Science Policy

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Introduction

This policy outlines the teaching and management of science taught and learnt at Raddlebarn Primary School. The school's policy for science is based upon the National Curriculum for key stages one and two, 'Development Matters' (2021) and the Statutory framework for the Early Years Foundation Stage (2021). The implementation of the policy is the responsibility of all teaching staff and will be monitored by the science coordinator.

This policy will be reviewed annually in relation to existing school policies, national and LEA guidelines and curriculum orders.

Aims and Objectives

The teaching of science develops in children an interest and curiosity about the world in which they live, and fosters in them a deeper understanding and sense of respect for the environment and all its phenomena. At Raddlebarn Primary School, it is our aim to provide children with the opportunities to explore, record, draw conclusions and become more inquisitive through firsthand experiences and other sources of information.

Through science in our school, we aim to:

- Develop children's enthusiasm and natural sense of wonder about the world.
- Encourage positive attitudes towards science.
- Deliver the Science National Curriculum in ways that are imaginative, purposeful, well planned and enjoyable.
- Encouraging them to ask deeper questions about the world around them and develop their scientific vocabulary.
- Deliver clear and accurate teacher explanations and skillful questioning. Providing guidance but at the same time allowing children the freedom to explore as independently as possible.
- Make purposeful links between science and other subjects (such as mathematics and computing)
- Develop the use of scientific skills in a way which shows progression throughout the school.
- Enable children to become effective communicators of scientific ideas, facts and data.
- Allow children to confidently take part in scientific enquiries, and understand the cycle of 'planning' their investigation, 'doing' the enquiry, recording data where needed and reviewing their findings.
- Enrich the children's knowledge of significant scientists from the past or modern times.

Statutory Requirements

Statutory requirements for the teaching and learning of science are laid out in The National Curriculum in England Framework Document for Teaching, September 2014 and the Statutory framework for the Early Years Foundation Stage, September 2021.

How we deliver the science curriculum

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programs of study for Science 2014' and, 'Understanding of World' in the Early Years Foundation Stage.

Planning

In KS1 and KS2, Science units are taught in blocks, lasting a half-term each. Teachers plan lessons in a sequence to ensure the complete delivery of the National Curriculum, as well as a sequenced, logical journey through the scientific concepts. When planning a unit, teachers carefully consider the coverage of scientific concepts and skills from the National Curriculum, as well as the 5 types of enquiry that pupils must experience. The scientific skills are woven through the teaching of scientific concepts. Enquiry lessons and the application of scientific skills are linked where possible and purposeful, making the most of every opportunity. Some lessons which do not link to one of the 5 types of enquiry are called 'knowledge lessons' and focus on scientific concepts. The 'PLAN' matrices and examples of work are used as a tool to support with planning as well as teacher subject knowledge. When beginning a new unit, teachers assess their pupils' retention of prior knowledge to ensure that new learning builds on what they

already know. Teachers plan for all types of learners in their class, and prepare resources and activities that are adapted where needed. This could be through simplified documents to read, scaffolds for recording data, or additional support resources given.

Teaching

Pupils are taught to ask, then answer questions via the 5 types of scientific enquiry and in time will decide which enquiry type is most appropriate to answer specific questions. Pupils are challenged in all year groups as their Working Scientifically skills are built on year after year, allowing them to become increasingly confident when handling equipment, planning and conducting experiments, explaining concepts clearly and logically and reporting their findings accurately. During lessons in which skills are applied, the success criteria are split into 2 sections: conceptual knowledge, and working scientifically. During enquiry driven lessons, children in years 3 and 4 have the enquiry type and symbol recorded under their success criteria. Children in years 5 and 6 have a tick list of the 5 types of enquiry, and pupils select the appropriate type for their enquiry question.

Where necessary and possible, science is taught by using practical equipment. Children work collaboratively in groups to complete enquiries and other practical work. Pupils may be assigned a role within their group to encourage teamwork and productivity. Staff will consider health and safety measures which are appropriate for the year group they are teaching.

Assessment

In KS1 And KS2, teachers formatively assess the children's conceptual knowledge via weekly lessons, and record this on the learning objective slips in children's books, following the Assessment and Feedback and Marking Policy. When delivering an enquiry driven lesson, teachers select which particular 'Working Scientifically' skill to focus on in that lesson to enable precise modelling and teaching, as well as accurate assessment for learning. All enquiries follow the 'Plan, Do, Review' cycle, however teachers will choose one of the three steps to assess the children on in that lesson (which subsequently informs evidence in books). The other two parts are deliberately scaffolded to develop the children's confidence. This focused assessment allows teachers to strike a balance between skills being modelled and assessed. It also means that over time, teachers are able to make correct and precise scientific assessments of all the Working Scientifically skills of their year group.

Teachers mark children's work following the Assessment Policy. This enables teachers to carefully assess each child's acquisition of scientific concepts, and scientific skills, were they linked to that lesson.

At the end of each unit, children complete a 'Chance to Shine' quiz which assesses their retention of scientific concepts (while skills are assessed through enquiry lessons). This is used as an opportunity to iron out any remaining misconceptions, and securely embed knowledge. These quizzes are used to input data at the end of each term to track progress.

In EYFS, science is assessed and evidenced using the children's Learning Journeys, which include a range of evidence, such as photographs and observations, alongside children's work.

Foundation Stage

Science in EYFS is taught through the strand of, 'Understanding the World' from the 'Development Matters' 2021, and follows the guidance from The Statutory Framework for the EYFS, 2021. In Nursery and Reception, pupils explore science through continuous provision. They use their senses, observe the world around them and are exposed to a rich scientific vocabulary by staff.

Teachers and teaching assistants support pupils to develop a solid understanding of things occurring around them in their day-to-day lives. Children are encouraged to be creative and inquisitive as they participate in activities both indoors and outdoors. Pupils are encouraged to use their natural curiosity, while taking part in exploratory play in specific scientific areas as well as areas that link across the EYFS framework. Nursery and Reception children also will develop Communication and Language skills via observations, explanations, predictions and questions.

Cross-curricular Science Opportunities

Teachers will seek to take advantage of opportunities to make cross-curricular links. Where purposeful, they will plan for pupils to practise and apply skills from other disciplines in science lessons (for example mathematical skills, artistic skills, technological skills or literacy skills). Our

'Scientific Skills' progression document clearly links to the mathematics progression document for measuring and recording data (statistics).

Equal Opportunities

We are committed to providing a teaching environment conducive to learning. Each child is valued, respected and challenged, regardless of ability, race, gender, religion, social background, culture or disability. We aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This will enable children with learning and/or physical difficulties to take part in scientific learning and practical activities and investigations and to achieve some of the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, more able children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

SEND & Inclusivity in Science

Inclusive learning and teaching recognises all pupil's entitlement to a learning experience that respects diversity, enables participation, removes barriers and anticipates and considers a variety of learning needs and preferences.

To support children with SEND in Science, teachers at Raddlebarn use scaffolding resources to help children plan enquiries or record data or their conclusions. Visual support and word banks may be given to enable children to understand and use more complex vocabulary. New units always begin with a recall of prior learning to support long-term memory retention. Misconceptions are picked up on verbally and in children's books to enable them to acquire sound scientific knowledge. When completing a research enquiry, children who need it are given more accessible documents to research from (shorter texts, or less complex vocabulary, or with highlighted key points). During practical work, SEND children always work with a mixed-ability group and benefit from the support of their peers. The assessment of concepts done during 'Chance to Shine' assessment quizzes are adapted for SEND children so they are realistic and achievable.

In future, we strive to meet the requirements of children with more complex needs by providing larger visual support sheets with diagrams and / or symbols on. Roles may be assigned during practical work so children with ASD for example know exactly what they are expected to do, and can complete the activities with focus and enjoyment.