LincolnCarlton ACADEMY

The Science Curriculum

2024 - 2025

Intent	Science teaching at Lincoln Carlton Academy aims to give all children a strong understanding of the world around them whilst acquiring specific knowledge, concepts and skills to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of science, today and for the future. Scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. Topics such as plants, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding concepts and knowledge into the long-term memory. All children are encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged.
Implementation	The planning and teaching of the science curriculum is designed to build on knowledge and skills taught in previous units and year groups. Science topics are not squeezed to fit into half termly blocks but planned to take the required number of lessons to ensure they are progressive and that all subject content is taught. Topics that cover weather and plants run across the year so that children can investigate the changes through the seasons. Teachers use knowledge organisers alongside the school's science progression framework to plan and teach key concepts and scientific enquiry skills in a progressive manner and support the acquisition and accumulation of knowledge. New vocabulary is planned through knowledge organisers and is taught explicitly to children, teaching the meaning of homonyms where necessary. Retrieval practice techniques are used to help children to memorise key concepts for use in future science lessons and across the curriculum. When teaching practical science, teachers combine demonstrations with opportunities for children to carry out their own investigations, gaining hands-on experience handling specialist equipment and materials.
Impact	Our science curriculum provides the foundations for our children to understand the world they live in. Through building up a body of knowledge and key concepts, our children develop a sense of excitement and curiosity and they understand how science can be used to explain what has occurred, predict how things will behave and analyse the causes. Our children understand the value of science and enjoy working scientifically. They are able to communicate their ideas and findings with confidence and using different styles. Our children have a passion for science and engage enthusiastically in their learning. As a result, they achieve well and are keen to continue studying science as they move on to the next stage of their education.

Year 1						
Autumn 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Seasonal change – Autumn	Seasonal change/ plants- Autumn	Animals including humans	Animals including humans	Animals including humans	Animals including humans
Half term						
Autumn 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Animals including humans	Animals including humans	Seasonal change - Winter	Seasonal change/ plants – Winter	Everyday materials	Everyday materials
Christmas break						
Spring 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Everyday materials	Everyday materials	Everyday materials	Everyday materials	Everyday materials	Everyday materials
Half term						
Spring 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Animals including humans	Animals including humans	Animals including humans	British Science Week	Animals including humans	Animals including humans
Easter break						
Summer 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Animals including humans	Animals including humans	Seasonal change - Spring	Seasonal change – Spring	Plants	Plants
Half term						
Summer 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**
	Plants	Plants	Plants	Plants	Seasonal change/ plants- Summer	Seasonal change – Summer

Year 2						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Observe plants/ flowers – Autumn.	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Living things and their habitats	Use of everyday materials	Use of everyday materials	Use of everyday materials	Use of everyday materials	Observe plants/ flowers – Winter.	
Christmas break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Use of everyday materials	Use of everyday materials	Animals including humans	Animals including humans	Animals including humans	Animals including humans	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Animals including humans	Animals including humans	Animals including humans	British Science Week	Animals including humans	Animals including humans	
Easter break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Animals including humans	Animals including humans	Animals including humans	Observe plants/ flowers – Spring	Plants	Plants	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Plants	Plants/ observe Summer	Plants	Plants	Cover and reteach misconceptions in preparation for transition to LKS2.		

Year 3							
Autumn 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Forces and magnets	Forces and magnets	Forces and magnets	Forces and magnets	Forces and magnets	Forces and magnets	
Half term							
Autumn 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Forces and magnets	Forces and magnets	Rocks	Rocks	Rocks	Rocks	Rocks
Christmas break							
Spring 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Rocks	Rocks	Rocks	Light	Light	Light	
Half term							
Spring 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Light	Light	Light	British Science Week	Light	Light	
Easter break							
Summer 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Plants	
Half term							
Summer 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Plants	Plants	Plants	Plants	Plants	Plants	Catch-up week

Year 4						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
Living things and their habitats	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Animals including humans
Christmas break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Animals including humans	Electricity	Electricity	Electricity	Electricity	Electricity	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Electricity	States of matter	States of matter	British Science Week	States of matter	States of matter	
Easter break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
States of matter	States of matter	States of matter	Sound	Sound	Sound	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
Sound	Sound	Sound	Sound	Sound	Sound	Catch-up week

Year 5							
Autumn 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	
Half term							
Autumn 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Forces	Forces	Forces	Forces	Forces	Forces	Forces
Christmas break							
Spring 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Forces	Earth and Space	Earth and Space	Earth and Space	Earth and Space	Earth and Space	
Half term							
Spring 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Earth and Space	Properties and changes of materials	Properties and changes of materials	British Science Week	Properties and changes of materials	Properties and changes of materials	
Easter break							
Summer 1	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
	Properties and changes of materials	Properties and changes of materials	Properties and changes of materials	Properties and changes of materials	Properties and changes of materials	Properties and changes of materials	
Half term							
Summer 2	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Animals including humans	Catch-up week	Catch-up week

Year 6						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	Living things and their habitats	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity
Christmas break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Light	Light	Light	Light	Light	Light	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Animals including humans	Animals including humans	Animals including humans	British Science Week	Animals including humans	Animals including humans	
Easter break						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	
Animals including humans	Animals including humans	SATS week	SATS week	Catch-up week	Catch-up week	
Half term						
Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
Evolution and inheritance	Evolution and inheritance	Evolution and inheritance	Evolution and inheritance	Evolution and inheritance	Evolution and inheritance	Evolution and inheritance

Science and children with Special Educational Needs

The graduated approach handbook for SEND students should be used to provide the simple, everyday strategies that should be employed to support learners in the classroom. The strategies below are aimed more specifically at adapting the science curriculum for SEND learners.

Use clear and simple language and avoid jargon or overly complex terminology.	Keeping instructions and content straightforward will help them understand better.	Summarise ideas/concepts using pictures.	Identify risk points in the lesson, visit or field trip – eg for pupils with noise or smell sensitivity.	Monitor activities and experiments that require mobility and dexterity that some pupils do not have.	Extend the range of the senses and make difficult-to-see processes visible – eg using video or CCTV.
Recognise that the language of science may be challenging for many pupils – for example: " the specific scientific use of everyday words such as 'weight', or " terms specific to science, such as 'electrical circuit'.	Capture images and processes and replay them at different speeds and magnifications, and with particular image characteristics.	Make use of pupils' own digital presentations – eg. of a visit or field trip – so that everyone can contribute.	Pre-learning on important scientific vocabulary and concepts.	Prepare grids for recording information, writing frames and cloze exercises (where key vocabulary is missing) – which can be helpful for some pupils.	Use voice recording to rehearse words, phrases, sentences.
Use real objects as a starting point for developing the concepts and the language needed to describe and discuss what pupils have observed or experienced.	Use a tablet to take photographs to capture important findings. Images can also be used to build a visual record.	Simple audio recorders can be used instead of written notes.	Use of Clicker to communicate findings in science.	Record oral responses where written work is a barrier.	Use targeted questioning to check the understanding of students.
Build on investigations, using careful discussions that help pupils understand and use scientific vocabulary and help them to analyse and understand what they have observed.	Use a digital camera to capture each stage of an investigation, or important findings on a field trip, for future reference. Images can also be used to build a visual record.	Use mnemonics to help pupils remember things like the order of the colours in a rainbow or the relative distance of the planets from Earth.			

	EYFS	End of Key Stage One	Lower Key Stage Two	Upper Key Stage 2
Working scientifically	• Observe things closely through a variety of means (photos, magnifiers) • With support, notice and discuss patterns around them.	• Explore the world around them and raise their own simple questions. • Begin to recognise that there are different ways to answer a scientific question. • Experience a variety of practical scientific enquiries. • Carry out a simple test. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (Identify and classify). • Observe closely using simple equipment: pooters, magnifying glasses • With guidance, begin to notice patterns and relationships. • Use simple measurements and equipment to gather data (egg timers, lenses, magnifiers) • Use observations and ideas to suggest answers to questions.	• **Raise their own relevant questions about the world around them.** • **Provide a range of different scientific experiences including different types of scientific enquiries to answer questions.** • **Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.** • **Set up simple scientific enquiries, comparatives and fair tests.** • **Recognise when a fair test is necessary and help to decide how to set it up.** • **Talk about the criteria for sorting, grouping and classifying; and use simple keys.** • **Make systematic and careful observations.** • **Help to make decisions about the observations to make, how long to make them for and the type of simple equipment that might be used.** • **Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.** • **Take accurate measurements using standard units.** • **Learn how to use a greater range of equipment including data loggers and thermometers.**	• Use their own science experiences to explore ideas and raise different kinds of questions. • Talk about how scientific ideas have developed over time. • Select and 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 development keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. • Make decisions about what observations to make, what measurements to use and long to make them for. • Look for different causal relationships in data and identify evidence that refutes or supports their ideas. • Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
Communicating Scientifically	• With support, talk about patterns and changes that have been seen.	• Record simple data. • Talk about what you have found out and how you have found out. • With support, record and communicate findings in a range of ways, beginning to use simple scientific language.	• **Collect and record data from observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams and keys.** • **Look for changes, patterns, similarities and differences in data in order to draw simple conclusions and answer questions.**	• Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Identify scientific evidence that has been used to refute or support ideas or arguments. • Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degrees of trust in results. • Use results to make predictions and identify when further observations, comparative and fair tests might be needed.
Animals, including humans	• Identify and name some common animals. This will be linked to personal experiences such as pets, books or days out with family.	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Understand that animals, including humans, have offspring which grow into adults. • Describe the basic needs of animals, including humans, for survival: water, food, air • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	• Know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food and that they get their nutrition from the food they eat. • Know that humans and some other animals have skeletons and muscles for support and movement. • **Know the basic functions of the human digestive system.** • **Know the types of teeth in the human mouth and their function.** • **Know how to construct and interpret a food chain, identifying predators, prey and producers.**	• Know how humans develop and change to old age. • Know how to group plants, animals and microorganisms based on common, observable characteristics. • Give reasons for the classification chosen. • Know the main parts of the human circulatory system. • Know the functions of the heart, blood vessels and blood. • Know what impact diet, exercise, drugs and lifestyle has on the function of the human body. • Know how water is transported within animals.

Living Things and their Habitats	• Make observations of living things in the immediate environment.	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	• **Know that living things can be classified in different ways.** • **Know how to use a classification key to group, identify and name a variety of living things.** • **Know that environments can change and that these changes can pose danger to living things.**	• Know how lifecycles differ for mammals, insects and birds. • Know the process of reproduction for plants and animals.
Plants	• With support, make observations of plants in the immediate environment	• Identify and name a variety of common wild and garden plants. • Identify and name a variety of native evergreen and deciduous trees. • Know the basic structure of a variety of common flowering plants including: petal, leaf, trunk, branch, stem, root, fruit, bulb, seed • Observe and describe how bulbs and seeds grow into mature plants. • Know that plants need water, light and a suitable temperature to grow and stay healthy.	• Know the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Know the requirements of a plant for life and growth (air, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported in plants. • Know the life cycle of a flowering plants: pollination, seed formation and seed dispersal.	
Materials, their properties and change	• Use a variety of materials during independent play: plastic jugs, wooden blocks, fabric puppets.	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of a variety of everyday objects. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.		• Know how to group materials based on their hardness, solubility, transparency, conductivity and response to magnets. • Know that some materials will dissolve in liquid to form a solution and how to recover a substance from a solution. • Know how to best separate a mixture using filtering, sieving and evaporating. • Know that dissolving, mixing and changes of state are reversible. • Know that some changes result in the formation of a new material and that this is usually irreversible.
Seasonal Changes	• Observe and name the types of weather seen on a daily basis.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.		
Rocks			• Compare and group different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed. • Know that soils are made from rocks and organic matter.	

Light	• Explore sources of light: torches, ceiling lights, the sun, the moon.		• Know that light is needed in order to see. • Know that dark is the absence of light. • Know that light can be reflected from surfaces. • Know that light from the sun can be dangerous and know some ways to protect yourself. • Know how shadows are formed and that their size can be changed.	
Forces and Magnets	• Explore and investigate bar magnets. Can you find an object that will stick to a magnet?		• Know that objects will move in different ways on different surfaces. • Know that some forces can act at a distance and that some forces need direct contact between two objects. • Know that magnets have two poles and how magnets behave depending on which of the poles meet. • Know that some objects are attracted to metals but some are not.	• Know that an unsupported object will fall to the Earth because of the effect of gravity. • Know how water resistance, air resistance and friction act between moving surfaces. • Know how levers, pulleys and gears allow a smaller force to have a greater effect.
States of Matter	• Explore malleable materials with hands, fingers and a variety of tools.	• Know that some objects can be squashed, bent, twisted or stretched depending on the material they are made from.	• **Know if a material is a solid, liquid or gas.** • **Know that heating or cooling a material can change its state.** • **Know that some changes can be reversed and that some are irreversible.** • **Know that evaporation rate increases as temperature increases.**	
Sound			• **Know that some sounds are created when an object vibrates.** • **Know that vibrations from sounds travel through a medium (usually the air) to the ear.** • **Know that features of an object will change the pitch of a sound.** • **Know that as the strength of vibrations increases, the volume of a sound will increase.** • **Know that sounds get fainter as the difference from the sound source increases.**	
Electricity			• **Know that common appliances require electricity to run.** • **Know how to construct a simple series circuit.** • **Know the basic parts of an electrical circuit.** • **Know that a circuit must complete a full loop in order for the electricity to flow around it.** • **Know how a switch affects a series circuit.** • **Know that some materials conduct electricity and some insulate electricity.**	
Earth and Space				• Know how the Earth and the other planets move in relation to the sun. • Know how the moon moves in relation to the earth. • Know that the sun, moon and earth and approximately spherical bodies. • Know that the rotation of the Earth explains the concept of day and night.

Evolution and Inheritance				• Know that living things have changed over time. • Know that fossils provide information about living things that inhabited the earth millions of years ago. • Know that living things produce offspring of the same kind, but that normally offspring vary and are not identical to their parents. • Know that animals have adapted to suit their environment in different ways and that this adaption may lead to evolution.