



Science At Timbertree



Our Science curriculum aims to ensure that all pupils...

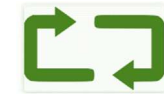
- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Big Ideas

We use CUSP Science to support the delivery of Science for Key Stages 1 and 2. EYFS follow the EYFS statutory framework. The pupils receive taught Science lessons weekly.

The Big Ideas, which are grouped into **Chemistry**, **Physics** and **Biology**, are:

- **Animals including humans**
- **Everyday materials**
- **Plants**
- **Living things are their habitats**
- **Seasonal changes and weather**
- **Light**
- **Forces**
- **Electricity**
- **Sound**
- **Earth and space**
- **Rocks**
- **States of matter**
- **Evolution and inheritance**



Content and Sequencing

Content – CUSP provides a clear evidence led Science curriculum for each year group. These units are built on in consequent years where scientific skills and knowledge are further developed and applied.

Sequencing

Subject coverage is planned sequentially and with a clear rationale for making connections with prior learning.

Subjects connect to previous learning and revisit and build on foundational knowledge

Attention is paid to EYFS provision and connections to Year 1.

Strategic and dedicated time is allocated to Science. Timetabling focuses on curriculum studies to increase motivation, pace and connection



Deepening Concepts

Our Science deepening concepts are what helps the pupils to think and act like a Scientist, these are shared at the start of a lesson and are:

- Observing changes over time
- Noticing patterns
- Grouping and classifying
- Research using secondary sources
- Comparative and fair tests
- Communicating scientifically

Scientific analysis is developed through IPROF criteria. We call it 'Thinking Scientifically.'

- o identifying and classifying
- o pattern seeking
- o research
- o observing over time
- o fair and comparative testing



Learning Modules

Each learning module has a knowledge and vocabulary rich teacher guide which identify:

- NC Science Curriculum expectations
- Connections to previous learning in the sequence
- A coherent sequence of learning supported by a cumulative quiz
- End point subject skills and knowledge
- Contextual Tier 2 and Tier 3 vocabulary
- Dual coded knowledge organisers and Knowledge Notes, that support the big idea, all information is kept in one place to avoid the split-attention effect
- Tier 3 vocabulary is highlighted in red
- Lesson by lesson navigation helps build conscious connections



Lesson Design

Each lesson has:

- A clear structure of – example, explain, attempt, apply and challenge
- A question to promote connection to prior learning and aid schema growth
- Vocabulary capture, where pupils' practise and define words
- Knowledge Note, which supports teaching headlines and pupil tasks; reduces the load on the working memory as all essential information is kept in one place
- Quality-assured, highly-detailed diagrams and images to enrich the teaching sequence
- Begins and ends with retrieval practice



Science continued...



Vocabulary

Each learning module has:

- A vocabulary specific unit where pupils are taught etymology and morphology of words
- A vocabulary teacher guide - that states prior vocabulary knowledge – listing words pupils should know. Tier 2/3 words for explicit instruction and relevant idioms and colloquialisms
- Vital vocabulary organiser. Pupils’ practise and define words. Words are used, connected and deconstructed for meaning within the learning sequence



Metacognition

Pupils are encouraged to think about their own learning by monitoring their understanding linked to the headings and icons on the knowledge notes. Pupils use the knowledge notes to monitor their achievement and purposefully direct their learning. Once they judge their understanding to be secure they highlight/tick the section on the knowledge note to signal this.

Pupils further engage in the process of metacognition by answering the end of lesson question in their own words, providing the supporting evidence.



Retrieval Practice

Retrieval practice is used as a learning tool, not just an assessment tool. Opportunities within each lesson are created for pupils to show what they know. Before a lesson, during a lesson and at the end of the lesson pupils will:

- Use retrieve two things – show what you know
- Connect – add one more thing to what you know
- Answer relevant questions on the cumulative quiz specific to the learning module. Cumulative quizzing is designed to help pupils bring current and past learning to mind as well as helping teachers to glean information about where to support pupils next



Subject Specific Resources

Our core offer ensures that all children have access to:

- Curriculum visions – irresistible digital books with secure embedded video that teachers can use to provide worked examples. Pupils can access this at school and at home
- Practical resources that are relevant to the Science curriculum and are pitched appropriately
- Quality texts to support the learning



Subject Specific Experiences

Our core Science offer ensures that all children will experience:

- British Science Week
- International Women and Girls in Science Day
- Visitors
- Educational visits
- Science assemblies



Making Progress

Children make progress when there is a change in long-term memory and when content is taught in small, manageable steps. This will reduce cognitive load. Units are sequenced, so prior knowledge, skills and concepts are built upon from previous year groups and units lead to improved skills and increased knowledge.

Individual progress is assessed through observations, questioning, cumulative quizzing, book looks, end of lesson question, pupil conferences and pupil voice. Pupils with special educational needs can fully access the learning content, as teachers skilfully provide adaptations and reasonable adjustments following our school’s five principle approach.

