

# Science Policy

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**CAPTAIN WEBB PRIMARY SCHOOL**

Curriculum

## Document History

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## Science policy

Science is a way of finding out about the real world through methodical investigation, systematic observation, questioning and experimentation.

At Captain Webb Primary School, pupils are given appropriate learning opportunities so that they develop the skills needed to be active citizens within an increasingly scientific world. Science is a powerful and useful tool through which children's understanding of the world around them is carefully developed. It is our aim to create a challenging environment that raises standards of achievement in science through high quality teaching and learning.

### Aims of teaching

At Captain Webb, our intention is to provide a high-quality science education that provides children with the foundations they need to recognise the importance of science in every aspect of daily life. As one of the core subjects taught in primary schools, we give the teaching and learning of science the prominence and relevance it requires. Through science learning, our children have a greater awareness of the role of science in everyday life. Science at Captain Webb ignites pupils' curiosity and offers opportunities to develop their observation, questioning and reasoning skills whilst equipping them with the key knowledge and understanding of the world around them. We intend for our children to think independently and to be life-long learners who are enthused, curious and inquisitive, confident to ask 'Big Questions' and who are well prepared for their future in the ever-changing world.

#### 1. Teaching and learning

Our pupils leave Captain Webb with all the knowledge and skills required to be curious and confident scientists by embedding a curriculum that helps children foster a healthy curiosity about the world around them. Our curriculum has been planned to ensure that the knowledge children have is built upon not only each year, but each term and within every science lesson. We've found that this increases children's enthusiasm for the topic whilst embedding procedural knowledge into their long-term memory. Knowledge within our science curriculum is taught through the specific disciplines of biology, chemistry, and physics. These are mapped out across the year groups to ensure progression.

Our carefully planned curriculum ensures children have the chance to apply their knowledge to scientific skills and encourages practical exploration and investigation activities, which enable our children to think and behave like scientists. Children understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Thus, our curriculum aims to enable pupils to develop enquiring minds with a range of investigative skills. Working scientifically plays an important role in our science planning as it means that children can obtain key scientific knowledge through practical experiences like using scientific equipment, conducting experiments, and explaining ideas confidently.

Science at Captain Webb is taught through blocks which supports children to develop the mastery of the subject. Children working at greater depth can revisit their learning and delve deeper into the topic. At the beginning of each topic or lesson, recap questions are asked to determine prior knowledge and ensure that progression is consistent.

Teachers are also expected to provide topical vocabulary per science unit that a learner can point or refer to when explaining scientific processes. Scaffolding learning makes each lesson accessible to all and teachers are encouraged to bring abstract concepts to life using concrete resources.

#### 2. Programmes of study

Science is arranged into blocks by the class teacher. See the table below for our science curriculum coverage:

|                                                          | Autumn 1                                               | Autumn 2                                | Spring 1                         | Spring 2                 | Summer 1                  | Summer 2                 |
|----------------------------------------------------------|--------------------------------------------------------|-----------------------------------------|----------------------------------|--------------------------|---------------------------|--------------------------|
| Year 1<br>Seasonal changes (ongoing throughout the year) | Animals including humans (Human body parts and senses) |                                         | Everyday materials               | Animals including humans |                           | Plants                   |
| Year 2                                                   | Animals including humans                               | Living things and their habitats        | Use of everyday materials        |                          | Plants                    |                          |
| Year 3                                                   | Plants                                                 |                                         | Animals, including humans        | Light and Dark           | Forces and Magnets        | Rocks                    |
| Year 4                                                   | Electricity                                            | Sound                                   | Living things and their habitats |                          | Animals, including humans | States of matter         |
| Year 5                                                   |                                                        | Changing materials and their properties | Living things and their habitats | Forces                   | Earth and Space           | Animals including humans |
| Year 6                                                   | Living things and their habitats                       | Animals including Humans                | Evolution                        | Light                    | Electricity               |                          |

### 3. Foundation stage

The Foundation Stage deliver science content through the ‘Understanding of the World’ strand of the EYFS curriculum. This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology, and the environment. They are assessed according to the Development Matters attainment targets.

#### Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. Not only is this done via practical activities to spark their interest, but also through secondary sources such as books, videos and simulations. These help children to understand and make sense of scientific content. They should be assisted to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding out information using secondary sources. They 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.

‘Working scientifically’ is described separately in the programme of study but must always be taught throughout units 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.

### Lower Key Stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry is likely to be the best ways of answering them: including observing changes over time, noticing patterns, grouping, and classifying things, carrying out simple comparative and fair tests and finding information out using secondary sources. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

‘Working scientifically’ is described separately at the beginning of the programme of study but must always be taught throughout units and clearly related to 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 correctly and with confidence, using their growing word reading and spelling knowledge.

### Upper Key Stage 2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships, and interactions more systematically. During upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping, and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

‘Working and thinking scientifically’ is described separately at the beginning of the programme of study but must always be taught throughout units and clearly related to 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, spell and pronounce scientific vocabulary correctly.

## 4. Planning

Planning is a process in which all teachers are involved. Planning should be done with partner teachers. All teachers keep a copy of the termly and weekly planning in their files. The National curriculum for primary science is used to inform teacher’s planning. The key knowledge and skills of each science topic is also mapped out in our Key Knowledge and Skills grid to ensure curriculum coverage and progression.

### Cross-curricular links

Cross-curricular links are continuously made throughout our theme planning, ensuring quality and purposeful teaching and learning is happening.

### English

Pupils are actively encouraged to develop their scientific vocabulary and their oral communication skills. They develop their skills of writing when recording their planning, what they observed and what they found out. There are opportunities for practising different genres of writing, such as writing instructions, persuasive writing, recounts, and explanations. They also develop their scientific thinking and understanding through whole class reading of scientific texts – these quality books have been chosen to run alongside year group topics and are mapped out on our Quality Science texts grid.

### Maths

Pupils are expected to use their knowledge and understanding of pattern seeking, measurement and data handling at appropriate levels.

## 5. Assessment

Children's progress is continually monitored throughout their time at Captain Webb Primary School and is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum. These are set out as statutory requirements. We also draw on the non-statutory requirements to extend our children's knowledge and understanding, which provide an appropriate level of challenge.

In Science, at the start of every unit, we share a 'what we should know sheet', which recaps prior learning and vocabulary that children can build on. We then assess using a range of different tools:

- Formative assessments are carried out during and following short, focused tasks and activities. They provide pupils and teaching staff the opportunity to reflect on their learning and this feeds into planning for the next lesson or activity. Formative assessment in Science includes assessment style questions throughout the journey (using them as either a pre-teach opportunity, a starter, a check in or a mini plenary) and a summary of learning sheet, which children fill out at the end of each lesson to summarise their new learning in their own words.
- Summative assessment should review pupils' capability and provide a best fit level. Use of independent open-ended tasks, provide opportunities for pupils to demonstrate capability in relation to the unit's work. We assess substantive knowledge by using a hot test (from White Rose Science), which assess the key learning objectives, and a short vocabulary assessment at the end of each unit. Using this information, teachers then complete an assessment grid and evaluate if each child has met the main curriculum objectives of that unit. This data is then passed on to the subject lead to analyse.

In EYFS, we assess the children's Understanding of the World according to the Development Matters statements and some aspects of Expressive Arts Design are also science based.

## 6. Equal opportunities

Whole school policy on inclusion will be adhered to in science activities. Teachers ensure that all children have access to the range of science activities and use opportunities within science to challenge stereotypes. Children with special needs or disabilities will be differentiated for and supported appropriately, to ensure development of skills and equal access to the Science curriculum.

## 7. Health and safety

All staff are aware of the requirements of the school's Health and Safety Policy. Risk assessments, if needed, are carried out for science experiments and activities. Visits to off-school sites are arranged in line with the school visits policy and Risk Assessment Forms are filled in.

All staff are aware of *CLEAPSS*, which can be used to support any practical science and technology.

## 8. Resources

We have sufficient, high-quality science resources to aid and support the teaching of all units and topics taught, from EYFS to Y6, including age-appropriate equipment used for a range of scientific enquiry. EYFS have a range of resources kept in classes, for simple access for children during exploration. The library contains a good supply of science topic books to support children's individual research.

## 9. Inclusion

In school, we aim to meet the needs of all our children by adapting our science learning to the needs of our pupils. We provide a variety of approaches and tasks appropriate to ability levels. Activities both within and outside the classroom are planned in a way that encourages full and active participation by all children, matched to their knowledge, understanding and previous experience. Collaboration and hands on activities are used throughout both key stages to encourage participation by all. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language. Where a child's progress falls significantly outside the expected range, they are provided with an Individual Provision Map (PM). This (PM) is taken into account in enabling children with special educational needs to access and engage with the science curriculum. Factors such as classroom organisation, teaching materials, teaching style and adaptive teaching are taken into account to enable the child to learn more effectively.

Teachers refer to the 'Whole School SEND Teacher Handbook' found at <https://www.wholeschoolsend.org.uk/resources/teacher-handbook-send>

## 10. Role of the subject leader

It is the responsibility of the subject leader to monitor the standards of children's work. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school.