The Federation of Spixworth Schools

Science Policy

Agreed by Individual Governor: Summer 2024

To be reviewed: Summer 2026

Intent

Overall curriculum rationale

This document is a statement of the aims, principles and strategies used for the development of the curriculum undertaken within The Federation of Spixworth Schools. This policy promotes best practice and establishes consistency in teaching and learning across the federation. It also takes into account the diversity of our learners, providing equality of opportunity for all, alongside varied learning experiences that lead to a consistently high level of pupil attitude and achievement in Science.

The Science curriculum at The Federation of Spixworth Schools provides children with the foundations for understanding the world and beyond, through broad ranging and exciting lessons that will ignite their natural curiosity and wonder. Our children will be supported to think critically and logically to build their knowledge, and their questioning is developed through hands-on, engaging activities. We will grow and challenge their scientific and practical skills to equip them to become inquisitive and confident young scientists.

Legal framework

This policy has due regard to all relevant legislation and statutory guidance including, but not limited to, the following:

- DfE (2024) The Statutory Framework for the Early Years Foundation Stage (EYFS)
- DfE (2013) National Curriculum in England: Science programmes of study: key stages 1 and 2
- The Control of Substances Hazardous to Health Regulations (COSHH)
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013

This policy operates in conjunction with the following federation policies:

- Curriculum Policy
- Health and Safety Policy
- Curriculum Risk Assessment
- Accident Reporting Procedure Policy
- Marking, Feedback and Assessment Policy
- ICT Acceptable Use Policy

Aims

The aims of The Federation of Spixworth Schools Science curriculum are:

- To develop pupils' interest in, and enjoyment of, Science. By building on children's curiosity, the Science curriculum will help to instil a positive attitude towards Science in all pupils.
- To deliver all the requirements of the National Curriculum in relation to Science and covering major scientific concepts.
- To ensure Science lessons are purposeful, accurate and imaginative.

- To ensure pupils have sufficient scientific knowledge to understand both the uses and implications of Science, today and in the future. This will also give pupils an appreciation of the changing nature of scientific knowledge.
- To develop pupils' ability to pose questions, investigate these using correct techniques, accurately record their findings using appropriate scientific language and analyse their results.
- To help pupils develop the skills of prediction, hypothesising, experimentation, investigation, observation, measurement, interpretation and communication.
- To make pupils aware of and alert to links between Science and other school subjects, as well as their lives more generally.

Implementation

EYFS Educational Programme

Taken from the Statutory Framework for the Early Years Foundation Stage January 2024 – Understanding the World:

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

EYFS Early Learning Goals: The Natural World

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Key Stage One

Pupils will be taught to:

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.

This will be taught through the units:

- Plants
- Animals, including humans
- Everyday materials and their uses
- Seasonal changes
- Living things and their habitats

Lower Key Stage Two (Years 3 and 4)

Pupils will be taught to:

- Ask relevant questions and use different types of scientific enquiries to answer these questions, setting up simple practical enquiries, comparative and fair tests.
- Make systematic and careful observations and, where appropriate, take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.
- Gather, record, present and classify data in a variety of ways to help answer questions.
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identify differences, similarities or changes related to simple scientific ideas and processes.
- Use straightforward scientific evidence to answer questions or to support their findings.

This will be taught through the units:

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

Upper Key Stage Two (Years 5 and 6)

Pupils will be taught to:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.

- Report and present findings from enquiries, including conclusions, causal relationships and explanations of the results and the degree of trust in them. This should be in oral and written forms such as displays and other presentations.
- Identify scientific evidence that has been used to support or refute ideas/arguments.

This will be taught through the units:

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

Curriculum Delivery

Throughout The Federation of Spixworth Schools, Science is taught as a discrete lesson and as part of cross-curricular themes when appropriate.

Teaching and Learning Approaches

The federation recognises the fact that in all science classes there are pupils of a variety of abilities, and we seek to provide suitable learning opportunities for all pupils by matching the challenge of the task to the ability of the child.

- Pupils will be taught to describe associated processes and key characteristics in common language, as well as understand and use technical terminology and specialist vocabulary.
- Lessons will develop both substantive and disciplinary knowledge through a range of scientific enquiry approaches:
    - Comparative/fair testing
    - Research
    - Observation over time
    - Pattern seeking
    - Identifying, grouping and classifying
    - Problem solving

Through basing teaching and learning around these enquiry approaches, the following enquiry skills will be developed:

- Asking questions
- Making predictions
- Setting up tests
- Observing and measuring
- Recording data
- Interpreting and communicating results
- Evaluating

- Teaching and learning will be focused on retrieval practice followed by the acquisition of new learning. Pupils will have the opportunity to show independent learning in a task at the end of the unit.
- Teachers will model, use practical equipment and draw up pupils' existing experiences to challenge misconceptions and develop new knowledge.
- Opportunities for outdoor learning will be provided wherever possible.
- Each year group will have the opportunity to undertake an external educational visit or visitor in school, which is Science based, at least once per key stage.
- Science will also be taught as part of any outdoor learning provision.

Enhanced Curriculum

The schools within the Federation of Spixworth Schools are members of The Ogden Trust Partnership; focusing, in collaboration and through training, on the area of physics within the curriculum. This includes use of resources, delivery methods, science ambassadors and engaging with the wider community.

Each school has pupil Science Ambassadors. Their role is to help support the science lead across all key stages, including one that is not their own, and encourage pupil engagement through clubs, assemblies and events.

Planning expectations

All relevant staff members are briefed on the federation's planning procedures as part of staff training.

- Teachers will use the key learning content in the DfE's 'Science programmes of study: key stages 1 and 2' and the National Curriculum as a starting point for their planning.
- Long-term planning will be used to outline the units to be taught within each year group.
- Due to providing for some mixed-age classes, we carry out the medium-term planning on a two-year rotation cycle. By doing so, we ensure that children have complete coverage of the National Curriculum, but do not repeat topics.
- Medium-term planning, including PLAN documents from the ASE, will be used to outline the vocabulary and skills that will be taught in each unit of work, as well as highlighting the opportunities for assessment.
- Medium-term plans, including PLAN documents from the ASE, will identify learning objectives, main learning activities and scaffolding opportunities following the guidance on the progression document for Science.
- Medium-term plans, including PLAN documents from the ASE, will be shared with the subject leader to ensure there is progression between years.
- Short-term planning will be used flexibly to reflect the objective of the lesson, the success criteria and the aim of the next lesson.
- Short-term planning is the responsibility of the teacher. This is achieved by building on the medium-term planning, taking into account pupils' needs and identifying the method in which topics could be taught.
- Short-term plans are solely for the benefit of the classroom teacher and do not need to be shared with the subject leader.

- All lessons will have clear learning objectives, which are shared and reviewed with pupils.

Equipment and resources

Science resources for each unit of work are stored in:

KS1 – cupboard in KS1 Class

KS2 – cupboard in the cookery area.

- The subject leader, in liaison with each key stage, is responsible for ensuring that all resources and equipment are sufficiently maintained.
- Equipment will be checked by class teachers prior to each use and any damages or defects must be reported to the subject leader immediately.
- The subject leader is responsible for maintaining an inventory of resources.
- Staff members must inform the subject leader of any changes regarding Science resources, such as broken items or when new resources are required. Class teachers can discuss the need for new resources with the subject leader. These must be costed before seeking approval from a member of the SLT.
- Any equipment or resources which are a cause of concern will be removed from use immediately.
- The subject leader will carry out an annual audit of the Science resources
- School equipment and resources will be loaned to individuals in line with the federation's Acceptable Use Policy.

Health and Safety

Specific considerations for this subject can be found in the Curriculum Risk Assessment, which is reviewed annually. A log is kept of all staff who have read and understood this assessment each year.

Cross curriculum links

Wherever possible, the science curriculum will provide opportunities to establish links with other curriculum areas.

English

- Pupils are encouraged to use their speaking and listening skills to describe what is happening.
- Pupils' writing skills are developed through recording their planning, what they observe and what they found out.
- Science based texts are sometimes used in English lessons and in guided reading sessions.

Maths

- Science will involve a degree of numeracy at all levels.
- Pupils use their knowledge and understanding of measurement and data handling.
- Where appropriate, pupils record their findings using charts, tables and graphs.

Computing

- Pupils will use ICT to locate and research information.
- ICT will be used to record findings, using text, data and tables.
- Pupils are encouraged to use electronic devices, gaining confidence throughout their school experience.

PSHE
- Health education is taught as part of the science unit about ourselves, which covers:
- Health and growing
- Teeth and eating
- Moving and growing
- Keeping healthy
- Life cycles

History
- Scientific discoveries and the contribution of individuals to Science will be studied.

Spiritual development
- Pupils' development will be focussed on the vastness of Science and the natural world, encouraging a sense of awe.
- Pupils are encouraged to think about the effect of scientific discoveries on the modern world.
- Current scientific developments and issues will be discussed in the classroom, where appropriate.

Inclusion and equality of opportunity
- All pupils will have equal access to the entire Science curriculum, including practical experiments.
- Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all Science lessons.
- Where it is inappropriate for a pupil to participate in a lesson because of reasons related to any of the factors outlined above, the lessons will be adapted to meet the pupil's needs and alternative arrangements involving extra support will be provided where necessary.
- All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.
- The Federation of Spixworth Schools aims to provide all pupils with the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

Impact

Assessment and reporting
- Pupils will be assessed and their progression recorded in line with the federation's Marking, Feedback and Assessment Policy.

- Pupils will be assessed continuously throughout the year against the working scientifically and statutory knowledge objectives.
- Throughout the year, teachers will plan on-going creative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives.
- Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Maths.
- Assessment will be undertaken in various forms, including the following:
    - Talking to pupils and asking questions
    - Discussing pupils' work with them
    - Marking work against the learning objective
    - Specific assignments for individual pupils
    - Observing practical tasks and activities
    - Pupils' self-evaluation of their work
    - Classroom tests and formal exams
    - Evidence of learning on Tapestry (EYFS/KS1)
- Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of subjects and informs their immediate lesson planning.
- In terms of summative assessments, the results of end of unit judgements will be recorded on the End of Unit Assessment sheets and an overall judgement added to Pupil Asset termly. These will be based of progress against the federation's assessment statements.
- Parents will be provided with a written report about their child's progress during the summer term every year. These will include some information on the pupil's attitude towards Science, progress in understanding scientific methods, ability to investigate, and the knowledge levels they have achieved.
- Verbal reports will be provided at parent-teacher interviews during the autumn and spring terms when appropriate.
- Pupils with special educational needs and disabilities (SEND) will be monitored by the special educational needs coordinator.

<u>Staff training</u>

All staff have access to training. This may include but is not limited to:

- The Science subject leader remaining up-to-date with the latest developments in Science through subscriptions to relevant journals, attendance at relevant courses through The Ogden Trust Partnership and VNET, etc., and passing on any newly acquired knowledge/skills to staff members, where appropriate.

<u>Monitoring and evaluation</u>

The staff and Governors are committed to maintaining standards, establishing high expectations, and promoting effective teaching and learning. Procedures for monitoring and evaluation involve all members of the federation community as part of the monitoring cycle.

A commitment to Assessment for Learning (AfL) endorses the federation's participation in the National Curriculum and demonstrates an ethos in which the personalities, strengths

and needs of children are considered and addressed individually. The monitoring and evaluating of practice enables the progress of individuals to be seen within the class and whole-federation contexts of school and staff development.

The main purpose of monitoring, evaluation and review is to ensure that all members of the federation community perform their roles effectively in order to maintain high standards of learning and teaching and raise achievements for all.

The range of approaches in monitoring and evaluating may include:

- Moderation Exercises/ Internal Standardisation – a comparison of children's work across classes and year groups
- Book Looks
- Questionnaires/ Surveys/ Audits
- Learning Walks
- Whole-federation self-evaluation
- Review meetings with staff and pupils
- The inspection process.

Roles and responsibilities

The Role of the Governing Body and Executive Head teacher is to:

- Approve and monitor the content of this policy.
- Liaise with the Executive Head, Heads of Schools, subject leaders and teachers with regards to pupil progress and attainment.
- Nominate a Governor to have specific responsibility for Curriculum including oversight, support and challenge
- Ensure the curriculum is inclusive and accessible to all.

The Role of the Head of School and Curriculum Leader is to:

- Devise long and medium term plans for the curriculum in collaboration with teachers, subject leaders and other members of the SLT.
- Communicate the agreed curriculum to the governing board on an annual basis.
- Ensure the curriculum is inclusive and accessible to all on a day-to-day basis.
- Assist teachers and subject leaders with the planning and implementation of the curriculum, ensuring their workload is manageable.
- Ensure the curriculum is implemented consistently throughout the federation, ensuring any difficulties are addressed and mitigated as soon as possible.

The Role of the Subject Leader is to:

- Provide a strategic lead and direction, ensuring appropriate coverage of the curriculum.
- Keep up to date with developments in subject, at both national and local levels.
- Lead sustainable improvement through supporting colleagues and others.
- Monitor pupil progress.
- Provide efficient resource management.
- Review the way subjects are taught in the federation and plan for improvement linking to whole school priorities.

- Ensure the School Improvement Plan priorities are monitored and consistently met.
- Monitor how their subjects are taught ensuring that appropriate teaching strategies are used.
- Reviewing curriculum plans for their key areas ensuring there is full coverage of the National Curriculum and that progression is planned for.
- Accurately judge standards within their subjects so they indicate the achievements of children at each key stage and indicate expectations of attainment.

The Role of the Class Teacher is to:

- Demonstrate a high level of knowledge of each subject they teach.
- Plan lessons with clear learning objectives that pupils understand.
- Demonstrate an enthusiasm for all themes and subjects.
- Know children as individuals, tailoring reaching to their needs.
- Identify barriers to learning and put strategies in place to overcome them.
- Build and maintain relationships with parents.
- Be able to accurately advise parents on how to further support their children at home.
- Reporting to parents on their child's progress across all areas of learning and development.
- To be an advocate of all learning to all learners.
- Be willing to be a learner as well as a teacher.
- Take on the responsibility for leading on a subject area.
- Act as a support partner for all other curriculum areas.
- Challenge and inspire pupils, expecting the most of them.
- Use a variety of methods to enable all pupils to learn effectively and will manage pupils well, insisting on high standards of behaviour at all times.
- Use time, support staff and other resources effectively.
- Use dialogue with pupils about their progress and their next steps.
- Reflect on their personal strengths and weaknesses and to be proactive to plan their own professional development needs

The Role of the SENCO is to:

- Collaborate with the Executive Head, Head of School, Curriculum Leader and teachers to ensure the curriculum is accessible to all.
- Ensure teaching materials do not discriminate against anyone in line with the Equality Act 2010.
- Carry out SEND assessments where necessary and ensuring pupils receive the additional help they need.
- Liaise with external agencies where necessary to ensure pupils who require additional support receive it.

<u>Review</u>

- This policy is reviewed every two years by the SLT and the governor responsible for Curriculum.
- Any changes made to this policy will be communicated to all members of staff and relevant stakeholders.