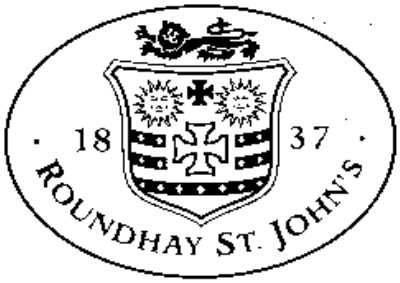

Science Policy

DATE: November 2022

REVIEW: November 2025

Learning to live life in all its fullness

Roundhay St John's CE Primary School

Policy for Science

Intent

At Roundhay St John's, we want our children to develop a sense of excitement and curiosity about natural phenomena and to experience and enjoy the gift of awe and wonder as they gain a strong understanding of the world around them. We want our children to ask questions, be inquisitive about their surroundings and foster a love of science through a varied, exciting and engaging science curriculum from EYFS up to the end of KS2. We want them to acquire specific skills and knowledge to help them to think scientifically. We want them to gain an understanding of scientific processes and of the uses and implications of science, today and for the future, as they develop as life-long learners and each live their life in all its fullness. We intend to make the best use of our local surroundings in Roundhay, the vast opportunities in our city of Leeds and links to Science Ambassadors within our community to enhance our pupils' scientific experience and boost their Science Capital.

Purpose of Study

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. 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.

Aims

The national curriculum for science aims to ensure that all pupils:

- 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

Teaching and Learning Strategies

At Roundhay St John's, children are ***Learning to live life in all its fullness*** and subjects are taught in the context of our whole school Curriculum Intent. Teaching is underpinned by strong subject knowledge of staff. At Roundhay St John's, we enjoy an ongoing connection with the national STEM Centre at York University which has helped to develop our successful science CPD offer for teachers across school. Accessing up to date and high quality DfE bursary funded day and residential courses, we have been able to target CPD tailored to each phase from EYFS to KS2 and to our outdoor learning with a focus on raising the profile of science in school; enhancing teaching, learning and assessment; and maximising our pupils' science capital.

Teachers employ a balance of whole class and group / individual activities and should incorporate a variety of learning activities. Our Science curriculum fosters a healthy curiosity in our children to

learn more about our universe and promotes respect for the living and non-living. It encompasses the acquisition of knowledge, concepts, skills and positive attitudes through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. We deliver the educational programmes within the EYFS Statutory Framework, (with reference to the Development Matters non-statutory guidance) and the programmes of study for Key Stages 1 and 2 in the National Curriculum for Science. Through this progressive curriculum, the children acquire and develop the key knowledge and vocabulary that has been identified within each unit and across each year group and develop the skills to predict, question, investigate and communicate to demonstrate their deepening understanding of the world. They also develop skills required for Scientific Enquiry Types: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources as they seek answers to questions through collecting, analysing and presenting data.

We recognise that children have different learning styles and preferences. When planning, staff ensure visual, auditory and kinaesthetic elements are included in lessons. A variety of approaches should be used to promote a variety of skills in the course of learning. enquiry-based research activities; practical investigations; the asking and answering of scientific questions; interpretation of a variety of data including statistics, graphs, pictures and photographs; use of ICT; discussions and presentations to the class and problem-solving activities. Wherever possible we involve pupils in real scientific activities, for example a local environmental problem, or by carrying out a practical experiment and analysing the results.

Wherever possible, teachers should seek opportunities for enrichment through indoor and outdoor learning, through visits and visitors to school providing memorable learning moments for children. Teachers will also plan opportunities for children to practice their skills in the context of other subjects to demonstrate the extent to which they are securing their learning and mastering taught skills. The school's approach to science takes account of the school's own context, ensuring access to people within our community with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom. Cross curricular opportunities and memorable moments are also identified, mapped and planned to ensure contextual relevance. Across all age phases, we take full advantage of our close proximity to Roundhay Park, linking with the park rangers on seed collection and dispersal projects, workshops offered at Tropical World and walks, throughout the seasons, to understand more about the flora and fauna within our local area.

Whole school initiatives such as British Science Week, our Sunflower Growing Competition, 'Save the Bees' wild garden seed scatter and tree planting project, all enhance the science experience our children enjoy throughout their time at Roundhay St John's.

Subject Content
Working scientifically (see progression of enquiry skills)

During EYFS, pupils should be given opportunities to play, explore, create, engage in active learning, and think critically through their learning to Understand the World.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

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

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

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

Knowledge (see progression in knowledge document here)

Early Years Foundation Stage

- the delivery of the EYFS Statutory Framework, using the Development Matters non-statutory guidance

Key Stage One Programme of Study (see National Curriculum for further details)

- Plants, Animals (including humans), Seasonal Changes, Uses of Everyday Materials, Living things and their habitats.

Lower Key Stage Two Programme of Study (see National Curriculum for further details).

- Plants, Animals (including humans), Rocks, Light, Forces and Magnets, Living things and their habitats, States of matter, Sound, Electricity

Upper Key Stage Two Programme of Study (see National Curriculum for further details).

- Living things and their habitats, Animals (including humans), Properties and changes of materials, Earth and space, Forces, Evolution and inheritance, Light, Electricity

These topics will be covered for each year group					
EYFS					
Year 1	**Materials Seasons**	**Animals (Classify)**	**Humans (Senses)**	**Seasonal Changes**	**Plants**
Year 2	**Living things and their habitats inc food chains**	**Animals including humans (Survival needs)**		**Use of everyday materials**	**Plants**
Year 3	**Forces and magnets**	**Animals including humans (Skeletal & nutrition))**	**Rocks and fossils**	**Light**	**Plants**
Year 4	**Living things and their habitats (Classification)**	**Animals including humans (Digestion)**	**Sound**	**States of matter & Water Cycle**	**Electricity**
Year 5	**Living things and their habitats (Life cycles & reproduction)**	**Animals including humans (Growth & Development)**	**Earth in Space**	**Properties and changes of materials (Filtering/sieving)**	**Forces**
Year 6	**Living things and their habitats (Classification)**	**Animals including humans (Circulation)**	**Evolution and inheritance**	**Light**	**Electricity**

Planning

The National Curriculum is used as the starting point for staff to develop subject planning. Our individual subject planning approach also facilitates cross curricular links and these are intentionally made where possible. Long term plans have been developed following whole school consultation to ensure appropriate coverage of the EYFS Statutory Framework and the National Curriculum across the school. Long term and medium term plans are reviewed in response to the needs of cohorts of children and changing interests of children. Our short term plans highlight prior learning, learning objectives (knowledge and working scientifically), pupil activities and how these will be differentiated and opportunities for cross curricular links and assessment. Class teachers make use of Explorify digital resources, the Developing Experts presentation packages and investigations, and PLAN Knowledge Matrices (which includes key vocabulary and common misconceptions) along with other applications to aid the planning and teaching of science to meet all the needs of our pupils. They also draw on support and connections with other teachers nationally as they access the STEM community learning hub.

Inclusion

The same high expectation, that children will reach their full potential applies to all children in keeping with the school's values and ethos. We have due regard for our duties under equality

legislation that covers all the protected characteristics. Teachers understand that all children have differing abilities and meet children where they are by providing learning opportunities which match the challenge of the task to the ability of the child. All children will be given equal access to science. Lessons are planned to include more stretching work for pupils whose ability is significantly above the expected standard as well as those who come from lower starting points and need more structured support. We remain vigilant about removing barriers to success; particularly for children who come from disadvantaged backgrounds or have special educational needs or disabilities. Additional resources are provided to support individual children when required.

Resources
The subject leader is responsible for ensuring both practical equipment and digital resources are adequate and appropriate for the successful teaching of this subject. Science resources are centrally stored, replenished, repaired and regularly checked for safety in line with CLEAPPS guidance.

Health and Safety
The school has extensive arrangements in place to ensure the health and safety of everybody and all staff must have due regards to the school's health and safety policy. All educational visits are undertaken in accordance with the school's Educational Visits Policy and the Educational Visits Coordinator is Mrs C. Sutherland, School Business Manager.

A risk assessment programme is coordinated by the school business manager for all aspects of school life. The CLEAPPS website is used by all staff, supported by the subject leader, to ensure appropriate guidance for practical science activities and the CLEAPPS risk assessment process is followed before undertaking with children. Specific guidance from the subject leader is accessed where needed.

This school is committed to safeguarding and promoting the wellbeing of children and young people and expects all staff and volunteers to share this commitment.

Assessment and Recording
Children are formally assessed against the EYFS Framework and the National Curriculum end of year expectations at the end of each academic year. This information is monitored and evaluated by the subject leader and shared with the next year's teacher.

Teachers use the Otrack assessment tool to record children's progress each term in either Biology, Chemistry and Physics and in the areas of Working Scientifically that have been covered. At the end of the year, teachers use this data to make a best-fit judgement based for each child, based on their attainment by the end of the year.

Pupils record their work in picture, written, word-processed, photograph or video formats and this can be found in pupils' individual science books, class floor books, on class displays and in digital media files. The science subject leader, along with our school governor for science, monitor the teaching and learning of the subject through learning walks, book looks and pupil interviews.

Formative assessment can be made from a range of sources within day to day teaching and is ongoing to inform future planning as part of Assessment for Learning. Assessment for Learning in science across school makes use of a range of strategies to self-assess, peer assess, address misconceptions, talk, discuss and question. In addition to these, teachers use the TAPS focused practical assessments which are implemented within units of work and for which there are support materials and exemplar documents.

End of unit assessments can be used or adapted from the Developing Experts resources available online.

Role of the Subject Leader
Each subject leader has a job description with clear responsibilities for their role:

Intent

- Having oversight of curriculum coverage and ensuring that the curriculum meets national requirements
- Ensuring that colleagues are aware of expectations of curriculum, planning and assessment
- Action planning for future development
- Ensuring that appropriate resources are in place to deliver a rich and challenging curriculum.

Implementation

- Ensuring that teaching within the subject is strong and promotes the acquisition of key knowledge, building on prior learning
- Leading professional development, providing guidance and support to colleagues
- Oversee assessment
- Making best use of financial and human resources to impact on standards and have a clear evidence based rationale for use of any allocated funding
- Promoting the subject and championing the subject with colleagues and pupils.

Impact

- Monitoring the effectiveness of teaching and the impact on learning and standards
- Evaluating and summarising all aspects of the subject to define next steps for improvement.

Reporting

- Maintain a clear overview of your subject for interested parties on the school website ensuring any statutory requirements are met (where appropriate)
- Produce an annual Subject Leader Report which as a full and current evaluation of your subject and incorporate areas for development in the following action plan
- Monitor and update your current action plan to reflect the current position of the subject
- Organise all aspects of evidence in a coherent and accessible subject leaders file

Monitoring, Evaluation and Accountability
Monitoring and evaluation of this subject is the responsibility of the Subject Leader in connection with the school governor for science. A range of strategies are used including: pupil interviews, staff interviews, children's work and planning scrutiny as well as data analysis to explore standards of attainment and progress.

An Annual Subject Leader Report is produced and shared with governors. This report will clearly reflect the strengths of the subject and the current key areas for further development which will form the basis of the subject action plan.

In all aspects of monitoring, the subject leader will ensure that the policy is being followed consistently across the school.

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Date: Nov 2022
Approved by: Dr Kim Knowles (Link governor for Science)