VAUGHAN PRIMARY SCHOOL

Science Policy

Date of Policy: Spring 2023
Date of Review: Spring 2025

Next Review: To be reviewed bi annually

Review Date	Changes made
SPRING 2023	Assessment

To be read with the following documents:
Teaching and Learning Policy
SMSC Vision Statement
Assessment Policy
Marking Policy
Equalities Policy
SEND Policy
Health and Safety Policy
Educational Visits Policy

Introduction

At Vaughan Primary School, we are committed to providing all children with learning opportunities to engage in science. This policy sets out a framework within which teaching and non-teaching staff work and deliver planning, teaching and assessment. It has been developed through a process of consultation with school staff and governors.

Aims

At Vaughan we believe that the best science teaching fosters and develops pupils' curiosity in the subject whilst also helping them to fulfil their potential. For our pupils to achieve well in science, they need to acquire the necessary scientific knowledge and also be able to enjoy the experience of engaging in purposeful scientific enquiry in order to help them to answer scientific questions about the world around them. We aim to help our pupils understand how major scientific ideas have played a vital role in society. Moreover, we aim to prepare our pupils for life in an increasingly scientific and technological world.

We aim to do this by:

- Delivering high quality, interesting and engaging science lessons

- Using scientific contexts to develop and consolidate cross curricular skills in English, Maths and ICT
- Teaching science in a global and historical context; including the contributions made by significant scientists from a range of cultures
- Developing and extending pupils' scientific knowledge and understanding
- Developing pupils' ability to work scientifically and involve pupils in planning, carrying out and evaluating investigations safely
- Developing pupils' scientific vocabulary and ability to articulate scientific concepts clearly and precisely
- Empowering them to evaluate evidence and present their conclusions clearly and accurately
- Ensuring that all pupils are appropriately challenged to make good progress in science
- Providing regular CPD for staff in school and at other training settings
- Timetabling a yearly science week that allows opportunities for 'thinking outside the box', science fairs and visitors who have expertise in science related industries
- Visiting other science settings for trips and specific learning, for instance, Year 6 visit Harrow School science laboratories for a set of chemistry lessons in the Spring Term and Year 5 children visit Whitmore High School for a hands on science day

Teaching and Learning

At Vaughan, teachers plan and deliver high-quality, stimulating and engaging science lessons. The teachers will provide opportunities for pupils to:

- Learn about science, where possible through first-hand practical experiences
- Develop their research skills through the appropriate use of secondary sources
- Work collaboratively encouraging one another with respect for other people's opinions. In pairs, teams, groups and/or individually
- Plan and carry out investigations with an increasing systematic approach as they progress through the school
- Develop their questioning, predicting, observing, measuring and interpreting skills
- Record their work in a variety of ways e.g. writing, diagrams, graphs, tables
- Read and spell scientific vocabulary appropriate for their age
- Be motivated and inspired by engaging and interactive science displays which include key vocabulary and relevant questions
- Learn about science using the outdoor learning environment

Teaching and Learning Style

We use a variety of teaching and learning styles in science lessons whilst still making sure that our lessons are consistent in standard and content. Our principal aim is to develop children's knowledge, skills, and understanding in science. Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. 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 ICT in science lessons where it enhances their learning. They take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the

pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.

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 of increasing difficulty (we do not expect all children to complete all tasks)
- Sometimes grouping children by ability in the room and setting different tasks for each ability group
- Providing resources of different complexity, matched to the ability of the child
- Giving adult support to individual children or groups of children

Planning

The science co-ordinator is responsible for providing a Science Yearly Overview setting out the curriculum areas to be taught across key stages each term based on the National Curriculum (2014). In addition the Science Skills Overview explains what is to be taught in more detail and outlines the skills progression year on year.

Foundation Stage

Science in the Early Years Foundation Stage is planned using the Early Years Curriculum 'Understanding of the World'. We teach science in reception classes as an integral part of the topic work covered during the year. As the reception class is 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 the Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

Key Stage 1 & 2

Key Stage 1 and 2 teachers plan science lessons using the new National Curriculum (2014) guidelines and are supported by lesson planning tools including SnapScience and Rising Stars. Topics 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.

All science lessons have focussed learning objectives, clear differentiation and success criteria to ensure that pupils make at least good progress. **'**Working scientifically' is embedded throughout the areas of learning in key stage 1 and 2; this focuses on the key aspects of scientific enquiry which enables pupils to investigate and answer scientific questions. Areas of learning within Key Stage 1 and 2 ensure that statutory requirements are being covered through the specific disciplines of biology, chemistry and physics (teachers may also refer to the non-statutory guidance which provide additional support).

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. Some of the texts that the children study in the English are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn 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. They use numbers in many of their answers and conclusions. The presentation and interpretation of results in science provides a context for work on data handling.

Computing

Children use computing 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 use computing to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. Additionally, ipads, laptops and web based learning resources are used by pupils and teachers to enhance the learning environment.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship, social welfare, health and drugs awareness, sex education. 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 organize campaigns on matters of concern to them, such as helping the poor or homeless. Science 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.

Inclusion and Equal Opportunities

At Vaughan teachers ensure that they adopt an inclusive approach to their science planning and teaching; ensuring that pupils of all abilities and backgrounds have an equal opportunity to make good progress and enjoy science. At Vaughan we teach science to all children, whatever their ability. 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 progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected standards. When progress 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 enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

Assessment Approaches

At Vaughan we see assessment as an integral part of teaching and learning, and it is inextricably linked to our curriculum.

In-School Formative Assessment

Assessment for Learning (AfL) provides opportunities to elicit real-time evidence of what students are learning and involves both teacher and learners in ongoing dialogue, reflection on learning and decision-making. This formative assessment process is central to classroom practice. Teachers gather evidence of where the learners stand in their learning. They use this evidence to make the necessary instructional adjustments by providing constructive or quality feedback that moves learning forward. Teachers are expected to use this formative assessment to update our assessment tracker, Arbor, as they are teaching. Effective in-school formative assessment is the day-to-day assessment which is carried out by teachers and is key to effective classroom practice.

It enables:

- Teachers to identify how pupils are performing on a continuing basis and to use this information to provide appropriate support or challenge, evaluate teaching and plan future lessons
- Pupils to measure their knowledge and understanding against learning objectives, and identify areas in which they need to improve
- Parents to gain a broad picture of where their child's strengths and weaknesses lie, and what they need to do to improve

A range of day-to-day formative assessments will be used including, for example:

- Rich questioning
- Written and verbal feedback of children's work
- Observations
- Pupil self-assessments and peer assessments

- Peer marking
- Pupil conferences

In-School Summative Assessment

Effective in-school summative assessment enables:

- Senior Leadership Team to monitor the performance of pupil cohorts, identify where interventions may be required, and work with teachers to ensure pupils are supported to make progress and attain personal learning goals
- Teachers to evaluate learning at the end of a unit or period and the impact of their own teaching
- Pupils to understand how well they have learned and understood a topic or course of work taught over a period of time. It should be used to provide feedback on how they can improve
- Parents to stay informed about the achievement, progress and wider outcomes of their child across a period

Pupils at Vaughan are assessed periodically and progress and attainment data is recorded on the assessment system 'Arbor'. These assessments are carried out three times a year in December, March and July. Teacher Judgements on Arbor for Reading, Writing, Maths, Science and the Wider Curriculum will relate to the National Curriculum age related expectations and will state whether a child is working, Pre Key Stage, Below age related expectation; At the Expected Standard, or at Greater Depth. These assessments are used to monitor the performance of individuals, groups and cohorts; to identify where interventions may be required; and to work with teachers to ensure that children are supported to achieve at least sufficient progress and expected attainment.

A range of in-school summative assessments will be used including, for example,

- Short end of topic or unit tests or tasks
- Reviews of progress against individual targets for pupils with SEN
- Teacher judgements on Arbor relating to the National Curriculum age related expectations
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Monitoring

Planning and workbook scrutinies as well as pupil interviews are carried out regularly by the science subject leader and feedback is given to teachers at an appropriate time. The science subject leader keeps evidence samples of children's work and uses these to demonstrate what the expected level of achievement is in science for each age group.

Health and Safety

In every science lesson it is essential for all staff to be aware of and plan for safety issues which may arise. The children will be taught to observe safe practice at all times. Teachers should familiarise themselves with the booklet "Be Safe" (published by ASE) for detailed guidance of safety matters and CLEAPSS. Copies of these are located in the science room, teachers' resource room and staff room. Any safety issues are highlighted on the year group's planning. **Activities will not be undertaken without a satisfactory risk assessment.**

Teachers must plan safe activities for science and complete a risk assessment if necessary. Teachers and teaching assistants need to be aware of health and safety procedures when using equipment/food in science lessons. Pupils must be aware of the need for personal safety and the safety of others during science lessons.

Resources

Science resources are currently stored in year group storerooms. Each year group is responsible for storing their own science resources. Any shared resources are stored in the science cupboard based in KS1 store and in the allotment shed. The subject leader must be informed of any changes regarding science resources i.e. missing or broken resources and/or when new or replacement resources are required.