

Science Curriculum Guide



The Quality of Education Subject Pathway





SCIENCE CURRICULUM

Intent

At Cherry Tree, we believe that Science has never been a more important curriculum subject than it is right now. From the effects of climate change, and scientists working to limit Earth's rising temperature, to understanding adaptation and global warming's impact on the world's flora and fauna. Science is evolving and our children need to be at pace with it.

The planning, amended from Lion Pathways, maps all objectives from the National Curriculum to ensure that progression is clear from EYFS to Year 6. Planning identifies the key knowledge and skills pupils need to truly work scientifically.

Our curriculum is ambitious and exciting enabling pupils to understand the material world around them.

Working Scientifically

Rather than teaching component units in a linear way, our curriculum builds disciplinary knowledge over time to enable pupils to develop skills and understanding as they progress through the curriculum.

Scientific enquiry is more than practical experiments or collecting data. It is about enabling pupils to grapple with research and presenting pupils with new ideas and concepts so that they can extract meaning.

Planning

Throughout our lesson plans and connected lesson visuals, pupils are presented with layered content that builds understanding over time. We know that pupils presented with disconnected information in lessons cannot build fluency or apply the knowledge and skills in meaningful contexts.

The potential for pupils developing misconceptions in Science study is greater because of the deep subject knowledge presented. Knowing this, our lessons are planned to ensure that pupils continually revisit concepts – enabling teachers to quickly address emerging gaps in knowledge or skills.

Each lesson begins habitually with a reminder of key content over the sequence of lessons. Sometimes the lesson opening could be prompting prior learning from a previous year where a topic has been studied before – e.g. gauging pupils' understanding of plants from Year 1 into Year 2.

A proportion of time in each lesson is specifically planned to provide pupils with time to practise or implement their new learning.

"The science of today is the technology of tomorrow"

Edward Teller

Experiential learning

Our curriculum is designed to ensure that pupils' knowledge and skills build towards a composite outcome that celebrates their newly acquired learning.

For example: Pupils in KS2 learning about the eye and light will have the opportunity to make and build a spectroscope at the end of the component unit. This ability to showcase their learning is crucial for our children as it helps to solidify the substantive concepts taught.

Celebration of Learning

At the beginning and end of each term, pupils are set a home learning task linked to the science topic being studied in class. These tasks support pupils in developing key scientific skills, including enquiry, observation, investigation, and the use of scientific vocabulary and simple data. Pupils are encouraged to ask questions, explore, and make sense of the natural world around them, strengthening their understanding of scientific concepts, processes, and the working scientifically approach, while building their cultural capital. Completed work is celebrated and displayed in classrooms, recognising effort, curiosity, creativity, and achievement. This approach enables pupils of all abilities to demonstrate their scientific knowledge and understanding in a format that reflects their individual interests, strengths, and learning styles.



Assessing pupil progress in Science

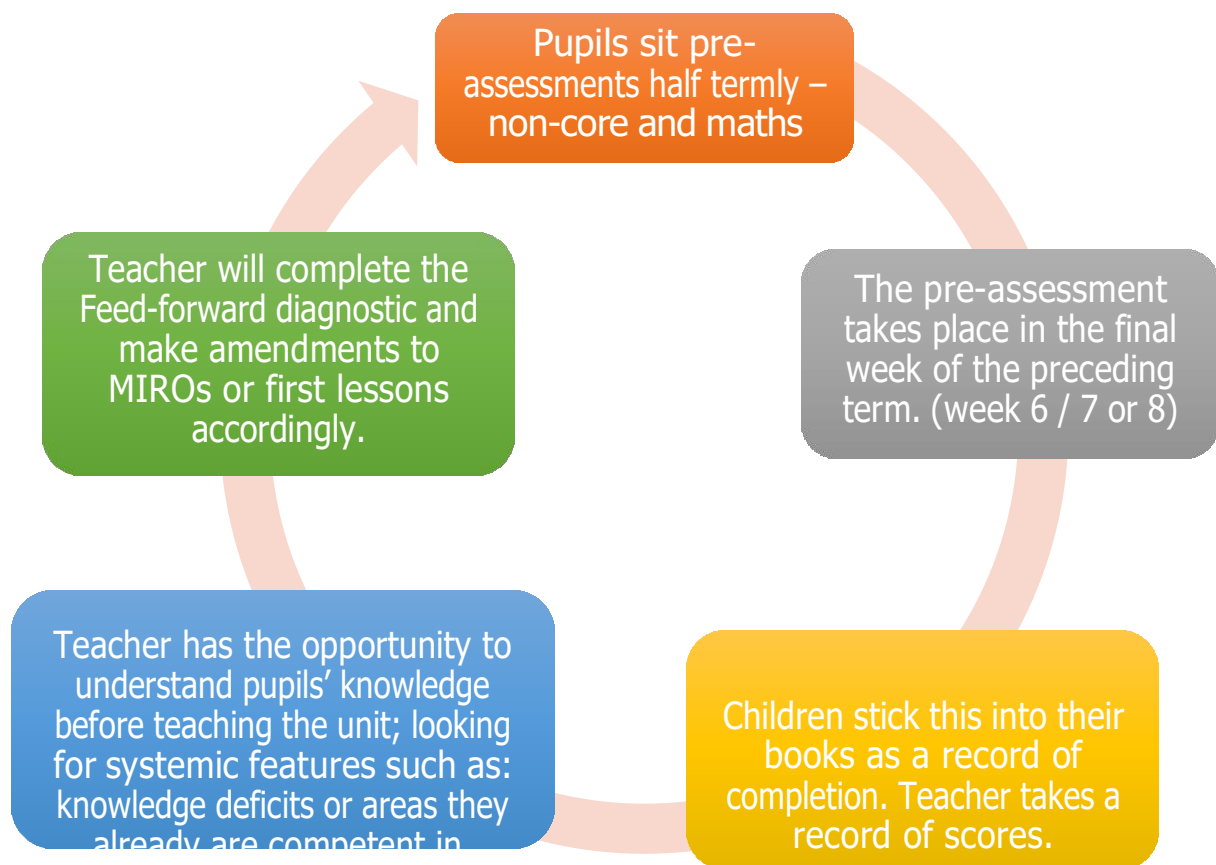
Teachers continually employ formative assessment to understand how pupils are knowing more and remembering more.

Each lesson, across the curriculum, begins with re-capping of the previous component lesson. Quick fire questions are answered verbally, in books or in groups. Exit tickets measure incremental knowledge progression – alerting teachers to misconceptions or wider gaps in prior knowledge.

Quizzes, delivered through IT and plenary activities, further demonstrate the knowledge pupils' have acquired. This example of low-stakes testing supports teachers in making balanced decisions on when to recap and repeat knowledge to ensure that is fully embedded.

The Lion Pathways provide a composite assessment task at the end of each component unit. This combines pupil self-assessment with teacher assessment indicating how well pupils have progressed in the component unit.

Interweaving knowledge concepts to commit to long-term memory



The purpose of checking prior assessment:

- To understand the knowledge-base (over time) of children before they are taught a unit of work.
- To ensure that misconceptions can be addressed ahead of delivery – which supports pupils to build new knowledge on firm foundations.
- To enable you to consider what is the MOST important content to teach/impart in the unit and which sections may need a lighter-touch.

Pre-assessment knowledge quizzes – teaching to need

A mixture of questions to elicit understanding of what has been remembered since the previous unit – in this case Year 2 (Summer 1) and the Introduction to Electricity.

Content is interwoven – including from the new component unit – to enable teachers to assess fully pupils' prior learning

What do I already know? Pre-assessment Knowledge Quiz
Year 4 Science Autumn 1
Electricity



Question 1: What is electricity?

- a) A form of energy that can flow from place to place
- b) A machine that converts energy into electricity
- c) A device designed to perform a specific task

Question 2: True or False: An insulator is a material that lets electricity pass through it easily.

- True
- False

Question 3: A material that does not allow electricity to pass through it is called an _____.

Question 4: Matching Definitions

Static electricity	A machine that converts energy into electricity
Battery	The build-up of an electrical charge on the surface of an object
Generator	A portable electrical power storage cell

Question 5: What does a circuit need to work? a) A source of electricity, such as a battery
b) A conductor and insulator
c) A switch and a bulb

Question 6: What is a renewable energy source? Give an example.

Question 7: What is a component in an electrical circuit that makes a buzzing noise when connected?

- a) Bulb
- b) Buzzer
- c) Wire

Question 8: A _____ is a complete path which allows the flow of electricity.

A clear link to vocabulary understanding that should be embedded from the child's previous study of the unit.

Multi-modal questions to enable pupils of all ability ranges to demonstrate their understanding.

