



OVERCHURCH INFANT SCHOOL

Science Policy

Approved by Full Governing Body	
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Statement of intent

“Somewhere, something incredible is waiting to be known.”

Carl Sagan

At Overchurch Infant School, our Science curriculum gives children a strong understanding of the world around them and develops their natural curiosity to find out how and why things happen in the way they do. As Scientists, children experience science through different contexts that are engaging, contextual and appropriate for their age group. They acquire specific skills and knowledge to help them to think scientifically using enquiry and investigation and encouraging creative thought. Children learn to ask scientific questions and discuss issues which affect their lives, their community and the world as a whole, now and in the future. Through a variety of first hand experiences, children have the opportunity to develop their understanding of the world through exploration and investigation. This “hands on, minds on” approach continues throughout school to aid conceptual understanding. In addition, the children are immersed in scientific vocabulary, which aids children’s knowledge and equips them with the ability to be able to explain scientific concepts for themselves.

Through adherence to this policy, Overchurch Infant School will not only ensure statutory compliance with the National Curriculum, but also that all pupils have a solid grounding in science and a positive attitude towards scientific knowledge and experimental processes.

The aims of this policy include:

- Developing pupils' interest in, and enjoyment of, science. By building on children's natural curiosity, the science curriculum will help to instil a positive attitude towards science in pupils.
- Delivering all the requirements of the National Curriculum in relation to science and covering major scientific concepts.
- Ensuring science lessons are purposeful, accurate and imaginative.
- Ensuring 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.
- The development of pupils' ability to pose questions, investigate these using correct techniques, accurately record their findings using appropriate scientific language and analyse their results.
- Helping pupils develop the skills of prediction, hypothesising, experimentation, investigation, observation, measurement, interpretation and communication.
- Making pupils aware of and alert to links between science and other school subjects, as well as their lives more generally.

1. Legal framework

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

- National Curriculum (2014) 'Science programmes of study: Key Stages 1 and 2'
- 'Early Years foundation stage (EYFS) Statutory framework – updated 2021.'
- Development Matters (updated 2021)
- The Control of Substances Hazardous to Health Regulations (COSHH) 2002
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 2013
- Keeping Children Safe in Education (2015, updated 2021)
- <http://science.cleapss.org.uk/>
- The Association for Science Education (ASE)

1.1. This policy will be used in conjunction with the following school policies and procedures:

- Health and Safety Policy
- Accident Reporting Procedures
- Assessment Policy
- COVID Risk Assessments and Government guidelines

2. Roles and responsibilities

2.1. The subject leader is responsible for:

- Preparing policy documents, curriculum plans and schemes of work for the subject.
- Reviewing changes to the National Curriculum and advising on their implementation.
- Monitoring the learning and teaching of science, providing support for staff where necessary (both in school and for remote learning where it is needed)
- Encouraging staff to provide effective learning opportunities for pupils.
- Helping to develop colleagues' expertise in the subject.
- Organising the deployment of resources and carrying out an annual audit of all science resources.
- Liaising with teachers across all phases.
- Communicating developments in the subject to all teaching staff.
- Contributing to staff meetings and providing staff members with the appropriate training.

- Organising, providing and monitoring CPD opportunities in the subject.
- Ensuring common standards are met for recording and assessment.
- Advising on the contribution of science to other curriculum areas, including cross-curricular and extra-curricular activities.
- Collating assessment data and setting new priorities for development of science in subsequent years.

2.2. The classroom teacher is responsible for:

- Acting in accordance with the Overchurch Infant School Science Policy, ensuring that lessons are taught in line with the school's Health and Safety Policy at all times.
- Liaising with the subject leader about key topics, resources and supporting individual pupils. Children should be supported to show their knowledge and understanding and not have to rely on written methods if this can be a barrier for them.
- Ensuring that all of the relevant statutory content is covered within the school year.
- Tracking assessment (Insight) of their class, addressing misconceptions and gaps in learning and ensuring children maximise their learning potential in Science.
- Monitoring the progress of pupils in their class and reporting this on an annual basis.
- Reporting any concerns regarding the teaching of the subject to the subject leader or a member of the senior leadership team (SLT).
- Undertaking any training that is necessary in order to effectively teach the subject.
- Helping to look after and monitor the use of resources and informing the subject leader if other equipment needs to be purchased or replaced.

3. The National Curriculum

3.1. The National Curriculum is followed and provides a full breakdown of the statutory content to be taught within each unit. Each year group has specific programmes of study to follow and a 'working scientifically' section to be covered over both years one and two and to have been completed by the end of key stage one.

3.2. The EYFS framework is structured differently to the National Curriculum and is split across seven areas of learning instead of subject areas. The most relevant statements for science are taken from the following areas of learning:

*Communication and Language

*Personal, Social and Emotional Development

*Understanding the World.

Foundation Stage plan as a team using objective-led planning focusing on the age-related skills and early learning goals. All adults can access these plans to understand how to move children's learning forward. There are statements included from the 2021 Development Matters which are prerequisite skills for science within the national curriculum.

Children will have opportunities to develop their early scientific thinking through natural seasonal changes and 'topic' based activities, as well as through child led questions and interests.

Children will be engaged in the three characteristics of effective teaching and learning:

*Playing and exploring

*Active learning

*Creative and thinking critically.

Three and four -year olds will be developing their 'Communication and Language' by using a wider range of vocabulary (including scientific words to name parts of a flower or insect) and understanding 'why' questions, e.g. 'Why do you think the caterpillar got so fat?'

They will begin to make healthy choices about food, drink, activity and toothbrushing in their 'Personal, Social and Emotional Development'.

They will be 'Understanding the World' by using all their senses in hands-on exploration of natural materials, exploring collections of materials with similar and/or different properties and talking about what they can see, using a wide vocabulary. They will explore how things work and discover different forces they can feel. They will talk about changes they notice and begin to understand the need to respect and care for the natural environment and all living things.

Reception aged children will develop their 'Communication and Language' further by learning new vocabulary and using in different contexts, asking questions, describing events in some detail and beginning to articulate their ideas in well formed sentences. They will be encouraged to use talk to help problem solve and to explain how things work or what might happen. In 'Personal, Social and Emotional Development' they will know and talk about the different factors that support their overall health and well-being, including regular physical exercise, healthy eating, toothbrushing and sleep. They will be 'Understanding the World' by exploring and describing what they see, hear and feel while they are outside, and noticing and talking about the changing seasons and how they affect the natural world around them.

The ELG related to Science are:

Communication and Language – Listening, Attention and Understanding:

*Make comments about what they have heard and ask questions to clarify their understanding.

Personal, Social and Emotional Development – Managing Self:

*Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

Understanding the World – The Natural World:

*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.

3.3. During **Years 1 and 2**, pupils will be taught as per the requirements of the **National Curriculum**.

The principal aim for Science in the National Curriculum is to enable *pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.*

The National Curriculum for Science aims to ensure all pupils:

- *are encouraged to be curious and ask questions about what they notice.*
- *are helped to develop their understanding of scientific ideas by using types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information.*
- *should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.*

Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at Key Stage 1.

4. Cross-curricular links

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

4.2. **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.

4.3. **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.

4.4. **Computing**

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

4.5. **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

4.6. **History**

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

4.7. **Spiritual development**

- Pupils' development will be focussed on the vastness of science and the natural world, encouraging a sense of awe and wonder.
- 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.

5. Teaching and learning

- 5.1. 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.
- 5.2. Lessons will allow for a wide range of scientific enquiry, including the following five areas:
 - Observation over time.
 - Pattern seeking.
 - Identifying, classifying and grouping.
 - Comparative and fair testing.
 - Research using secondary sources.
- 5.3. Opportunities for outdoor learning will be provided wherever possible.
- 5.4. Science planning is located in every classroom and available to access on the staff shared drive; this can be used to promote progression throughout the school.

6. Planning

- 6.1. All relevant staff members are briefed on the school's planning procedures as part of staff training.
- 6.2. Throughout Overchurch Infant School, science is taught as a discrete lesson and as part of cross-curricular themes when appropriate.
- 6.3. Teachers will use the key learning content in the National Curriculum 'Science programmes of study: key stage 1'.
- 6.4. Lesson plans will demonstrate the balance of visual, auditory and kinaesthetic elements used in teaching, ensuring that all pupils with different learning styles can access the learning experience.
- 6.5. Long-term planning will be used to outline the units to be taught within each year group.
- 6.6. Medium-term planning 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.
- 6.7. Medium-term plans will identify learning objectives, main learning activities and differentiation.
- 6.8. Medium-term plans will be planned with the subject leader to ensure there is progression between years.

- 6.9. Short-term planning will be used flexibly to reflect the objective of the lesson, the success criteria and the aim of the next lesson.
- 6.10. Short-term planning is the responsibility of the teacher. This is achieved by building on their medium-term planning, taking into account pupils' needs and identifying the method in which topics could be taught.
- 6.11. Short-term plans are solely for the benefit of the classroom teacher and do not need to be shared with the subject leader.
- 6.12. All lessons will have clear learning objectives, which are shared and reviewed with pupils.

7. Marking, assessment and reporting

7.1. In Key Stage 1 written recording for Science will be highlighted on the planning and examples may be included in the Science floorbook. Often the Science work will be practical and recording will be done verbally and through photographs displayed on Working Walls, Twitter and in the class floorbook. Observations and photographs taken in the Foundation Stage will feed into their Learning Journey/Tapestry assessment information.

7.2. Foundation Stage children will be observed against the age related expectations and the ELGs and this will feed into the individual learning Journeys/ Tapestry online program. Parents have access to Tapestry at home and can also add their own comments.

7.3. By the end of Foundation Stage – For each ELG, practitioners must judge whether a child is:

- meeting the level of development expected at the end of EYFS (expected)
- not yet reaching this level (emerging)

Where a child has a special educational need or disability (SEND), teachers should take care to ensure the child is able to demonstrate their attainment. Children should be assessed on the basis of what they can do when using the adaptations they normally use to carry out daily activities, so that teachers come to know all children at their most capable. Adaptations include mobility aids, magnification and adapted ICT and equipment. A child can use their established or preferred mode of communication for all the ELGs except 'Speaking'. Where a child has a special educational need, teachers should be alert to their demonstrating attainment in a variety of ways, including eye pointing, use of symbols or signs. In this case, practitioners should give additional detail about the child's understanding and preferred means of communication in their EYFS profile record.

7.4 In Key Stage One Science will be assessed against the NC objectives and fed onto the school assessment tracker using the online 'Insight' tracking system. This will be done at least termly and is used as a working document, identifying gaps and misconceptions and addressing them in each class. This is the responsibility of each class teacher and the subject leader will look at this data at key points over the school year.

- 7.5. Year two Teachers will refer to the exemplifications for science and the Teacher Assessment Frameworks for judging whether a child has reached the expected standard.
- 7.6. Pupils will be assessed and their progression recorded in line with the school's Assessment Policy.
- 7.7. Throughout the year, teachers will plan on-going creative assessment opportunities in order to gauge whether pupils have achieved the key learning objectives.
- 7.8. Assessment in science is based upon scientific knowledge and understanding, rather than achievement in English or Maths.
- 7.9. 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 'quizzes' (including the 'Plickers' resource)
- 7.10. Formative assessment, which is carried out informally throughout the year, enables teachers to identify pupils' understanding of subjects and informs their immediate lesson planning.
- 7.11. In terms of summative assessments, the results of end of year assessments will be passed to relevant members of staff, such as the pupil's future teacher and in the case of Year 2 children with Overchurch Junior School.

7.12. **Science using the science frameworks**

- The standard in this framework contains a number of 'pupil can' statements. To judge that a pupil is working at the standard in science, teachers need to have evidence which demonstrates that the pupil meets all of the 'working scientifically' statements and all of the 'science content' taught in the final year of the key stage.
- There is no requirement to have evidence from the classroom that pupils have met statements relating to science content taught before the final year of the key stage. Where possible, teachers should draw on assessments that have been made earlier in the key stage to make their judgement against this framework.
- The 'working scientifically' statements must be taught through, and clearly related to, the teaching of substantive science content in the programme of study. The 'science content' statements will be taught and assessed throughout the key stage. The framework shows where statements relating to science content appear in the national curriculum.

Working at the expected standard

Working scientifically-

The pupil can, using appropriate scientific language from the national curriculum:

- ask their own questions about what they notice
- use different types of scientific enquiry to gather and record data, using simple equipment where appropriate, to answer questions:
 - ♣ observing changes over time
 - ♣ noticing patterns
 - ♣ grouping and classifying things
 - ♣ carrying out simple comparative tests
 - ♣ finding things out using secondary sources of information
- communicate their ideas, what they do and what they find out in a variety of ways.

Science content

The pupil can:

- name and locate parts of the human body, including those related to the senses [year 1], and describe the importance of exercise, a balanced diet and hygiene for humans [year 2]
- describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults [year 2]
- describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants [year 2]
- identify whether things are alive, dead or have never lived [year 2]
- describe and compare the observable features of animals from a range of groups [year 1]
 - group animals according to what they eat [year 1], describe how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships [year 2]
- describe seasonal changes [year 1]
- name different plants and animals and describe how they are suited to different habitats [year 2]
- distinguish objects from materials, describe their properties, identify and group everyday materials [year 1] and compare their suitability for different uses [year 2].

- 7.13. Parents will be provided with a written report about their child's progress during the **summer** term every year. These will include information on the pupil's attitude towards science, progress in understanding scientific methods, ability to investigate, and the knowledge levels they have achieved.
- 7.14. Verbal reports will be provided at parent-teacher meetings, as and when appropriate.
- 7.15. Pupils with special educational needs and disabilities (SEND) will be monitored by the special educational needs coordinator and the class teacher(s).

8. Equipment and resources

- 8.1. Science resources for each unit are stored in appropriate year groups or in the Key Stage 1 Resources cupboard in between classes 7 and 8.
- 8.2. The subject leader, in liaison with the caretaker and SLT, is responsible for ensuring that all resources and equipment are sufficiently maintained.
- 8.3. Equipment will be checked prior to each use and any damages or defects must be reported to the subject leader immediately.
- 8.4. The subject leader is responsible for maintaining an inventory of resources.
- 8.5. Staff members must inform the subject leader of any changes regarding science resources, such as broken items or when new resources are required.
- 8.6. Any equipment or resources which are a cause of concern will be removed immediately.
- 8.7. The subject leader will carry out an annual audit of the science resources, reordering any consumables when necessary.
- 8.8. Class teachers can discuss the need for new resources with the subject leader.
- 8.9. The subject leader is responsible for negotiating requests from staff members and ensuring resources are bought within the amount allocated in the annual budget.

9. Health and safety

- 9.1. Staff members will act in accordance with the school's Health and Safety Policy at all times.
- 9.2. Covid risk assessments and Government guidelines will be followed and implemented by all.

- 9.3. Accidents and near-misses will be reported following the procedure outlined in the school's Accident Reporting Procedures.
- 9.4. A risk assessment will be carried out by class teachers before conducting an experiment or undertaking practical activities.
- 9.5. All pupils will be shown how to correctly use equipment and will be monitored by staff members whilst using equipment.
- 9.6. All pupils will be made aware of how they are expected to behave, ensuring that they show respect to other people and the environment.
- 9.7. Pupils are made aware of the personal safety protocols and equipment needed when using different equipment or carrying out different tasks.
- 9.8. Staff members will be made aware of Health and Safety regulations as part of their induction training and will act in accordance with these whilst undertaking activities.
- 9.9. Any 'new' experiments or activities which a teacher has not used in the classroom before will be trialled prior to being performed with pupils.
- 9.10. At the beginning of any experiment, the teacher will outline the purpose of the experiment to the class, and all hazards and safety precautions will be thoroughly outlined.

10. Equal opportunities

- 10.1. All pupils will have equal access to the entire science curriculum, including practical experiments.
- 10.2. Gender, learning ability, physical ability, ethnicity, linguistic ability and/or cultural circumstances will not impede pupils from accessing all science lessons.
- 10.3. 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.
- 10.4. All efforts will be made to ensure that cultural and gender differences will be positively reflected in all lessons and teaching materials used.
- 10.5. Overchurch Infant School aims to provide more academically able pupils with the opportunity to extend and deepen their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

11. Monitoring and review

- 11.1. This policy will be reviewed on an annual basis by the subject leader, in collaboration with the Headteacher.
- 11.2. The subject leader will monitor teaching and learning in science at Overchurch Infant School, ensuring that the content of the National Curriculum is covered.
- 11.3. Any changes made to this policy will be communicated to all teaching staff.