



Lake Haven: Science Curriculum A special place to learn

Background Context

All children who attend Lake Haven School have an Education, Health and Care Plan (EHCP). Most pupils have experienced anxiety within mainstream education, often linked to their Autistic Spectrum Condition (ASC). The majority join in lower Key Stage 2 having missed significant periods of education.

First and foremost, our aim is to ensure pupils develop a **readiness to learn**. Many arrive having experienced disengagement, low confidence, and gaps in core knowledge. In line with Maslow's hierarchy of needs, the school prioritises emotional safety, trust, and stability so that pupils feel secure enough to take risks in their learning.



Staff work collaboratively to ensure pupils can:

- Feel safe to learn and make mistakes
- Rebuild confidence and self-esteem
- Re-engage with education successfully
- Make sustained progress over time

This is achieved through:

- Strong, trusting relationships
 - High-quality, adaptive teaching
 - Carefully sequenced curriculum planning
 - Formative and summative assessment
 - Effective use of resources and outdoor learning
 - Real-life, meaningful scientific contexts
 - Short, focused learning sessions (typically 30-45 minutes)
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Intent

At Lake Haven, we understand that having a secure knowledge of science empowers our children to confidently explore, discover and reason about their surroundings; and to develop a deeper understanding of the world they live in. As part of Understanding the World, our Natural World Curriculum seeks to instil a genuine curiosity about the world – encouraging our children to keep asking “Why... ?” and giving them the knowledge, skills and confidence to find answers to their questions and to gather evidence for their ideas.

We want our children to become lifelong learners, and to have no limits to their ambitions and aspirations. We want them to feel empowered by their knowledge, and to grow feeling that they can strive to become astronauts, vets, engineers, research scientists, or any

other STEM career they may wish to pursue.

The curriculum is designed to provide a clear and structured pathway from Year 7 to Year 11, beginning with Entry Level 1 foundations and progressing through to Entry Level 3 Science (or equivalent qualifications). Pupils follow a carefully sequenced curriculum based on the content and structure of the AQA Entry Level Certificate (ELC) Science specification, ensuring that all pupils are prepared for assessment by the end of Year 11 and are able to achieve a meaningful and appropriate accredited outcome.

This ensures all pupils, regardless of starting point, access a meaningful and accredited scientific pathway.

We aim to:

- Foster curiosity and engagement with the natural world
- Promote respect for living things and environmental responsibility
- Develop understanding of how science shapes everyday life
- Provide practical, enquiry-based and memorable learning experiences
- Encourage critical thinking and challenge misconceptions
- Develop scientific enquiry, reasoning, and investigative skills
- Build accurate scientific vocabulary and communication skills

The curriculum is inclusive and designed so that all pupils can access learning, make progress, and achieve success relative to their individual starting points.

Implementation

At Lake Haven, the science curriculum is underpinned by the White Rose Education Science scheme of work for Primary, and preparation for Entry Level or Equivalent qualifications at KS3 and KS4.

In Lower Key Stage 2, pupils study key biology concepts including the human skeleton, movement, nutrition, and the digestive system. They explore plants, habitats, and food chains, including the impact of environmental change such as deforestation. In chemistry, pupils identify and compare materials and investigate their properties, including rocks and fossils. Physics units include light, sound, magnets, forces, and electricity. Learning is practical and enquiry-based, enabling pupils to apply scientific skills in a range of contexts.

In Upper Key Stage 2, pupils build on prior knowledge to study life cycles, reproduction, the circulatory system, and the effects of lifestyle, diet, and drugs on the human body. They learn about adaptation, variation, and classification, plant reproduction and transport systems, and environmental issues such as plastic pollution and climate change. Physics units, including forces and light, provide opportunities for prediction, fair testing, and comparative investigations. Pupils develop increasing independence in selecting and using appropriate scientific enquiry types and in recording and analysing data.

At Lake Haven, the science curriculum is not driven by a standardised Key Stage 3 scheme, but instead by a bespoke, carefully sequenced pathway from Year 7 to Year 11, designed to prepare pupils to progress from Entry Level 1 through to Entry Level 3 Science (or equivalent) by the end of Key Stage 4. This pathway is built directly from the content and structure of the AQA Entry Level Certificate (ELC) Science specification, ensuring full curriculum coverage and clear progression over time.

This approach reflects:

- The significant gaps in prior learning
- Interrupted educational experiences
- The need for a slower, more secure build of foundational knowledge

The curriculum is structured as a **spiral model**, where pupils revisit key concepts across biology, chemistry and physics each year, developing their understanding in increasing depth. From Year 7 onwards, pupils begin with Entry Level 1 foundational knowledge, focusing on recognising, naming and observing. This develops into Entry Level 2 in Year 8 and Year 9, where pupils describe processes and begin to make connections between ideas. By Year 10, pupils are working towards Entry Level 3, where they are able to explain scientific processes,

apply their knowledge and prepare for formal assessment.

Across all key stages, pupils are supported to develop their ability to work scientifically by asking questions, making observations, planning and carrying out investigations, gathering and recording data, identifying patterns, and drawing conclusions using scientific language.

At Key Stage 3, pupils deepen their understanding of scientific concepts through a carefully sequenced, term-by-term curriculum that integrates biology, chemistry and physics within each unit. Pupils study core concepts including the human body, ecosystems, materials, the particle model, energy, forces, electricity and waves. Learning builds from concrete experiences to more abstract ideas, ensuring pupils develop a secure and coherent understanding of the natural world.

Due to the absence of laboratory facilities, practical work involving hazardous equipment is adapted through teacher demonstrations, structured classroom investigations using safe, everyday materials, outdoor learning opportunities, and digital simulations such as PhET Interactive Simulations. These approaches ensure that pupils continue to develop the working scientifically skills required for Entry Level Science, including observing, recording, identifying patterns and drawing conclusions.

The curriculum is delivered through a **term-by-term scheme of work**, covering all six components of the Entry Level Science specification (Biology, Chemistry and Physics) across Years 7–10. By the end of Year 10, pupils will have been taught the full content of the specification, enabling Year 11 to focus on consolidation, targeted support, and completion of assessment components, including Teacher Devised Assignments (TDAs) and Externally Set Assignments (ESAs).

Teaching is highly structured and inclusive, with short, focused lessons, explicit vocabulary instruction, scaffolded learning, and regular retrieval practice to support memory and retention. Assessment is ongoing and includes formative strategies alongside Entry Level requirements, enabling accurate monitoring of progress and targeted support for all pupils.

Assessment is ongoing and includes formative assessment alongside Entry Level requirements, including Teacher Devised Assignments (TDAs) and Externally Set Assignments (ESAs), ensuring accurate tracking of progress towards Entry Level 3.

Retrieval practice and repeated exposure to key knowledge are embedded throughout the curriculum to strengthen long-term memory and ensure cumulative learning.

Impact

Science at Lake Haven fosters curiosity, resilience, and a lifelong love of learning, ensuring all pupils can achieve success and fulfil their potential. As a result of the carefully sequenced and inclusive curriculum, pupils make sustained and meaningful progress from their individual starting points, developing from Entry Level 1 through to Entry Level 3 (or equivalent) by the end of Key Stage 4.

Pupils know more and remember more over time because key scientific knowledge is explicitly taught, regularly revisited, and built upon through a spiral curriculum model. This enables them to develop a secure and increasingly sophisticated understanding across biology, chemistry and physics, progressing from recognising and describing concepts to explaining processes and applying their knowledge in meaningful contexts.

As pupils move through the curriculum from Year 7 to Year 10, they develop increasing confidence in scientific thinking and communication. They use appropriate scientific vocabulary with greater accuracy and are able to link cause and effect in scientific phenomena, applying their understanding to real-life situations.

Pupils become increasingly independent in working scientifically through adapted practical experiences, including teacher demonstrations, structured investigations using everyday materials, outdoor learning, and digital simulations such as PhET Interactive Simulations. As a result, they are able to observe, record, identify patterns and draw conclusions with growing independence and confidence.

By the end of Year 11, pupils are fully prepared to complete components of the AQA Entry Level Certificate in Science or equivalent qualifications, including Teacher Devised Assignments (TDAs) and Externally Set Assignments (ESAs). They demonstrate the ability to recall key knowledge, apply it in structured contexts, and communicate their understanding clearly.

The curriculum ensures that all pupils achieve meaningful and aspirational outcomes, preparing them for further education, vocational pathways or training. Pupils leave Lake Haven as confident, engaged and capable learners who are able to apply scientific knowledge in real-world contexts, think critically about the world around them, and recognise how their actions can positively impact the environment

and society.

Inclusion

The curriculum is highly inclusive. Teaching is carefully scaffolded to remove barriers without lowering expectations. Vocabulary and concepts are explicitly taught and revisited regularly to support retention and understanding. Practical and enquiry-based learning ensures all pupils, regardless of need or starting point, can access science meaningfully and experience success.

Ambition

All pupils are expected to engage with a broad and challenging curriculum, making progress from their individual starting points. KS4 pathways are personalised to ensure pupils can progress through Entry Level Science up to Entry Level 3 or equivalent, with opportunities for further study through accredited courses where appropriate.

Lake Haven maintains high expectations in science, fostering curiosity, resilience, and responsibility, and supporting pupils to achieve meaningful and recognised outcomes.

Cultural Capital

To ensure equitable opportunity, learning is enriched through visits, visitors, and hands-on experiences wherever possible. The school's

unique environment—including the farm, forest, lakes, and allotments—provides real-world scientific contexts.

These experiences support understanding of:

- Environmental sustainability
- Human biology
- Ecosystems and habitats
- Materials and natural processes

Science is made explicit, engaging, and multisensory, encouraging pupils to ask questions, seek answers, and develop a lifelong interest in the world around them.

Curriculum Coverage

LKS2 Year A

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Biology Skeletons FREE TRIAL VIEW			Biology Movement VIEW	Biology Nutrition and diet VIEW		Sustainability Food waste VIEW	Chemistry Rocks VIEW		Consolidation		
Spring term	Chemistry Fossils VIEW	Chemistry Soils VIEW			Physics Light VIEW						Consolidation	
Summer term	Biology Plants A VIEW				Physics Forces VIEW	Physics Magnets VIEW		Biology Plants B VIEW	Sustainability Biodiversity VIEW			

LKS2 Year B

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Biology Group and classify living things FREE TRIAL VIEW			Biology Data collection A VIEW	Chemistry States of matter VIEW						Consolidation	
Spring term	Physics Sound VIEW				Biology Data collection B VIEW	Physics Electricity VIEW				 Sustainability Energy VIEW	Consolidation	
Summer term	Biology Data collection C VIEW	Biology Habitats VIEW		 Sustainability Deforestation VIEW	Biology The digestive system VIEW				Biology Food chains VIEW			

UKS2 Year A

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Physics Forces FREE TRIAL VIEW					Physics Space VIEW					 Sustainability Global warming VIEW	Consolidation
Spring term	Chemistry Properties of materials VIEW				Biology Animals including humans VIEW				Biology Life cycles VIEW			
Summer term	Biology Reproduction A VIEW		Chemistry Reversible and irreversible changes VIEW			 Sustainability Plastic pollution VIEW		Biology Reproduction B VIEW		Consolidation		

UKS2 Year B

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn term	Biology Living things and their habitats FREE TRIAL VIEW					Physics Electricity VIEW					Sustainability Renewable energy VIEW	
Spring term	Physics Light VIEW				Sustainability Light pollution VIEW	Biology The circulatory system VIEW			Biology Diet, drugs and lifestyle VIEW			
Summer term	Biology Variation VIEW		Biology Adaptations VIEW			Biology Fossils VIEW		Consolidation		Themed projects (Year 7 ready) VIEW		

Year	Term	Weeks	Entry Level Focus	Unit	Components & Outcomes	Curriculum Coverage	Progression Focus	Key Concepts	Assessment Focus
Year 7	Autumn 1	1–6	EL1	Particles & Materials Foundations	C3-O1, C3-O3, C3-O5	Atoms, particle model, states of matter and separating mixtures introduced slowly through practical exploration.	Recognise and identify scientific ideas.	Particles, solids/liquids/gases, mixtures	Sorting and practical observation
Year 7	Autumn 2	7–12	EL1	Forces Foundations	C5-O4, C5-O5	Pushes, pulls, friction and simple work done explored through hands-on investigation.	Recognise and describe effects.	Forces, friction	Practical investigations
Year 7	Spring 1	13–18	EL1	Human Body Foundations	C1-O2, C1-O4	Circulation, organs and respiration introduced through models and sequencing tasks.	Name and sequence processes.	Circulation, respiration	Diagram labelling and sequencing
Year 7	Spring 2	19–24	EL1	Environment & Plants	C2-O1, C2-O3	Plants, producers and food chains introduced through observation and classification.	Identify and classify.	Photosynthesis, food chains	Matching and oral questioning
Year 7	Summer 1	25–30	EL1	Electricity & Waves	C6-O1, C6-O7	Simple circuits and wave types introduced using practical equipment.	Recognise and label.	Circuits, waves	Circuit building and diagrams
Year 7	Summer 2	31–36	EL1	Chemistry in Everyday Life	C4-O1, C4-O3	Simple acid reactions and temperature changes in reactions.	Observe and describe.	Acids, reactions	Practical observation
Year 8	Autumn 1	1–6	EL2	Advanced Human Body	C1-O1, C1-O3, C1-O5, C1-O6	Cells, digestion, pathogens and vaccination revisited with structured explanation.	Describe and explain processes.	Cells, digestion, disease	Short-answer responses
Year 8	Autumn 2	7–12	EL2	Advanced Particles & Materials	C3-O2, C3-O4, C3-O6	Compounds, carbon structures and chromatography explained using models and investigations.	Describe and compare.	Compounds, graphite, chromatography	Practical write-up
Year 8	Spring 1	13–18	EL2	Energy & Motion	C5-O1, C5-O2, C5-O6	Energy transfer and speed explored using calculations and experiments.	Apply scientific ideas.	Energy transfer, speed	Simple calculations
Year 8	Spring 2	19–24	EL2	Environment & Evolution	C2-O2, C2-O4, C2-O8	Adaptation, decay and evolution explored using examples and case studies.	Describe and explain relationships.	Adaptation, evolution	Case-study explanations

Year 8	Summer 1	25–30	EL2	Electricity & Magnetism	C6-O2, C6-O5, C6-O6	Current, magnets and electromagnets revisited through practical tasks.	Describe and apply.	Current, magnets, electromagnets	Practical investigation
Year 8	Summer 2	31–36	EL2	Chemistry & Environment	C4-O2, C4-O4, C4-O5	Neutralisation, reaction rates and atmosphere development revisited.	Describe and explain changes.	Neutralisation, atmosphere	Practical assessment
Year 9	Autumn 1	1–6	EL2/3	Human Body Applications	C1-O7, C1-O8, C1-O9	Drugs, reflexes and hormones explored in real-life contexts.	Explain and apply knowledge.	Reflexes, hormones	Exam-style explanation
Year 9	Autumn 2	7–12	EL2/3	Materials & Metals	C3-O7, C3-O8	Metal extraction and metal properties applied to real-world uses.	Explain and evaluate.	Metals, recycling	Extended responses
Year 9	Spring 1	13–18	EL2/3	Forces & Stopping Distances	C5-O7, C5-O8, C5-O9	Reaction times and stopping distances analysed using scenarios and data.	Analyse and explain.	Stopping distance, braking	Data analysis
Year 9	Spring 2	19–24	EL2/3	Inheritance & Genetics	C2-O9, C2-O10	Reproduction, chromosomes and genetic engineering explained.	Explain and evaluate.	DNA, genes	Application questions
Year 9	Summer 1	25–30	EL2/3	Electromagnetic Waves	C6-O8, C6-O9	Wave properties and the electromagnetic spectrum explored through applications.	Apply and justify.	Wavelength, EM spectrum	Exam-style questions
Year 9	Summer 2	31–36	EL2/3	Climate & Fuels	C4-O6, C4-O7, C4-O8	Atmospheric gases, crude oil and pollution analysed using evidence.	Explain environmental impacts.	Fuels, pollution	Extended response
Year 10	Autumn 1	1–6	EL3	Biology EL3 Consolidation	C1-O10, C2-O5, C2-O6, C2-O7	Competition, environmental change and fertility control revisited at EL3 level.	Evaluate and justify.	Competition, pollution	Mock assessment
Year 10	Autumn 2	7–12	EL3	Chemistry EL3 Consolidation	C3-O9, C3-O10, C4-O9, C4-O10	Alloys, polymers, greenhouse gases and drinking water evaluated.	Evaluate advantages and disadvantages.	Polymers, climate change	Extended exam questions
Year 10	Spring 1	13–18	EL3	Physics EL3 Consolidation	C5-O3, C5-O10	Energy resources and radiation revisited through application and evaluation.	Explain and evaluate.	Radiation, renewable energy	Exam-style assessment
Year 10	Spring 2	19–24	EL3	Electricity & Waves EL3	C6-O3, C6-O4, C6-O10	Domestic electricity and EM wave applications evaluated.	Apply and justify scientific choices.	Electrical safety, EM uses	Applied exam questions

Vocational route	
Asdan Science short course https://www.asdan.org.uk/courses/science-short-course/ https://www.asdan.org.uk/media/d4ubkx2l/sciencesc-sample.pdf	Units from aqa, entry level certificate BTEC Pearson- BTEC in Applied Science https://qualifications.pearson.com/en/qualifications/btec-entry-level-level-1-and-level-1-introductory/applied-science-l1-introductory.html

NB: The bespoke nature of our setting means that, in addition to the topics outlined above, our children are also engaged in lots more learning about plants, animals and the environment as part of their daily farm activities and weekly Outdoor School sessions. Our children also benefit from participating in National Science Week and other science enrichment opportunities throughout the year.

