Science Policy

Introduction

Our curriculum has been organised and established in consultation with the subject leader and staff. It is continually developed through evaluation with and feedback from teaching and support staff.

Science is a subject within the National Curriculum 2014. This policy outlines the guiding principles by which this school will implement Science in relation to the teaching and learning of the National Curriculum 2014. It sets out a framework within which all staff can co-operate and gives guidance on planning, teaching and assessment.

This document is intended for all teaching staff with classroom responsibilities. It is also intended for Governors, parents, inspection teams, Local Authority Advisory/Improvement Officers and copies are available upon request from the school office and on the school's website

It is the role of the Headteacher and the Science Subject Leader to ensure that the policy is successfully implemented.

Curriculum Intent

Science in our school should develop a sense of excitement and curiosity, as well as providing children with first hand experiences, which help them to understand the world around them. Children should be able to use a variety of scientific vocabulary to explain their understanding of different scientific concepts.

Science in our school is about providing children with a safe and stimulating environment in which they can explore and investigate. The children should be able to effectively work independently and collaboratively to pose questions, analyse causes and be able to explain what is occurring.

We want to inspire our Scientists of the future by developing their knowledge and understanding and highlighting the integral part that science plays in all our lives.

We believe that all children in our school are entitled to a broad and balanced science education, regardless of ethnic origin, gender, class, aptitude or disability.

We believe that Science is good when…

1. We can work together as a group.
2. We can ask questions.
3. Learning is fun.
4. We are able to use different equipment.
5. We can learn outside of the classroom.
6. We can plan and carry out investigations.
7. We can record and talk about our results. (cross curricular experiences)
8. We get to make choices about what we do.
9. We find out new things. (gaining knowledge)
10. We learn about things that are 'real'. (real life experiences)

Attitudes / Skills / Concepts

The national curriculum aims for children to:

- Develop scientific knowledge and conceptual understanding through biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquires that help them to answer scientific questions about the world around them.

- Become equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

In addition to this, children will work scientifically by using the 5 lines of scientific enquiry:

- Making observations over time
- Pattern seeking
- Identifying, classifying and grouping
- Comparative and fair testing (controlled investigations)
- Researching using secondary sources

Implementation

Our scheme of work is based on the National Curriculum Programmes of Study for Science.

In the Foundation Stage, children are to study science through the strand 'Knowledge and Understanding of the World'. The aims of the curriculum takes in to consideration the Early Learning Goals. During the Foundation Stage, children will be encouraged to explore the world around them. They will be provided with the chance to recall and draw upon their own experiences as well as inspiring their own curiosity to find out new things. They will be given opportunity to ask questions and explore through play whilst making links to scientific concepts that occur in everyday life. Children are also given chances to work outside and within the local area.

In Key Stage 1, the children will start to look more closely at the natural and humanly – constructed world around them. They will work collaboratively to ask questions, carrying out investigations and evaluate their evidence. They will begin to understand how to make test fair and start to communicate their ideas more effectively through scientific language, drawings, charts and tables. They will be able to explore though first-hand experience, that encourages their curiosity and interest in science phenomena. The children will be exposed to a range of scientific vocabulary which they will be expected to use when demonstrating their knowledge and understanding of a scientific concept. Children are also given chances to work outside and within the local area.

In Key Stage 2, children will begin to take more responsibility whilst working scientifically. They will work individually and within a group to raise important questions that link to their prior understanding. They will create effective, systematic investigations and begin to make their own decisions on how to conduct this. They will investigate using a wider range of materials and record their findings in a range of different ways including tables, graphs, diagrams and charts. They should be able to communicate their findings and explanations through illustrations and the use of scientific vocabulary. The children will be provided with opportunities to explore, problem solve and think creatively. They will also develop their use of scientific vocabulary and begin to develop their understanding of the different strands of scientific knowledge (i.e. animals inc humans, plants, forces, states of matter, habitats, electricity). Children are also given chances to work outside and within the local area.

In order to support the knowledge that the children develop, cross curricular links will be made with other subjects. The use of books, in particular, will enhance the children's understanding of their science unit by providing real life links, creating interest and by immersing the pupil's fully in a the term's theme. The links with English also lend to opportunities for cross curricular writing in which children can display their understanding and knowledge as well as providing opportunities for them to use taught vocabulary. We will also provide children with oracy related activities to allow them to explore and discuss science concepts with their peers. This will support the use of taught scientific vocabulary. It will also aid the children with the presentational talk skills as they can prepare and present their findings to the class.

Opportunities to use computing during science lessons will be provided throughout the year. This may be done through the use of cameras, data loggers and the use of the internet to conduct research. Links will also be made to the year group's maths objectives through the use of creation of bar charts, lines graphs etc. and through the use of measures.

We adapt and extend the curriculum to the unique circumstances of our school by ensuring that science is covered in a creative and engaging way. When our science unit is linked to the term's theme, it will be used to create cross curricular links and will support our creative curriculum. At times, the science objectives will not correlate with the topic focus for the term. In this instance, the science objectives will be taught alongside the current topic. Science units will normally span over a half term with some units taking a full term. Some units may be visited regularly throughout the year, for example Year 1 will observe the four different seasons and the change between them.

In accordance with the guidance from the DFE, science will be teaching for a minimum of 1 hour a week whilst Key Stage 2 will be two hours a week. This may be taught on a weekly basis or the time allocation may be grouped within a few weeks to tie in with the rest of the teaching during a half termly topic.

Teachers are provided with a long term plan which correlates with the National Curriculum coverage for each year group. A medium term plan has also been created for each year group which informs staff of the learning objectives regarding the scientific knowledge and understanding as well as the working scientifically objectives. It also provides lines of enquiry for clear, focused lessons. The medium term plan provides teachers with suggested activities, resources and books that can be used to support with lessons. Teachers are expected to adapt and modify the medium term plans to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available. We must ensure that any moderation does not overlook any statutory requirements of NC2014. A skills correlation grid has also been created for each key stage phase to ensure that there is progression with the scientific skills required from each year group.

All children will have a science book that they will work in. Work may recorded in a variety of ways including written explanations, photographs, planning grids, graphs, tables and evidence of group/ whole class discussion. A science display (may be part of the term's themed board) will be used to support the children's learning and will provide them with relevant scientific vocabulary and display good pieces of work. Teachers are also provided with an age appropriate planning grid that the children/ whole class will use in order to plan and structure investigative work.

All planning resources are available on the school network as well as links to appropriate websites for the children to use including Terrific Scientific, Explorify and STEM Science. We will also use the portfolios of work from the ASE to guide and aid with assessment as well as the TAPS Science Assessment pack. Rising Stars formative assessments are used to assess knowledge and understanding at the end of each unit of work.

Health & Safety

- All out of school activities will comply with the guidelines in the school Health and Safety policy.
- A risk assessment form will be completed by staff prior to any trips. This will identify any risk and procedures will be put in place to minimise these.
- The 'Be Safe' booklet, which provides school with in class safety information, will be stored in the subject leader's classrooms.
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The contribution of science to teaching in other curriculum areas

- English – Science can provide opportunities for writing. This may be through an explanation of results or the creation of a piece of writing linked to the current English genre e.g. non chronological reports can be linked to living things and their habitats. The contribution of English can also help provide real life contexts for science and give the chance for children to communicate their results to a real life audience e.g. a letter to a newspaper. Oracy activities are also planned in for children to use and develop vocabulary as well as developing their explorative and presentational talk.
- Reading – where possible, the class novel/ other texts used in class should be linked to the Science unit. This helps create interest and enthusiasm as well as making real life links. It immerses the children further into their unit.
- Mathematics- Science provides plenty of opportunities for children to develop their mathematic skills. This can be done through problem solving, calculating measures, time, temperatures and using graphs / tables to communicate results.
- Computing – Children can record their results using cameras. They can use microscopes and data loggers. They can also use computing to conduct further research.
- British Values – Science provides the children with opportunities to help understand the natural and manmade world around them. It allows them to understand attitudes and how science has aided with the development of the world that they live in.

SEN

All pupils, whatever their needs, are included in the teaching of Science. It is part of the school curriculum policy to provide a broad and balanced education to all children, and to ensure that learning opportunities match the needs of all children. Amendments are made in lessons for children with SEND in order for them to access the Science curriculum and to achieve their full potential. This includes:

- Extended time to develop knowledge and understanding
- Use of adaptive teaching to support and scaffold children's learning
- Teacher/TA support
- Adapted recording systems
- Further aids or adapted equipment to allow access to practical activities.
- Use of pre teach vocabulary
- Dyslexic friendly PowerPoints and paper
- Use of job roles when completing group work
- Writing frames and vocabulary support sheet including widgets
- Regular recap and recall of previously taught knowledge
- Working walls
- Knowledge organiser
- Printed pictures and visuals
- Chunking of information
- Use of questioning and time to process
- Break up learning into manageable sections with links and visual cues for each key concept.
- Adapt resources used i.e. size of measuring cylinders

Equal Opportunities.

It is the responsibility of all teachers to ensure that all pupils, irrespective of gender, ability and including gifted pupils, ethnicity and social circumstance, have access to the curriculum and make the greatest progress possible. Continuity and progression is facilitated by the structure and content of the Scheme of Work.

Inclusion

The school is committed to providing effective learning opportunities for all children. Our school aims to provide a Science curriculum which meets the specific needs of individuals and groups of children. This includes the three essential principles of:-

- Setting suitable learning challenges
- Responding to pupil's diverse learning needs
- Overcoming potential barriers to learning and assessment for individuals and groups of pupils
- Using classroom assistants (where available) to support the work of individual children or groups of children.

Resources

All resources for science are stored in the cupboards outside the Year 6 classrooms. Each cupboard is labelled with the contents. The equipment is to be put back into the cupboard correctly by all staff and the subject leader is to be informed if anything becomes broken/ needs replacing. Each class may also order equipment as and when they need it e.g. seeds for when learning about plants. This will be done with the subject leader's permission. We use technology to support us with our work through the use of iPads and data loggers.

The outdoor learning areas (next to the infant yard) is a fantastic place for children to explore plants and mini beasts. Our school is also close to a woodland which can be used to support the children's learning outside of the classroom environment, as well as using our garden/ Forest Schools area.

Children also have access to a school Science Club. There is also opportunities for parents and visitors to speak/ demonstrate to classes the science that they do (e.g. nurse visit). This will

support the raising of the profile of science within our school. Some year groups may have a school trip that links to the current learning in science.

Impact

Assessment, Record Keeping and Reporting

Feedback and marking should be in keeping with the school's 'Feedback and Response' policy. It should enhance children's learning by prompting further questions/ next steps whilst also provide support for children that have had misconceptions. Children should be provided with the chance to reflect on their learning independently to help the teacher to judge their understanding. Teachers are to highlight the objectives covered throughout the year on the science tracker throughout the year to keep a formative assessment on the children in the class. This will then help them to inform a judgement of whether each child is working below, within, secure or working at greater depth based on the year group expectations. They will complete a tracker with these summative judgements every term (based on the units that have already been taught). These trackers will then be monitored by the subject leader and in turn provide them with an assessment regarding the whole school. All assessments for science will be reported back to parents through the end of year reports. Teachers will be able to make a judgement on different areas of science and provide a comment for the parents to read. Judgements can be made with the support of the Rising Stars formative tests. The TAPS assessment packs and ASE portfolios can also aid the teacher in making a judgement linked to Working Scientifically.

Monitoring and Evaluation

- Monitoring of the standards of teaching and learning in science is the responsibility of the subject leader in consultation with the head teacher. Planning, book scrutiny, pupil voice and lessons will be monitored as part of the Whole School Monitoring and Evaluation policy on a rolling programme. Key strengths will be identified along with issues for development. Any additional actions to be taken are noted on the science action plan for that school year. Subject leaders meet termly with the whole school curriculum lead to reported and discuss findings and feed-back at weekly staff meetings. The subject leader produces an Action Plan at the start of each year and an annual Subject Report for the SLT and Governors in the summer term.

The Role of the Subject Leader

The subject leader for science is Emma Harrison.

It is the role of the subject leader to:-

- Take the lead in policy development and the production of schemes of work designed to ensure progression and continuity in science throughout the school.
- Support colleagues in their development of detailed work plans and implementation of the scheme of work.
- monitor progress and attainment in science
- Take responsibility for the purchase and organisation of central resources for science.
- Keep up-to-date with developments in science education and disseminate relevant information to staff.
- Produces an Action Plan at the start of each academic year
- Produce a report to Governors at the end of each school year.

Their role is defined in detail in their subject leader job description and is linked to teacher appraisal.

Governors

- The link Governor for science is Sarah Stowe. They have the responsibility of meeting with the subject lead termly to discuss data, development of the action plan and any other issues. The link Governor will then provide a report to feedback to the Full Governing Body. In addition to this, the subject lead will write a report to be discussed and accepted at the Curriculum Committee Meetings. This will be a termly report for core subject areas and a yearly report for foundation subjects.

Background Documentation

- This policy was informed by reference to National Curriculum documentation 2014.

Review

- This policy will be reviewed by the Headteacher and all the staff every two years and amendments presented to the Governing Body.

Date of last review : May 2023

Date of next review : May 2025