Science Policy

Senacre Wood Primary School

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INTRODUCTION

The National Curriculum states that:

"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."

At Senacre Wood, we have created a short vision that is shared with pupils during Science lessons.



INTENT

At Senacre Wood Primary, we follow the aims of the National Curriculum to ensure that all pupils:

- *Become 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.*

National Curriculum 2014

Using the national curriculum for science, we aim to ensure that all pupils:

- Are encouraged to be inquisitive and have a desire to find out answers to their own questions in class and with interest in the world around them
- Develop resilience through seeing that they will not always get the results they expect and things will not always go right, alongside conversations about how the issue is noticed and resolved
- Understand how their learning of science is relevant and show curiosity about natural phenomena
- Use technical vocabulary to explain what they are observing or the experiment they are conducting

IMPLEMENTATION

At Senacre Wood Primary School, we use the Kent Primary Science Scheme (2024) but have made adaptations to allow the curriculum to meet the needs of our pupils and setting. One such example is that children will be exposed to the specific trees within our school grounds. The adaptations do not remove any elements of the National Curriculum, and it exposes children regularly and effectively to the different working scientifically areas of learning. The scheme also ensures that children are provided with exposure to the different enquiry types throughout each year group. In addition to the scheme being followed, teachers will conduct a TAPS lesson plan half-termly, which will allow teachers to moderate their working scientifically assessment judgements.

PLANNING

The Kent Primary Science Scheme (2024) provides teachers with the planning required for each unit of study. The planning includes retrieval, although this has been supplemented by the science leader to ensure that children are retrieving across year groups and not just within them.

At the end of each unit of study, one lesson will be planned by the individual class teacher. This lesson will address gaps in knowledge that the children have, and deepen or apply knowledge where appropriate. The gaps will be identified through assessment or assessment ladders. The subject leader will support class teachers with judging which areas to cover, but this will vary for each cohort. The subject leader has provided staff with other documents or websites to assist with planning these effectively.

In their planning and preparing of activities, teachers will anticipate likely safety issues. They will need to explain the reasons for safety measures and discuss any implications with the children. Children should always be encouraged to consider safety for themselves, others, the environment and the resources they use, when undertaking scientific activities.

For specific guidance about safety in science teachers will refer to CLEAPSS school-safety guidance and resources, and if in doubt they will discuss with the subject leader.

LESSONS AND ENVIRONMENT

Science is expected to be taught weekly, for at least one afternoon (timetable permitting). ;

The following are included in science lessons:

- Learning question is displayed (these are taken from the scheme of work). It is recorded in the book where appropriate.
- The opportunity to recall previously taught content at the start of the lesson. Teachers will find this information on the scheme of work or on their MTP.
- Opportunities for pupils to engage in discussions; this includes individual, paired, group and whole class learning and discussions.
- A range of engaging activities, including practical lessons, using models, drama, singing, IT and thinking challenges.
- Collaborative learning, where appropriate, amongst the children, which could be in mixed-ability pairs or group work.

- Increasing independence – by the end of KS2, pupils should be more independent in planning and carrying out these investigations, dependant on ability.
- Careful planning and assessment that allow children to progress without repetition of content or activities.
- Differentiation, where appropriate (this could be through different tasks, resources, questions or level of support from the staff or peers)
- Vocabulary that has been planned for, to ensure that children can explain them (typically these will be Tier 3 words, but Tier 2 words should also feature), and are not cognitively overloaded by the amount of new vocabulary include in one lesson. This could have a detrimental effect on their learning of knowledge.
- A variety of recording types. Teachers will carefully identify their reasons for selecting a particular method of recording. Children will record independently where appropriate.

Each classroom has a Science display. The Science vision should be visible on each one, and referred to while learning. The board will also show the current learning; starting with the 'big question' being answered and any examples of work, models or pupil voice that clearly show the key learning points along the journey of that particular topic. Vocabulary will be shown on the display.

ONLINE RESOURCES

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ASSESSMENT

Assessment is an integral part of teaching and learning and is a continuous process. To support this, teachers maintain an assessment grid which tracks the children's progress and understanding across a range of assessment criteria objectives. This is updated regularly and is informed by tests, assessment questions, observations of pupils' discussions (these are recorded on pink and green slips), work in children's books and work on Seesaw. Classes may also use the learning question from the Kent Primary Science Scheme to help with assessment, and this could be verbally or written. Completed assessment grids can then be used to identify next steps and therefore inform planning. Furthermore, these grids are passed onto future teachers, so that the planning in subsequent year groups can address knowledge gaps and prepare lessons at a suitable level. Teachers will use these grids to assess both knowledge and working scientifically. The working scientifically skills are shared by two year groups, and will therefore be built upon and secured by a second year of learning.

Teachers will complete a TAPS lesson plan half termly, which have been chosen by the subject leader. These will provide the class teacher with a high-quality lesson to assess a particular strand of working scientifically. See Appendix 1 for more detail.

At the end of a unit of study, one lesson will be provided for the children to answer 'The Big Question'. This activity has been carefully chosen to allow children to show all learning from the unit in an engaging manner, therefore allowing class teachers to assess all knowledge areas of the unit. The tasks are varied to improve engagement. Teachers may also decide, using their assessment ladders, that there are gaps from a unit taught in a previous year group that should be addressed in this time.

Feedback of this assessment is also important, and provided to the children regularly to ensure that they can strengthen and deepen their understanding. This is in line with the school's Feedback and Marking policy, and will take different forms as appropriate for the age group being taught. Teachers will also use feedback to address misconceptions that the children may have acquired.

SCIENCE IN EARLY YEARS FOUNDATION STAGE

EYFS planning is based on the Development Matters statements and the Early Learning Goals (ELG). EYFS staff, continually observe and assess children against these, and plan the next steps in their mathematical development.

Science is covered in the EYFS through practical, stimulating activities, which develop knowledge and understanding through cross curriculum learning. The scientific aspects of the children's work are mostly related to the objectives set out in 'Understanding the World' within Development Matters. Science makes a significant contribution to achieving the Early Years Outcomes and understanding of the world, e.g. through investigating what floats and what sinks when placed in water. Many activities in child-initiated play have links to Science, and teacher-led activities can initiate or further develop this understanding.

The PLAN resources have provided the EYFS team with themed activities, with example texts to support learning, so that the scientific strands important to the KS1 National Curriculum are covered.

EQUAL OPPORTUNITIES AND INCLUSION OF ALL LEARNERS

All children have equal access to the science curriculum. Positive attitudes towards scientists are encouraged, so that all children, regardless of race, gender, ability or special needs (including those for whom English is a second language) develop an enjoyment and confidence with science.

Where required, children's EHCP's incorporate suitable objectives. These targets are most likely covered within a lesson, although sometimes this might be in a 1:1 setting, such as when pre-learning vocabulary.

IMPACT

In order to ensure we measure impact, we gather a variety of data and feedback to check whether learning has been retained. The information gathered impacts the future planning of teaching and learning opportunities, ensuring we are responsive to the needs of our learners.

The following are methods are also used to support measuring the impact of science teaching across the school:

- Pupil voice – carried out by the subject leader. This will allow the leader to understand the quality of the lessons/learning as well as the engagement and excitement of the pupils and can be compared across topics and year groups/key stages.
- Formative assessments; through regular retrieval and application, we can check children's retention of previously taught concepts. The retrieval activities recorded at the start of each lesson (where appropriate) will be used for this purpose.
- Summative assessments-
    - Short summative assessments which are based on previous units of work. These are used to update pupils' levels and gaps are used to inform interventions and focus for retrieval practice. This is typically an answer to a 'big question'

ROLE OF THE SCIENCE SUBJECT LEADER

It is the role of the subject leader, along with SLT, to ensure the subject is monitored using a range of methods which inform the development of science teaching and learning. Following monitoring, outcomes are shared, with colleagues and relevant stakeholders, in a timely manner and areas for improvement are swiftly and effectively acted upon.

It is also the role of the science subject leader to:

- Promote the value and importance of science amongst staff and pupils.

- Identify and support the training needs of colleagues.
- Moderate teachers' assessment to ensure consistency with levels across year groups.
- Monitor, maintain and provide high quality resources and manipulatives.
- Ensure pupils' voice is valued and responded to.
- Keep up to date with CPD
- Be involved with the planning of 'STEM week' and organising other opportunities to raise the profile of Science in school
- Run Science club

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APPENDIX 1

TAPS Overview

The following activities have been chosen by the subject leader to ensure that working scientifically is assessed effectively before reaching the end of the key stage, and is available for moderation purposes. There is at least one TAPS assessment opportunity per unit each year. The scheme of work followed ensures children are continually exposed to all areas of working scientifically, and these lessons may be used for additional assessment.

KEY STAGE 1	TAPS Activity
Asking simple questions and recognising that they can be answered in different ways	Ways to test reflectiveness (Year 1) Waterproof materials (Year 2)
Observing closely, using simple equipment	Leaf looking (Year 1) Plant growth (Year 2)
Performing simple tests	Note: This will be assessed as a by-product of the other activities; for example in 'Ways to test reflectiveness' and 'Waterproof materials'.
Identifying and classifying	Nature spotters (Year 2)
Using their observations and ideas to suggest answers to questions	Body parts (Year 1) Hand spans (Year 2)
gathering and recording data to help in answering questions	Materials Hunt (Year 2) Seasonal Change (Year 1)
LOWER KEY STAGE 2	**TAPS Activity**
Asking relevant questions and using different types of scientific enquiries to answer them	Skeleton Questions (Year 3)
Setting up simple practical enquiries, comparative and fair tests	Note: This will be assessed as a by-product of the other activities; for example in 'Make shadows' and 'String telephones'.
Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Measuring temperature (Year 4)
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Make Shadows (Year 3) Local survey (Year 4)
Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Note: This will be assessed as a by-product of the other activities; for example in 'Teeth in liquid' and 'Rocks report'.
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Rocks reports (Year 3) Does it conduct electricity? (Year 4)
Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Balloon Rockets (Year 3) Teeth in liquid (Year 4)
Identifying differences, similarities or changes related to simple scientific ideas and processes	String telephones (Year 4)
Using straightforward scientific evidence to answer questions or to support their findings.	Function of stem (Year 3)
UPPER KEY STAGE 2	**TAPS Activity**
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	Dissolving (Year 5) Bulb brightness (Year 6)
Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Spinners (Year 5) Growth survey (Year 5) Investigating shadows (Year 6)
Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	Seed dispersal survey (Year 5) Outdoor keys (Year 6)
Using test results to make predictions to set up further comparative and fair tests	Heart rate pose (Year 6)
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	Solar system research (Year 5)
Identifying scientific evidence that has been used to support or refute ideas or arguments.	Fossil habitats (Year 6)