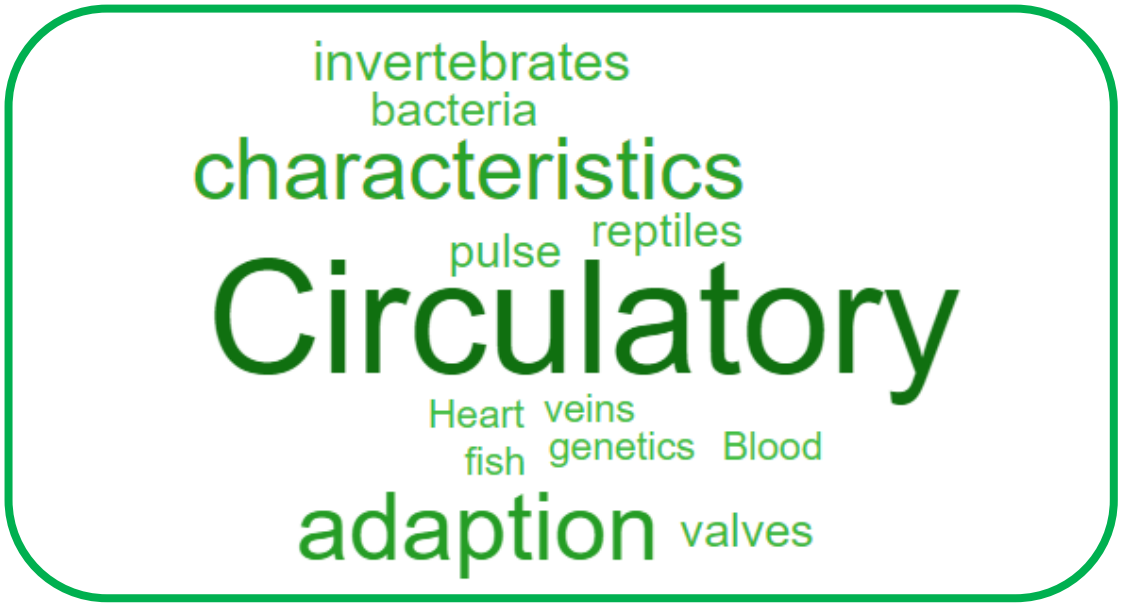
SCIENCE

AT

HAZEL LEYS ACADEMY



VALUES	Respect Each Other · Respect Our Environment & Community · Respect Yourself
INTENT	At Hazel Leys Academy, we aim to provide all pupils with a well-sequenced, knowledge-rich curriculum, centered around a stimulating and inclusive educational environment in which everyone feels safe, respected, and supported to grow and develop to their full potential. Our school's vision is to **ignite** the spark of curiosity in every child. We want to make them excited about learning new things and discovering the world around them. We encourage them to **aspire** to great heights, to dream big and believe in themselves. With hard work and dedication, we believe they can **achieve** anything they set their minds to and become exceptional contributors to their communities. Together, we can **ignite, aspire,** and **achieve** amazing things! • **Ignite.** We ignite passions. • **Aspire.** We inspire aspirations. • **Achieve.** We achieve greatness. The principles of our knowledge-rich curriculum are: • Knowledge is **valued** and **specified** • Knowledge is **well-sequenced** • Knowledge is **taught to be remembered** The content in our curriculum has been carefully chosen by subject experts and has been sequenced in a meaningful way that enables children to make connections and progress from unit to unit, term to term and year to year, supported by additional schemes of work such as Purple Mash for Computing, Jigsaw for PHSE/RSE and RE and Primary Languages.
SKILLS FOR LIFE	The curriculum entitlement supports the development of individual essential skills for life through the Skills Builder aspects: 1. Listening 2. Speaking 3. Problem Solving 4. Creativity 5. Staying Positive 6. Aiming High 7. Leadership 8. Teamwork

Science at Hazel Leys Academy

Overview

At Hazel Leys Academy we follow the national curriculum for science. Our knowledge-rich curriculum aims to equip children with the foundations for understanding the world through a scientific lens. Pupils will be taught units of work that cover and go beyond the requirements of the National Curriculum in the specific disciplines of biology, chemistry and physics. Pupils will encounter people who have made significant contributions to the field of science over time, understanding that science has been a quest for understanding for many years, and will continue to be so in the future. Pupils will build a body of key foundational science knowledge as they work through the curriculum, asking questions and developing a sense of curiosity about the world around us. Pupils will be encouraged to use the knowledge they learn in Science and apply it to investigations that test a theory or set out to answer a question. Importantly, substantive scientific knowledge is taught first, before pupils are asked to undertake enquiry. This helps them to fully understand the elements of the enquiry first, and to make informed observations about the processes they see. Gathering information, recording data, graphing data and interpreting findings are all essential skills that pupils will apply to new contexts as they work through the curriculum. Our science curriculum builds knowledge incrementally. Pupils have multiple opportunities to secure and build on their knowledge and understanding as subject content is revisited at points throughout the curriculum. This helps children to master the knowledge and concepts whilst building up an extended specialist vocabulary. This incremental approach helps teachers to identify knowledge gaps and look back at previous content if they need to close gaps in knowledge or understanding. Our curriculum enables children to understand the important role that science plays in the sustainability of life on earth. We want children following this curriculum to be equipped to go forth into their secondary education with curiosity, passion and a desire for discovery.

To enrich children's learning in science, children may participate in visits to outdoor locations or receive visitors. For example, the National Space Centre in Leicester and Sublime Science workshops in school.

Intent

At Hazel Leys Academy, children come first and our intent is to deliver high quality teaching and learning that is knowledge-rich, well sequenced and taught to be remembered, whilst at the same time providing rich and truly enjoyable learning experiences for our community of children. Everything we do as a school is to ensure that the children achieve their very best, and that they are socially and emotionally ready for academic success. We are deeply aware that children only get one chance at their primary education and it is our job to ensure that they all reach for the highest levels of personal achievement and development. The vision of the curriculum at Hazel Leys Academy is to give all pupils the knowledge and skills they need to succeed in life. Our intent is to create a thirst for learning, through first hand experiences and stimulating hooks, that broaden horizons and pushes expected boundaries. Children will leave Hazel Leys Academy successful, with a love of learning that remains with them for their next phase in education. The intent of our Science curriculum is to deliver a curriculum which is accessible to all and that will maximise the outcomes for every child so that they know more, remember more and understand more. As a result of this they will:

- 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
- be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future
- develop an enthusiasm and enjoyment of scientific learning and discovery

Science at Hazel Leys Academy

Implementation

Working Walls : Science Working Walls throughout school focus on key knowledge, vocabulary and questions and exemplify the terminology used throughout the teaching of science in school and other aspects of life including recent scientific discoveries and experiments. Subject specific vocabulary is identified through knowledge organisers, the vocabulary progression document and working wall, and highlighted to the children at the beginning of lessons and revisited through assessments.

Provision in EYFS : Children are given a secure grounding in the prime areas of learning, ensuring they have a good foundation on which to build through the specific areas, including understanding the world. Areas of provision are enhanced to ensure vocabulary understanding and extension, and develop understanding of themselves and the world around them.

Books: Children will have constant access to a wide variety of subject specific fiction and non-fiction books, available as part of science displays to relate to the different topic areas as well as online resources to support and engage.

Fair testing/ bias : We aim for children to recognise that bias can exist in science experiments particularly those conducted without thinking about variables. Children will be expected to recognise and comment on the validity of their tests and some will be able to explain why a fair test is important.

Assessment: Assessments are completed at the end of each teaching unit. Teachers use this data alongside their formative assessments and complete teacher assessments on the whole school data tracker three times per academic year.

Outdoor learning : We recognise that children learn in a variety of ways, and so where appropriate, children will learn science outside the classroom.

Approaches to teaching : A wide variety of teaching approaches are used in science lessons to ensure children make good progress, regardless of their backgrounds, and all learning styles are catered for. Class teachers ensure there is a good balance of whole class, group work, as well as time for children to express ideas individually.

Consistent teaching sequence: As 'scientists' children will learn lessons from science to influence the decisions they make in their lives in the future. Science curriculum science lessons will follow a clear and consistent teaching sequence, including putting the learning in the context of the topic and current time. An emphasis on past and future learning to reconnect with old topics, embed current learning and set up new learning. Specifying new key vocab and using it throughout the learning. Correct modelling of using specific science equipment to not only ensure safety, but also to ensure experiments are carried out properly with children able to recognise and control certain variables.

Learning environment: The learning environment is designed to ensure children develop their science knowledge, and continue to know more and remember more. Knowledge walls and practical engaging experiments are key drivers to this, with teachers making reference to them during lessons and at other regular times during the term, including plenaries and starters.

Research: Each class may use a termly homework project to undertake a research project focusing on their current science topic. This will support independent learning as well as allowing children to improve their working scientifically skills.

Basic skills: English, Maths and ICT skills are taught during discrete lessons but are revisited in science so children can apply and embed the skills they have learnt in a purposeful context.

Cultural Capital: Each class will attempt to take part in a yearly science visit focusing on one of the topics they have covered in that year. We will also use outside resources to come into school and connect the pupils with science in a different context to school.

Impact

Children will understand the relevance of what they have learnt in science in relation to the world around them. Children will have an enjoyment of science and will be able to discuss what they have learnt and how they have gone about their learning with confidence. Progress will be clearly seen through looking at children's books as well as through positive data increases using the school's data tracker.

The large majority of children will achieve age related expectations in Science.

As scientists' children will learn lessons from science to influence the decisions they make in their lives in the future.

Subject Overview

	Autumn A	Autumn B	Spring A	Spring B	Summer A	Summer B
Year 1	The Human Body	Animals and their Needs	Seasons and Weather	Taking Care of the Earth	Plants	Materials and Magnets
Year 2	The Human Body	Living Things and their Environments	Electricity	Plants	Materials and Matter	Astronomy
Year 3	The Human Body	Cycles in Nature	Rocks	Forces and Magnets	Plants	Light
Year 4	The Human Body	Classification of Plants and Animals	Ecology	Sound	The Water Cycle	Electricity
Year 5	The Human Body	Materials	Living Things	Forces	Astronomy	Meteorology
Year 6	The Human Body	Classification of Living Things	Electricity	Light	Reproduction	Evolution

SCIENCE AT HAZEL LEYS ACADEMY

National Curriculum Overview

Working Scientifically KS1	Year 1							Year 2				
	Human Body	Animals and their Needs	Seasons and Weather	Taking Care of the Earth	Plants	Materials and Magnets	The Human Body	Living Things and their Environments	Electricity	Plants	Materials and Matter	Astronomy
Statutory												
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			✓		✓	✓				✓	✓	✓
Notes and guidance												
use simple features to compare objects, materials and living things and, with help, decide how to sort and group them, observe changes over time, and, with guidance, they should begin to notice patterns and relationships		✓			✓	✓						✓
ask people questions and use simple secondary sources to find answers	✓			✓			✓		✓			
use simple measurements and equipment (for example, hand lenses, egg timers) to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out			✓		✓					✓	✓	✓
record and communicate their findings in a range of ways and begin to use simple scientific language (with help)		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

SCIENCE AT HAZEL LEYS ACADEMY

Working Scientifically Lower KS2	Year 3							Year 4				
Statutory	The Human Body	Cycles in Nature	Plants	Light	Rocks	Forces and Magnets	The Human Body	Classification	Ecology	Sound	States of Matter and the Water cycle	Electricity
asking relevant questions and using different types of scientific enquiries to answer them			✓		✓	✓			✓	✓		
setting up simple practical enquiries, comparative and fair tests			✓		✓	✓		✓	✓	✓	✓	✓
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers			✓	✓		✓		✓				
gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	✓	✓	✓		✓	✓		✓	✓	✓		
recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓
reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	✓				✓	✓						
using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions			✓					✓	✓	✓		✓
identifying differences, similarities or changes related to simple scientific ideas and processes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
using straightforward scientific evidence to answer questions or to support their findings.					✓	✓						
Notes and guidance												
recognise when a simple fair test is necessary and help to decide how to set it up					✓	✓				✓	✓	✓
talk about criteria for grouping, sorting and classifying; and use simple keys	✓		✓		✓		✓					
collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data			✓		✓				✓			
make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used	✓				✓	✓			✓	✓	✓	
how to use new equipment, including thermometers and data loggers		✓				✓					✓	✓
collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data					✓	✓						
look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions		✓			✓			✓	✓	✓	✓	✓
making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done						✓			✓	✓		
use relevant scientific language to discuss their ideas and communicate their findings		✓				✓		✓		✓	✓	✓

SCIENCE AT HAZEL LEYS ACADEMY

Working Scientifically Upper KS2	Year 5						Year 6					
Statutory	Human Body	Materials	Living Things	Forces	Astronomy	Meteorology	The Human Body	Classification	Electricity	Light	Reproduction	Evolution
planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	✓	✓		✓					✓	✓		
taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	✓	✓		✓		✓			✓	✓		
recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	✓			✓		✓			✓	✓		
using test results to make predictions to set up further comparative and fair tests	✓	✓		✓					✓			
reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	✓	✓	✓	✓					✓	✓		
identifying scientific evidence that has been used to support or refute ideas or arguments	✓	✓	✓	✓	✓				✓	✓		
Notes and guidance												
plan the most appropriate type of scientific enquiry to use to answer scientific questions	✓	✓	✓	✓			✓					
recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why	✓	✓		✓					✓			
use and develop keys and other information records to identify, classify and describe living things and materials		✓	✓					✓		✓	✓	✓
make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them	✓	✓		✓	✓		✓		✓			
choose the most appropriate equipment to make measurements and explain how to use it accurately		✓				✓	✓					
decide how to record data from a choice of familiar approaches		✓		✓					✓			
look for different causal relationships in their data and identify evidence that refutes or supports their ideas	✓	✓		✓	✓				✓			
use their results to identify when further tests and observations might be needed	✓	✓		✓			✓		✓			
talk about how scientific ideas have developed over time	✓				✓					✓		

SCIENCE AT HAZEL LEYS ACADEMY

SEND-STRATEGIES FOR SUPPORTING ACCESS

- Break down learning – now/then
- Adult support – start off then independent (where possible)
- Images to support
- Specific simple instructions
- Differentiation – scaffold
- Pre-learning tasks
- Re-capping within lessons for all or groups of pupils
- Mixed ability groups
- Immersive Reader
- Definitions – revisit

ENRICHMENT

Educational visits are another opportunity for the teachers to plan for additional science learning outside the classroom. At Hazel Leys Academy, the children have many opportunities to experience science on educational visits or during field work lessons.

Whole School—Science Day

EYFS - Hatching kit within school (Nursery farm visit)

Y1-

Y2-solar system dome in school

Y3

Y4– solar system dome in school

Y5 –visit to space centre or solar system dome in school

Y6– University trip for STEM workshop

SCIENCE AT HAZEL LEYS ACADEMY

Subject Leadership and Development

Subject Strengths

- Well designed, well-sequenced, knowledge-rich curriculum
- Staff knowledge of their curriculum – progression and sequence
- Pupil enjoyment of science and remembering key facts
- Lots of opportunity for recall during lessons and units
- Ambitious and supportive curriculum
- Clear sequence of learning in planning and in pupil books

Areas to Develop

- Continue to develop working walls
- Continue to develop use of knowledge organisers and quizzes
- Continue to access specialist training from external providers to ensure the best and most current practise.
- Develop exemplification folders
- Develop enrichment activities

Monitoring

- T1 Focus – Recall of knowledge and use of working walls
- T2 Focus – Monitoring – Books/pupil voice
- T3 Focus – SL discussions with CTs - Book monitoring

CPD

- Sequence of learning – Development of LTPs and MTPs – identifying and addressing gaps
- Science leadership training – EEF
- Subject leader disseminates knowledge to whole staff
- New knowledge rich curriculum training