

Our Curriculum Vision

Everything we do, at Lanercost C of E Primary School, stems from our children having a life-long love of learning. We are proud of our inclusive environment, which is firmly rooted in a shared Christian ethos and fosters the care and nurture of our school community. As a school, in partnership with parents and carers, we strive to build strong foundations for an excellent education. We enable our children to achieve all of their divine potential by inspiring them and promoting opportunities to delight in their learning as well as allowing them to grow into successful, compassionate, young adults who recognise their role in the community and the ever-changing wider world.

We aim to accomplish this through a loving, structured and joyful environment with consistently high standards of teaching. Our engaging and immersive learning is based upon the National Curriculum (2014), developed from a love of reading and reflects our school's unique circumstances. We make the most of our beautiful location, which is a stone's throw from Hadrian's Wall, Lanercost Priory, Naworth Castle and close to Northumbria National Park.

This brave, broad and rich curriculum motivates all of our children to build concepts, skills and knowledge for life. They become curious learners who are led by enquiry and inspired by a range of real-life experiences and cultural enrichment. Each of our subject leaders has worked hard to craft their subject curriculum to ensure this within their subject.

We know that the greatest way to understand school-life is to become a part of your child's learning journey. We aim to run several shared learning events, workshops and cultural enrichment moments that you can participate in, allowing you to see your child's progress and ventures in school. Please see our school website, social media platforms and school newsletter for the latest parent and community events.

Our vision for our curriculum comes directly from our whole school vision. It has been carefully crafted by our teaching staff in order to ensure that we provide an education that helps every child reach their divine potential and enables them to have a life-long love of learning. Each of our subject-leaders has then designed their subject to stem from an evidence-basis where our vision is threaded through at every point.

Our Vision for Science

At Lanercost Church of England Primary School, we endeavour to ensure our Science curriculum stimulates and excites children's curiosity about phenomena whilst satisfying natural curiosity with unfolding knowledge. We aim for all our children, from Early Years through to Year Six, to enquire, investigate, ask scientific question through the use of high-quality resources, hands-on experiences, visits and visitors and exploration of the outdoor environment. We know that we live in an increasingly scientific and technological age and Science is an area of learning that is fundamental to exploring, understanding and influencing the natural and made worlds in which we live.

Through our connected and coherent two-year rolling curriculum, we aim to ensure our science curriculum results in the progressive acquisition of key knowledge, whilst enabling all children to become enquiry-based learners with investigative skills. These science lessons will promote joy, open-mindedness and excitement leading to a life-long love of learning science. We explicitly teach children the essential, age-appropriate scientific methods of enquiry, so they are able to confidently and with increasing independence use these skills in a variety of scientific approaches to understand how science can be used today and in the future.

We value the importance of science in every aspect of daily life; encouraging children to recognise the significance and impact that science will have on their future lives on a personal, national and global level. We endeavour to unlock children's potential for future life choices across the curriculum and our science plays an integral part within this; real-life examples of where science is found and used are fundamental to our approach.

Our Teaching and Learning of Science

At Lanercost Church of England Primary School, we base our two-year rolling science curriculum upon the CUSP Science model, allowing each area of learning to be taught for depth rather than breadth. This is organised into three distinct subject domains: biology, physics and chemistry. Where interdisciplinary concepts are encountered, such as the particle model, these are taught explicitly and then connected across science domains.

CUSP Science has sequenced the national curriculum into meaningful and connected 'chunks' of content to reduce the load on the working memory, as well as creating coherent and strong long-term memories and we have adapted these to our mixed year group context. We follow the sequence of substantive and disciplinary knowledge enabling pupils to become 'more expert' with each focus and grow an ever broadening and coherent mental model of the subject. The learning is based on becoming more expert as they progress through the curriculum, accumulating, connecting and making sense of the rich substantive and disciplinary knowledge.

1. **Substantive knowledge** - this is the subject knowledge and explicit vocabulary used to learn about the content. Common misconceptions are explicitly revealed as non-examples and positioned against known and accurate content. In our science curriculum, an extensive and connected knowledge base is constructed so that pupils can use these foundations and integrate it with what they already know. Misconceptions are challenged carefully and in the context of the substantive and disciplinary knowledge.
2. **Disciplinary knowledge** - this is knowing how to collect, use, interpret, understand and evaluate the evidence from scientific processes. This is taught. It is not assumed that pupils will acquire these skills by luck or hope. Pupils construct understanding by applying substantive knowledge to questioning and planning, observing, performing a range of tests, accurately measuring, comparing through identifying and classifying, using observations and gathering data to help answer questions, explaining and reporting, predicting, concluding, improving, and seeking patterns. We call it '**Working Scientifically.**'

Scientific analysis is developed through IPROF criteria; '**Thinking Scientifically.**'

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

We use simple images for the children to be able to identify the 'Thinking scientifically' skills across the learning.



Asking simple questions and recognising that they can be answered in different ways



Observing closely, using simple equipment



Performing simple tests



Identifying and classifying



Using their observations and ideas to suggest answers to questions

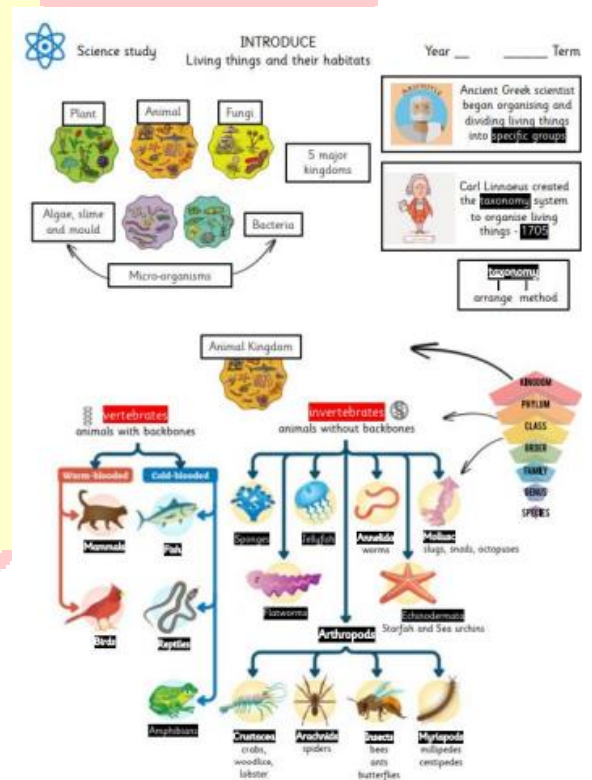


Gathering and recording data to help in answering questions.

Our lesson design reflects this and follows the minimum structure of:

1. Explicit teaching of vocabulary
2. Revisiting of prior learning
3. Use of scientific vocabulary in learning
4. Reading
5. Thinking scientifically
6. Evidence of learning in pupil's books

Within our Science curriculum, the retention of knowledge is much more than just 'in the moment knowledge'. To aid with retention of knowledge, we use a Knowledge Organiser (right) which contains key vocabulary, information and concepts which all pupils are expected to understand and retain. Knowledge notes used in each lesson are the elaboration and detail which help pupils acquire the content of each module. They support vocabulary and concept acquisition through a well-structured sequence that is cumulative. Each Knowledge Note begins with questions that link back to the cumulative quizzing, focussing on key content to be learnt and understood. The effect of this model supports opportunities for children to associate and connect significant scientific concepts, over time, and with increasing expertise and knowledge.



Vocabulary is key within our Science curriculum and each focus has tasks and resources to enhance and deepen the understanding of vocabulary within the context that it is being taught. Common scientific misconceptions are identified throughout the curriculum and are made explicit to pupils.

Children draw upon substantive and disciplinary knowledge to reason and practise acquiring the conception, whilst repelling the misconceptions.

In addition, throughout the curriculum, children study the scientists of the past. These studies are coherently placed for children to see how conceptions within science were realised,

Further to our taught curriculum, all children in school have opportunities throughout the year to attend Woodland Schools. These sessions allow children to experience the wonders of nature, helping to spark an interest and enthusiasm for Science.

Supporting Teaching and Learning of Science

At our school, science is key to curriculum. First and foremost, we support any children who need further provision to understand the learning with Quality First Teaching. All teachers and teaching assistants have training from CUSP in the evidence behind the approach in order for them to teach the modules to the best of their ability. Furthermore, children identified as needing more support, have pre-teach sessions, group support if needed and the work is scaffolded so they can access it. Pre-teaching of scientific vocabulary provides all children with the opportunity to demonstrate an understanding of subject specific language. The use of dual coded Knowledge Notes and Organisers provide visuals to aid understanding and recall. In addition, knowledge notes are utilised in all lessons to minimise cognitive overload, so children can use and apply their knowledge more easily. Sentence stems can be used where necessary to aid with written evidence.

We also believe that an immersive, concrete and pictorial approach to Science enables children to grasp concepts and realise them further. Therefore, we ensure our lessons are well resourced with high-quality equipment and appropriate resources.

Although we aim to ensure that all our children access the objectives laid out for their year group, if children need to access an adapted curriculum, we would endeavour to give them 1:1 sessions and a catch-up curriculum so they can make accelerated curriculum to eventually access the curriculum created for their year group.

Furthering the Teaching and Learning of Science

Within the situational context of our school, studying nature and understanding the natural world is a key. Therefore, Woodland Schools and understanding the biodiversity of our school is an extension of our curriculum. Gardening club and Cookery club also allow for the children to see how the natural world around us can be treasured and used purposefully.

Ensuring that our science curriculum is immersive for our children is key; purposeful trips are planned to enhance our children's knowledge and speakers or professionals in their field are organised to speak to the children.

Connections with the science department at our secondary school, especially within KS2, allow children to see where their science learning will be taken, as well as giving the children a wider range of equipment to use within their application of skills.

Assessment of the Teaching and Learning of Science

As with all the subjects within the curriculum, formative assessment plays a key role in the assessment of science. Teachers and teaching assistants use assessment for learning questioning to understand where children are mastering the science curriculum, and where other children may need intervention. This formative assessment is used in all areas; the knowledge and the enquiry-based skills. For more information, please see our Assessment Policy.



Y5 Properties and changes of materials

1. Everything is made from atoms and molecules.

True

False

2. An atom is...

two or more atoms, joined by a bond.

the smallest known part of any material.


made of atoms and molecules.

I'm not sure.

Within our Science curriculum, we use the Knowledge Organiser provided to ensure that children have learned and understand the objectives required for the module. Children also complete a short pre-test (see left) for each module and a short post-test for the module, to ensure progression of understanding.

At Lanercost Church of England Primary School, we believe that children should have constant retrieval practise in order to review and check for their understanding. Therefore, within lessons, quick retrieval of both knowledge and skills is progressively planned in to the sequence of learning (see right) to allow children to recall information quickly and use it effectively.

Summative assessments and professional judgements of the children's progression is recorded on FFT Aspire. Along with pupil book looks and learning walkarounds, this allows the teaching staff and the Science subject lead to effectively check the teaching and learning within school.

 **SCIENCE** Properties and changes of materials Year 5
Summer Term

suggested foundational knowledge that is essential to teach

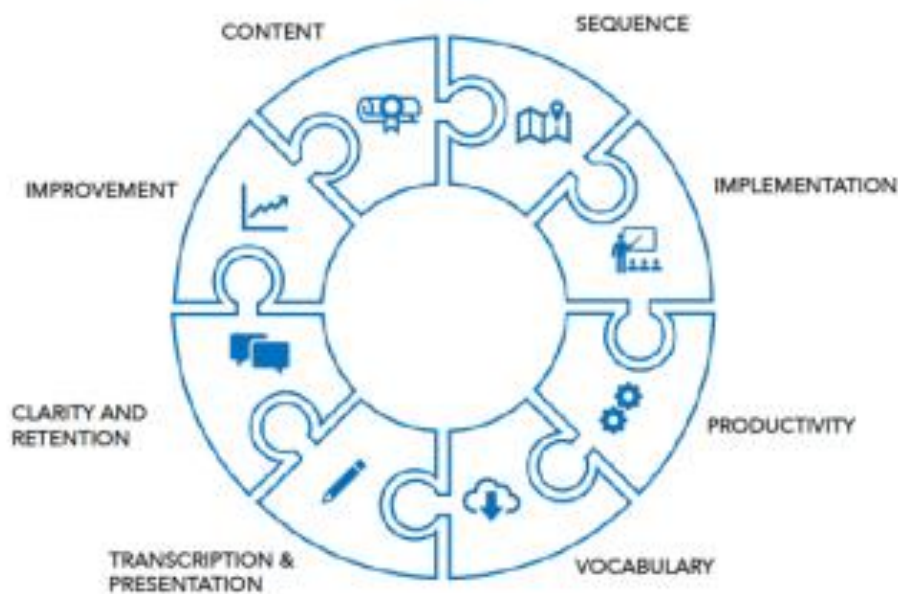
Suggested Lesson	Learning question	Cumulative questions from quiz			
1.	What properties do materials have? How do we use them?	1 - 19			
2.	What is a solution and what is a mixture?	20 - 27			
DESIRABLE 3.	How can we separate materials from a mixture? (spilled pond experiment p219 Essential Primary Science)	Choose one of these if you find you need to consolidate learning	28 - 31		
DESIRABLE 4.	How can we separate materials from a solution? (Kitchen disaster experiment p219 Essential Primary Science)				
5.	What changes are reversible?				
6.	What changes are irreversible? (Does it burn or does it melt experiment p222 Essential Primary Science)				32 - 38

The Impact of Teaching and Learning of Science

Our teaching and learning of our Science curriculum across school provides a strong foundation and a wide variety of opportunities for the children. As a school, we have the same high expectations in Science as we do for our other core subjects and we monitor our data accordingly.

From September 2022, to develop our assessment on impact, we are using pupil book studies. Pupil book studies includes group of children discussing their work and their understanding of their learning. It provides an opportunity for children to share their knowledge by talking through the journey of their learning. Also, it acts as a CPD tool for the subject lead and the teachers to see where their good practice is and where they need to develop.

The pupil book studies follow this model;



Teachers and leaders within school use the information gathered from the Pupil Book Study to further their subject and ensure that teaching and learning is of a consistently high standard across school.

For more information about Data and Assessment for each of our subjects, see our Assessment policy.