledge. The national scheme has been adapted to our local environment, trips and cross curricular opportunities.

We carry out our curriculum planning in science in two formal phases (long term curriculum map and weekly plans). The long-term curriculum plan maps the scientific topics studied in each term during the key stage and highlights which 'Working scientifically' skills are being focussed on. The science subject leader works in conjunction with teaching colleagues in each year group to monitor and amend the latter.

Our termly science curriculum maps, which we have based on the national curriculum knowledge objectives in science, also give details of each unit of work and lesson for each term. The science subject leader reviews these plans and performs book looks in allocated time slots. At Wallace Fields Junior School, we cover the 'Programmes of Study' on a two year rotation cycle and all aspects of 'Working Scientifically' are covered in each year group. In this way we ensure a complete and consolidated coverage of the National Curriculum.

In response to teacher workload, science adheres to the school policy with regards to planning expectation: the class teacher may use the termly unit plans for the teaching of each lesson; or they may keep more detailed weekly lesson plans if the sessions requires. Both of these planning types list the specific learning questions of each lesson. The SLT monitor work across the school in relation to these plans.

We have planned the topics in a two-year cycle in science so that children build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school. Progression of skills and knowledge is monitored by the use of a long term science progression map.

The contribution of science to teaching in other curriculum areas

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Reading skills are regularly practised in lessons through the use of supporting scientific texts and some science topics are directly linked to literature studied in English topics. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills by presenting their findings in a variety of ways (e.g. letters, posters, etc), completing projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights, measures and thermometers, learning how to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events both in tables and in graphs. They use numbers in many of their answers and conclusions and also learn to calculate mean averages.

Computing

Children use computing technology in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the internet. Children also use computer technology to record, present and interpret data and to research areas such as how scientific understanding has changed over time. Children also use online videos, digital photos and digital microscopes where appropriate. Furthermore, the school subscribes to 'TigTag', which offers high quality science videos for children and lesson ideas for teachers. 'Explorify' discussion starters are also commonly used in lessons to provide a stimulus.

Personal, Social, Health and Economic (PSHE)

Science makes a significant contribution to the teaching of personal, social, health and economic. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They can organise campaigns on matters of concern to them across the curriculum (e.g. geography: river pollution and rainforest deforestation). Science promotes the concept of positive citizenship. Thirdly, many of the key scientific concepts found within the 'Animals, including humans' topic are revisited in PSHE lessons, such as the life cycle.

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.

Teaching science to children with special needs

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the targets set in the children's SEND support arrangements. Additionally, 'Science in my pocket' and 'Playground science' investigations offer SEND, EAL and PPG children the opportunity for further scientific investigation in smaller, child led enquiry. These can be utilised during designated 1-1 sessions by additional support adults.

Assessment and recording

We assess children's work in science by making formative judgements as we observe them during lessons. On completion of a assessed piece of work, the teacher marks the work in line with the school marking policy using a success checker (which is responded to by the children) at least once a term. Each term the children perform a 'Working scientifically' task relevant to their work, which is assessed and recorded using Pupil Asset. These assessments help to generate an overall judgement for the year so the science lead can track standards throughout the school. Also at the end of a unit of work, children complete an end of topic knowledge test, which the teacher then marks and uses in conjunction with their 'Working scientifically' assessment to generate an overall judgement of the child. The teacher records these knowledge test scores in a mark book. We use all these assessment methods to judge the progress of each child, reporting to parents and for identifying future planning. We also pass this information on to the next teacher at the end of the year.

At the end of Key Stage 2 we report to parents and secondary schools the children's teacher assessed, end of key stage 2 judgement. We use science tests, sample SATs papers, 'Working scientifically' tasks and formative teacher assessment to help us generate such judgements.

Cross year group moderation takes place in staff meetings where judgements between and within year groups can be discussed and scrutinised. Furthermore, a joint school moderation, held at local network meetings, is also undertaken to ensure consistency of the judgements being made.

Resources

We have an array of resources for all science teaching units in the school. We keep these in a central store where there are boxes of equipment for each unit of work, while some specialist equipment, such as digital microscopes, are kept by the subject leader. There is also a collection of science equipment which the children use to gather weather data. The library contains a good supply of science topic books and there is a good supply of both computer software and hardware to support children's learning. Furthermore each teacher has a subscription to online resource TigTag to aid lesson ideas and the use of computer technology to support learning.

Monitoring and review

It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader will evaluate strengths and areas of development, indicating areas for improvement. The science subject leader will need to consider the following throughout the course of the year: reviewing plans and progression map, arranging visitors, books looks, learning walks, extra-curricular opportunities (e.g. national science quiz), KS3 transition (Blenheim and Epsom College), interviewing children, staff CPD and staff meetings, and conducting observations to monitor teaching and learning in the subject.