



Science Guidance

Introduction

This guidance outlines the teaching, organisation and management of Science at Nene Valley Primary School, following the Primary National Curriculum (2014) statutory programmes of study, and links to the Early Years Foundation Stage (EYFS) Curriculum.

A high-quality Science education ensures that 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 a variety of different scientific enquiries that help them to answer questions about the world around them on a personal, national and global level;
- are equipped with the scientific knowledge required to understand the uses and implications of Science today and for the future;
- are encouraged to understand how Science can be used to explain what is occurring, predict how things will behave and analyse causes.

The programmes of study (POS) for Science are set out year by year for key stage 1 and 2. Schools are required to teach the relevant POS by the *end* of the key stage, allowing us to approach the subject flexibly to link with curriculum framework and to accommodate our mixed year groups. 'Working scientifically' or enquiry skills for phase group are not taught in isolation, but embedded throughout the Science curriculum.

Science is a core subject and should have an equal profile with English and Maths. It should be taught, planned and assessed with the same level of rigour.

Vision (co-produced with staff and children 2018)

At Nene Valley, our vision for Science in the school is for lessons to be fun, collaborative, full of discovery and learning new things, through practical investigation and exploration in real-life situations.

Aims and Principles (co-produced with staff and children in 2018)

At, Nene Valley, good Science teaching and learning happens when:

- Children are engaged in learning and there is a 'buzz' in lessons
- Children are actively encouraged to ask questions and develop their enquiry skills
- Staff and children are confident in their scientific knowledge and there is a clear progression of skills across the school
- Children make connections with the real world and other curriculum areas
- Children's learning is 'hands-on'

Teaching and Learning



Science should be timetabled to be taught *at least* weekly. To provide adequate time for developing scientific knowledge, skills and understanding, lessons will usually be an hour in length, but this may vary. Where possible, cross-curricular links are made to specific topics and other core subjects to enable pupils to develop and apply their scientific skills. Some teachers may 'block' units of work, where it is appropriate. In the EYFS, the 'Understanding the World' area of learning is delivered through a combination of adult-led activities and continuous provision opportunities.

Our school aims to encourage learning through enquiry and investigation. Science lessons have no formal structure, but should typically contain some of the following elements:

- *Discussion: finding out what children already know from experience, how they can build on prior learning, what they would like to find out. Mind mapping and question boards can record these discussions.*
- *Teaching: directly teaching the whole class or through guided/individual work.*
- *Investigation: working in groups (grouped by ability or mixed) or individually, practising and applying scientific and enquiry skills, exploring resources, finding out answers.*
- *Recording: drawing charts, tables, diagrams, using ICT (e.g. iPad, laptops, microphones), writing about what they have found out.*
- *Communicating: sharing ideas and opinions, predicting, debating, planning with each other, the teacher or other adults.*

No formal homework is set in Science; however, children are encouraged to find out information and practise scientific skills out of school time. Teachers will provide opportunities to showcase the children's work outside school via class Twitter pages and other parent events.

Long term plans demonstrate when the Science programmes of study will be delivered and how they link to our curriculum overview for each phase group. Medium term planning outlines the progression of Science objectives and working scientifically skills week by week. Short term plans (supported by the Science Bug resource) contain more detailed information about the content of the lesson, including technical vocabulary, how the needs of all learners will be met, links to scientific/enquiry skills and resources.

Assessment

It is the responsibility of the class teacher to assess a child's attainment and progress in Science in both knowledge and understanding and working scientifically. Prior to starting a new topic, teachers complete a 'blue' assessment with the children. This open-ended task (e.g. odd one out, concept cartoons) allows teachers to elicit children's current knowledge and understanding and is used to ensure teaching is matched to children's starting points. Formative assessment strategies (e.g. observation, feedback and marking, questioning) are used by teachers within and between lessons to judge whether children have a secure understanding of the focus objectives. Teachers regularly record these assessments on the school's assessment system to track and monitor progress towards the objectives for each unit of learning in Science.

On completion of each unit of work, teachers use a range of strategies to assess children's understanding (formative assessments, end of unit assessments, quizzes, test questions). At the end of each term, teachers use this evidence to make a summative assessment about each child's level of achievement in Science with reference to the expected standards. This is recorded and tracked on Insight.

During the Spring Term, children in Y3-6 complete a standardised Science progress test through GL Assessment. These assessments provide additional information to support teacher assessments and analysis of the results enables leaders to evaluate how effective Science provision is in the school.



Science Displays

Each class will have a display board dedicated to Science to be used as a working space to support children's learning. It may be appropriate to include the following:

- Key technical vocabulary
- Questions the children have asked/things they would like to find out about
- Examples of what the children have learned so far
- Resources to support learning, e.g. vocabulary mats, word banks, investigation frameworks
- Modelled work, e.g. example of a modelled prediction, scaffolds
- Examples of children's learning, e.g. work, comments, photos
- The school's Science vision and principles
- Enquiry types linked to the topic

Science Ambassadors

Throughout their time at the school, children will learn about the work of famous and inspiring scientists, engineers and mathematicians. This is to encourage them to consider a STEM-based career in the future. Our school houses are named after famous scientists in order to raise the profile of Science in school.

Teachers can also access support from external experts known as STEM Ambassadors who are real-life scientists available to support the delivery of the curriculum in school.

Additionally, six Year 5 children have the opportunity to become school Science Ambassadors. They support the work of the subject leader, audit and check resources, gain feedback on Science learning from their peers and can attend special Science events.

Health and Safety

The Association for Science Education (ASE) publication, Be Safe!, is used by staff as a point of reference for issues regarding Health and Safety. A copy is held in the PPA room. Additionally, the school's membership with CLEAPSS allows staff to access a wealth of advice, guidance and risk assessments for a range of Science related activities to ensure that health and safety guidelines are followed and strictly adhered to.

Teachers should be proactive in planning for and managing the risk factors associated with providing a high-quality Science curriculum. It is the responsibility of the class teacher to identify safety issues and potential hazards in detail on their planning and complete the necessary risk assessments where appropriate. This must include making children aware of safety issues, taught how to stay safe and why.

Resources

Resources to support the delivery of Science in school are stored centrally in the PPA room. These are checked regularly, audited and replenished to support quality teaching and learning.

Monitoring and Review

It is the responsibility of the subject leader to monitor standards in Science. The subject leader is also responsible for supporting colleagues in their teaching, being informed about current developments in the subject and for



providing a strategic lead and direction for Science in the school. Monitoring activities might include work scrutiny, learning walks, discussion with children about their Science learning and analysing data. The subject leader meets regularly with the Science link governor to keep them informed of school-based development and improvements.

Signed:

Mr. Richard Isley
Chair of Governors

Signed:

Mr. Stuart Mansell
Headteacher

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