

Castle Primary School Science Policy

Review Date: Feb 2024

Overview

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, and 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, our children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Above all science should be interesting and fun for young children

At Castle, children learn science through the structure of the new National Curriculum and through cross curricular links with other subjects wherever possible. Science is divided into two areas: the three bodies of knowledge, which are biology, chemistry and physics, and then 'working scientifically,' which focuses on scientific skills.

The best science teachers set out to 'first develop and maintain curiosity' in their children. Without curiosity and wonder, our children lose their natural inclination to observe the world, ask questions of it and investigate to find answers. Like this, primary science should be child-led, enquiry based and saturated with curiosity and wonder for both teachers and children.

Curriculum Intent

Science at Castle Primary School aims to:

- Develop enquiring minds
- Relevant to the real world that live in now
- Fun and enjoyable
- Be hands on
- Learn processes relevant to real life supported by vocabulary of Science

At Castle Primary School, we provide a curriculum in line with the National Curriculum that is broad and balanced. Our curriculum aims for a 'hands on', full of 'wonder and wow' approach, inspiring the imagination and exploring opportunities to investigate in a range of practical ways.

We promote curiosity, generate questions to be investigated and develop natural inquisitiveness and instil a 'love of learning'. It is our intent that our children do this by applying knowledge and skills from a range of subjects and to ensure our curriculum builds on previous learning and is progressive.

Through science lessons it is our intent to allow children to have first-hand opportunities to explore and ask questions as well as learn about the work of famous and contemporary scientists. To generate questions to be investigated, make predictions, participate in practical activities using a range of equipment, to collate results and draw conclusions based on their findings. Children will have opportunities to work in a variety of ways: independently, collaboratively and have opportunities to apply different learning styles. Our aim is for our children to become scientifically literate and maybe one day aspire to jobs in the field of science.

Ambition for All

Our Science curriculum is achievable for all. Children are taught through whole-class interactive teaching, where the focus is on all children working together on the same lesson content at the same time. This ensures that all children can master concepts before moving to the next part of the curriculum sequence, allowing no child to be left behind. If a child fails to grasp a concept or procedure, this is identified quickly and early intervention ensures they are ready to move forward with the whole class in the next lesson. Although the teaching of the concepts is the same for all, the outcomes in terms of application may be different.

Curriculum Implementation

Science is taught at Castle Primary School through a variety of approaches. These may include: investigations, practical experiments, video clips, stories or drama. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. We ensure that scientific skills are used and embedded at every opportunity and outdoor learning used when applicable.

Existing knowledge is checked at the beginning of each topic to ensure that teaching is informed by the children's starting points and that it takes account of pupil voice, knowledge and skills acquired. We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases they become more proficient in selecting and using scientific equipment, collating and interpreting results, and become increasingly confident in their growing ability to come to conclusions based on real evidence.

EYFS

Science in the Early Years Foundation Stage is planned using the Early Years Curriculum 'Understanding of the World'.

Key Stage 1

Science teaching in Key Stage 1 will:

- Enable pupils to experience and observe phenomena, by looking more closely at the natural and humanly-constructed world around them.
- Encourage pupils to be curious and ask questions about what they notice.
- Help children 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 of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information.
- Teach children 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.
- 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.
- **Always** include 'Working Scientifically' which will be taught through and be clearly related to the teaching of substantive science content in the programme of study.
- Enable pupils to 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

Science teaching in lower key stage 2 will:

- Enable pupils to broaden their scientific view of the world around them and develop greater curiosity for scientific knowledge.
- Teach pupils to 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.
- Encourage pupils to ask their own questions about what they observe and make some decisions about which types of scientific enquiry are 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 things out using secondary sources of information.

- Teach children to draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- **Always** include 'Working Scientifically' which will be taught through and be clearly related to the teaching of substantive science content in the programme of study.
- Enable pupils to read and spell scientific vocabulary correctly and with confidence.

Upper Key Stage 2

Science teaching in upper Key Stage 2 will:

- Enable pupils to develop a deeper understanding of a wide range of scientific ideas.
- Teach pupils to do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.
- Let the children encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.
- Enable children to recognise that scientific ideas change and develop over time.
- Teach children to 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.
- Teach pupils to 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.
- **Always** include 'Working Scientifically' which will be taught through and be clearly related to the teaching of substantive science content in the programme of study.
- Enable pupils to read, spell and pronounce scientific vocabulary correctly.

Health and Safety

Our children are taught to use scientific equipment safely during practical activities. Class teachers, teaching assistants and the subject leader will check equipment regularly and report any damage, taking defective equipment out of action.

Inclusion

Pupils with diverse learning needs in science are provided for through:

- Teachers planning for the pupils' full participation - quality first teaching.
- Setting high expectations for all pupils.
- Providing opportunities for all pupils to achieve.
- Creating effective learning environments.
- Providing equality of opportunity through different teaching approaches.
- Continuous consultation with and involvement of parents.

Assessment of Science

Children self-assess their understanding and knowledge at the start and at the end of each unit of work. These outcomes are then assessed against by the class teacher. Younger children use smiley faces, whilst KS2 use ticks to indicate their level of understanding (1 = WTS, 2 = EXS, 3 = GDS)

By the end of each Key Stage, children are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. An assessment task / activity may be set to show this at the end of a unit of work.

Pupil achievement is then recorded termly on the school's tracking system as follows:

Castle Tracking / Colour	Curriculum Outcome
1	SEND
2	Working Towards
3	Expected
4	Greater Depth

Curriculum Impact

When our pupils leave each Key Stage, learners will have the Scientific knowledge, skills and vocabulary necessary to progress to the next stage of their learning. We firmly believe that a deep understanding of Science is key to success in everyday life and so the impact of our Science curriculum goes beyond the results of assessments.

Our Science curriculum allows children to approach a range of real-life problems and apply their scientific skills to solve them. From exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving.

Children will have overwhelmingly enjoyed science and this results in motivated learners with a sound scientific understanding.

As a result of high-quality teaching, learners make sustained progress in Science and develop the skills, knowledge and confidence to challenge and investigate throughout their lives.

Monitoring and Evaluation

The Head Teacher, Science Leader and Governors manage a programme of monitoring and evaluation of the teaching and learning in the school through:

- The monitoring of planning
- Lesson observations
- Staff consultation
- Book scrutiny
- Scrutiny of teacher assessments
- Monitoring of standards in science.