

AVENUE PRIMARY SCHOOL



SCIENCE POLICY

Autumn Term 2017



Mission Statement

‘Expect the Best ...To be the Best’

School Aims:

- To ensure that all pupils whatever their race, gender, age or ability feel valued and supported to achieve their best
- To promote positive learning attitudes and behaviour and create safe and effective learning environments where all children and staff show mutual respect for one another
- To provide effective and strategic leadership at all levels
- To deliver high standards of teaching that enable children to make progress and reach high standards of attainment.

This policy outlines the guiding principles by which Avenue Primary School will implement Science in the National Curriculum (2014) in the context of Newham’s Curriculum Policy Statement and its Staffing, Health & Safety and Equal Opportunities Policies.

Rationale for teaching Science

“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.” National Curriculum 2014

Aims

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

- To develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- To develop understanding of the nature, processes and methods of Science through different types of Science enquiries that help pupils to answer scientific questions about the world around them
- To ensure pupils are equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future

Attitudes

- To encouraging the development of positive attitudes to Science.

- To building on our pupils' natural curiosity and developing a scientific approach to problems.
- To encouraging open-mindedness, self-assessment, perseverance and responsibility.
- To building our pupils' self-confidence to enable them to work independently.
- To developing our pupils' social skills to work co-operatively with others.
- To provide our pupils 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

- To give our pupils an understanding of scientific processes.
- To help our pupils to acquire practical scientific skills.
- To develop the skills of investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- To develop the use of scientific language, recording and techniques.
- To develop the use of ICT in investigating and recording.
- To enable our pupils to become effective communicators of scientific ideas, facts and data.

(See Appendix 1- Working Scientifically)

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 Understanding the World - EYFS Framework 2017*. Science teaching in the school is about excellence and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school. **(See Appendix 2- Effective Science Planning)**

In years 1 to 6 the school follows the Focus Learning Challenge Curriculum. The Science Drivers lead the Science content teaching. Teachers are expected to plan to suit their pupil's interests, current events, their own teaching style, the use of any support staff and the resources available. We ensure that any planning does not overlook any areas of the National Curriculum and Focus Learning Challenge Curriculum. Where appropriate, teachers may teach Science in thematic, blocked or a cross-curricular manner.

How Science is taught

- Teaching Science (*National Curriculum Science*) in ways that are imaginative, purposeful, well managed and enjoyable.
- Giving clear and accurate teacher explanations and offering skilful questioning.
- Making links between Science and other subjects.

In year 1 to 6, Science is a core subject within the National Curriculum and has four strands. These are:

Working Scientifically;
 Life and Living Processes;
 Materials and their Properties;
 Physical Processes.

Our role is to teach working scientifically through the contexts of the three main content areas. Pupils in the Foundation Stage are taught the Science elements of the foundation stage document through the Early-Learning Curriculum: Understanding of the World.

Our approach to Science

The essential elements describing how Science is taught in our school are described below.

- We have adopted the Focus Learning Challenge Curriculum.
- We use ICT widely in Science. Pupils 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 data logging.
- We use the school's intranet to share Science resources.
- The school combines these secondary sources with first-hand scientific enquiries, building pupils Science skills.
- We actively teach Science skills, and reinforce learning with selected enquiry simulations.
- We encourage pupils to ask and answer their own questions as far as practicable.
- Pupils complete at least two full enquiries each term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results.
- Where relevant we use cross-curricular links to Science with, for example, design and technology units.
- We develop Science informally through school visits and other out-of-school activities. We are also beginning to incorporate use of our new school garden.

Assessment and recording in Science

We use assessment to inform and develop our teaching.

- Topics commonly begin with an assessment of what pupils already know.
- We assess for learning (AfL). Pupils are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve.
- Work is marked according to the Science Protocols. **(See Appendix 3, Science Protocols)**
- We use the Science Assessment Grids, twice per year, to identify pupils who are exceeding, expected and emerging in Science. This assessment is also used to inform teaching and learning throughout the year.
- Reports to parents are made at set intervals, and written once a year, describing each pupil's development in working scientifically, attitude to Science, his/her progress in and understanding of the content of Science.

Training

Science specific staff meetings are used to remind colleagues about this policy and the pivotal role of *Be Safe!* We will review the policy and consider the training needs for individual and all staff. When new staff, especially student teachers and newly-qualified teachers join the school, it is the duty of the Science Lead to inform them about this policy.

Monitoring

The Science Lead and Leadership team at Avenue monitor that this policy is being implemented. This will involve checking documentation, observing lessons and joining in planning meetings.

Health and Safety in Science

Duties of staff

The employer, i.e., the governing body of Avenue school and Newham Local Authority, has the ultimate responsibility to ensure the health and safety of employees and others. The task of overseeing health and safety in this school has been delegated by the employer to the Head Teacher, Hafise Nazif. Within Science, this task has been further delegated to the Science Leader.

It is the duty of all staff (and, where relevant, non-employees such as parent helpers):

- to take reasonable care for the health and safety of themselves and others who may be affected by their acts or omissions;
- to be familiar with this policy by periodic reference to it;
- to implement the provisions of this policy; and
- to co-operate with the employer and with other members of staff in promoting health and safety.

Be Safe! booklet

We believe Science in primary schools to be a very safe activity and do not consider that the few, small risks justify excessive bureaucracy.

This school's health & safety policy for teaching Science is largely contained within *Be Safe! Health and Safety in School Science and Technology for Teachers of 3-12 year olds* (4th edition, Association for Science Education).

One copy of *Be Safe!* is held by each year group leader. The Science Lead also holds a spare copy. All teachers must check *Be safe!* and use it when planning their Science activities.

Advice on health & safety matters in Science

The Local Authority's designated representative for giving advice on health & safety in teaching Science in primary schools is *Alan Merry*, from Newham Partnership Working (NPW): 020 3373 9724.

Risk Assessment

It is the duty of the employer, under the *COSHH (Control of Substances Hazardous to Health) Regulations* to make a risk assessment before micro-organisms (e.g., moulds) or hazardous chemicals (including some 'kitchen' chemicals) are used. Under the *Management of Health and Safety at Work Regulations* the employer must make a risk assessment before hazardous activities are undertaken. As required by our employer, and following guidance in the *Management Regulations Approved Code of Practice*, this school has adopted *Be safe!* as containing model risk assessments for the activities normally undertaken in teaching Science in primary schools. Teachers should review the advice and consider whether further modification is needed for the special circumstances of their lessons with their classes. Professional judgement is needed. For example, pupils who are early bilinguals may not fully understand the instructions, and pupils with special needs may need special consideration.

When drawing up schemes of work and lesson plans, staff should note down any relevant and important health & safety information extracted from *Be Safe!* or elsewhere. This can be very brief comments and will only be necessary for a few topics but will satisfy the requirement that the "significant findings of risk assessment should be recorded" and demonstrate that individuals acknowledge the risk involved.

Close supervision

On some occasions, *Be Safe!* states that an activity should be carried out “under close adult supervision”. We interpret this as meaning that a small group of pupils (up to about 6) should have the undivided attention of the supervising adult. Such adults need not be teachers but, if they are parents, learning support assistants etc, they must have been well briefed before the activity on the nature of the risk by the teacher in charge and be aware of guidance in *Be Safe!*

Purchasing and storing resources

When purchasing equipment or materials, and especially mains-powered electrical equipment, staff must ensure that it is safe and appropriate for use by pupils of the relevant age.

Similar considerations apply when equipment, chemicals or other items are given to the school, e.g., by parents, local companies, etc or brought in from home. They may not be sufficiently safe for school use. In general, our policy is not to accept such donations. Any mains-electrical equipment donated or borrowed from home must undergo a portable-appliance test before being used. Testing is carried out regularly by the Local Authority contractor.

Equipment and materials must be stored safely.

Living organisms

We believe that the responsible use of suitable animals, plants and micro-organisms in the classroom not only enhances the curriculum, but also helps to promote respect for living things. Classroom uses of living organisms may raise issues about the health & safety of pupils and teachers (which are dealt with in *Be Safe!* and other model risk assessments) and, in the case of animals, about their welfare and the need to care for them humanely.

Special Restrictions

There are no special restrictions in teaching Science in this school. The Local Authority has decided that in addition to advice in *Be Safe!* and relevant CLEAPSS publications, the following special restrictions will apply:

- Pupils at Key Stage 1 must not use expanded polystyrene, because of the risk that they may poke it into ears, etc, possibly requiring surgery to extract it.
- Thin plastic (polystyrene) cups from drinks machines should not be used to hold hot water, because of the risk that they may be easily knocked over when pouring the water or may soften and collapse, in either case spilling hot water on those nearby.
- Glass containers must not normally be used by pupils in Years R to 4, but may be used in Years 5 and 6 when the nature of the work means that there is no realistic alternative.
- Rechargeable batteries must not be used for circuit work by pupils because they may become very hot if short-circuited.
- Where iron filings are in use for work on magnets, these must be enclosed in clear plastic containers, sealed plastic bags or similar.
- An acceptable high standard of hygiene must be observed before and after cooking activities or handling animals, etc. Younger pupils must be supervised to ensure they wash their hands properly.
- A separate Risk Assessment is required for Annual Visits.

Review

This Science Policy will be reviewed by the Science Curriculum Leader, Senior Management Team and where necessary the Governors.

The date for next review of this document is Autumn Term 2019 or sooner if the legislation determines the need for this.

APPENDIX 1

National Curriculum 2014 Programme of Study Statutory Requirements Working Scientifically

Years 1 & 2

Planning

- asking simple questions and recognising that they can be answered in different ways

Undertaking

- observing closely, using simple equipment
- performing simple tests
- identifying and classifying

Evaluating

- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

National Curriculum 2014
Programme of Study
Statutory Requirements
Working Scientifically

Years 3 & 4

Planning

- asking relevant questions and using different types of scientific enquiries to answer them

Undertaking

- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Evaluating

- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

National Curriculum 2014
Programme of Study
Statutory Requirements
Working Scientifically

Years 5 & 6

Planning

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Undertaking

- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Evaluating

- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Appendix 2

Effective Science Planning

6 Steps

Step 1 Lesson Content – Refer to LCC

Step 2 Research

Step 3 Learning Objective- Learning Outcomes

Step 4 Starting point

Step 5 Developing the lesson

Step 6 End the lesson

Appendix 3
Science protocols