OUR

Science

CURRICULUM

Support • Achieve • Celebrate

The teaching of Science at Cherry Lane Primary School is underpinned by the principles of the Cherry Lane Way.

The Cherry Lane Way

Learn Actively

Ask and Answer Questions

Understand Key Vocabulary

Link Learning to Existing Knowledge

INTENT

At Cherry Lane, we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We aim to develop our pupils' curiosity in the subject, whilst also helping them to fulfil their potential. Moreover, we aim to prepare our pupils for life in an increasingly scientific and technological world. We intend learning in science to be through systematic investigations of the physical, chemical and biological aspects of their lives that rely mainly on first hand experiences, leading to them being equipped to answer scientific questions about the world around them. It is our intention that, through investigative science, pupils at Cherry Lane Primary School will continue to deepen their respect for the natural world and all its phenomena, and increase their care and appreciation of it.

We aim to develop pupils' enjoyment and interest in science and appreciation of its contribution to all aspects of everyday life. We use a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science and introduce pupils to the language and vocabulary of science. We extend the learning environment for our pupils via environmental areas and the locality and promote a 'healthy lifestyle' in our pupils.

We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been

identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills. The staff at Cherry Lane ensure that all children are exposed to high quality teaching and learning experiences, which allow children to explore their outdoor environment and locality, thus developing their scientific enquiry and investigative skills. They are immersed in scientific vocabulary, which aids children's knowledge and understanding not only of the topic they are studying, but of the ever-changing world around them and prepares them for life in modern Britain. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability, with a broad and balanced science curriculum.

IMPLEMENTATION

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Science teaching at Cherry Lane Primary School involves adapting and extending the curriculum to match all pupils' needs. KS1 and KS2 follow the Switched on Science schemes of work. Where possible, Science is linked to class topics. Science is taught as discrete units and lessons where needed to ensure coverage. Teachers plan to suit their children's interests, current events, their own teaching style to implement the Switched on Science Scheme, the use of any support staff and the resources available.

We ensure that all children are provided with rich learning experiences that aim to:

- *Prepare our children for life in an increasingly scientific and technological world today and in the future.*
- *Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.*
- *Help develop and extend our children's scientific concept of their world.*
- *Build on our children's natural curiosity and developing a scientific approach to problems.*
- *Encouraging open-mindedness, self-assessment, perseverance and developing investigative skills – including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.*
- *Develop the use of scientific language, recording and techniques.*
- *Develop the use of computing in investigating and recording.*
- *Make links between science and other subjects.*

Science is taught consistently, weekly for up to two hours, but is discretely taught in many different contexts throughout all areas of the curriculum.

For example, through English, ie. writing a biography of a famous scientist etc.

We have also hold science week, during the spring term, in which the children enjoy lots of practical science activities addition to their science lessons as well as cross curricular activities studying a life of a famous scientist.
At Cherry Lane, we aspire to promote children's independence and for all children to take responsibility in their own learning, therefore we have implemented pupil assessments, which the children complete at the end of each unit (years 1-6) to track achievements and progress at the end of a topic.

PROGRESSION OVERVIEW

SKILLS

The skills progression outlined in the Switched on Science scheme of learning is aligned with the National Curriculum statements regarding 'Working Scientifically'. These skills are embedded within the content of biology, chemistry and physics, focussing on the key features of scientific enquiry, so that pupils use a variety of approaches to answer relevant scientific questions. These types of enquiries include those outlined by the National Curriculum and shown above. Pupils seek answers to these questions through collecting, analysing and presenting data. Skills for each key stage are broken down into small steps which prepare children for the next stage of their learning.

Progression of Disciplinary Knowledge - Working Scientifically							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Observation and Measurement	Observe and describe what they see using everyday language. Use equipment such as magnifying glasses and viewers. Take measurements by comparing and notice simple patterns e.g. bigger/smaller.	Can identify and group, compare and contrast using observations, video and photographs. Can observe changes over time and describe changes. Can use magnifying glasses, viewers and digital microscopes. Use simple measurement and equipment such as egg timers and stopwatches. Use non-standard measures.	Observe closely and select the correct equipment. Can identify a range of plants using ID charts. Observe how plants and animals grow and record findings. Notice similarities and differences. Use observations and ideas to suggest answers to questions. Use standard units to estimate and measure. Use rulers, scales, thermometers and measuring vessels with a degree of accuracy.	Make systematic and careful observations. Select your own equipment for observing including digital cameras. Look for naturally occurring patterns. Collect data from your own observations. Can make observations and decide how to record them to answer a question. Take accurate measurements using standard units. Use a range of equipment and begin to read digital measurements from data loggers and stop watches	Make systematic and careful observations to ask questions and group objects using classification keys. Observe closely and explain processes. Identify similarities, differences or changes related to simple scientific ideas or processes. Take and record accurate measurements using standards units to 2dp. Use data loggers to record. Use volt metres and begin to gather repeat readings to increase accuracy.	Observe carefully and make comparisons. Observe changes over a period of time. Make decisions about what to observe to answer questions. Use observation skills and ID kits to identify plants and animals. Take repeat measurements where appropriate. Can find the average of data. Select measuring equipment and use accurately e.g. ruler, tape measure, trundle wheel, force metres.	Can make accurate drawings of plants and animals based on observations. Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings where appropriate. When collecting measurements decide whether to increase sample size for validity and reliability. Record measurements to 3dp. Use protractors, rulers, force metres, volt metres accurately
Planning enquiries	Test out ideas and take risks through trial and error.	Begin to recognise ways they may answer scientific	Can plan and carry out simple tests linked to the different	Can set up practical enquiries using comparative and	Can identify the type of enquiry needed to answer a	Recognise when and how to set up comparative and fair tests	Children choose the type of enquiry needed to carry out their investigation.

Progression of Disciplinary Knowledge - Working Scientifically							
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Asking Questions	Question why things happen. Ask questions to find out how things work.	Can ask simple questions. Can ask yes and no questions to sort and classify. Can raise own questions.	Can ask simple questions relevant to the topic. Know their questions can be answered in different ways. Can use a range of question stems.	Can raise questions and can carry out tests with support to find things out. Can write a range of questions relevant to the topic. Can answer questions posed.	Can ask a range of questions to sort and classify. Can write a range of questions using own scientific knowledge. Can answer questions independently using secondary sources.	Use scientific experiences to explore ideas and raise different higher order questions. Can create further questions to investigate. Can raise questions and suggest reasons for similarities and differences	Can raise questions to further prove or disprove a scientific enquiry. Can raise questions about a range of phenomena.
Make predictions	Can make simple predictions based on comparisons e.g. float or sink.	Can make basic predictions over things they can see or their own ideas. Use some scientific vocabulary.	Draws knowledge from observations to make predictions. Can begin to test predictions and later answer questions.	Draws on knowledge to make predictions. Can add detail to their predictions. Make further predictions based on what's observed or tested.	Predictions are detailed and explain their thinking, they link to tests, data and use scientific language. Raise further predictions from	Use subject knowledge, observations or previous learning to make predictions. Add detail and explanations. Can identify a range of	Use test results to make predictions to set up further comparative tests. Uses evidence to support predictions. Develop predictions based on research and scientific knowledge.

	Engage in open ended activities. Choose resources they need for their activity from their environment. Find ways to solve problems.	questions. Experience different types of enquiry including practical activities. Use resources provided by the teacher and suggest some resources of their own e.g. pipettes.	types of enquiry. They can carry out a simple comparative test using some of their own ideas. Can suggest their own resources to carry out tests.	fair tests. Use a range of scientific enquiry. Can investigate and answer questions linked to a shared planning frame. Understand some of the variables needed to be controlled with support. Use a range of equipment e.g. thermometers and data loggers.	question. Follow a plan to carry out observations and tests. Use a planning approach with more independence identifying variables and what needs measuring. Children choose their method to carry out their investigation.	and explain which variables need to be controlled and changed. Understand what type of scientific inquiry is needed to answer and prove/disprove scientific questions or phenomena.	Children can pose and answer their own questions, controlling variables where necessary independently. Decide whether sample size needs to be increased for validity. Identify a range of factors which may affect their investigation.
Recording	Draw pictures or objects in their own environment. Can take photos of things that interest them. Can count results and start to make marks to record results. Can sort in at least 2 groups. Can create a class pictogram using pictures and objects.	Begin to show some accuracy in drawings, observations and use simple labels. Use scientific vocabulary provided by the teacher. Can complete a simple prepared table with some support and scaffolding. Can add marks to a chart to complete data.	Gather and record data to help answer questions. Record observations using photo video, drawings, labelled diagrams or in writing. Count results using tally charts. Use prepared tables to record results more independently. Use simple keys based on yes and no questions. Can sort into 2 groups with their own categories	Record findings using scientific language, drawings and labelled diagrams including detailed labelling and written explanations based on observations. Can complete a table where they can add their own headings and results. Use simple classification keys and Venn diagrams. Can use Carroll diagrams and	Record findings using systematic and careful observational drawings and labelled diagrams using scientific vocabulary. Children present the same data in different ways. Can create own tables with headings. Can record using classification keys. Can use Venn and Carroll diagrams with accuracy. Can use discrete and continuous data	Present results in a variety of ways to help answer questions. Can decide how to record from a range of approaches. Can record ideas using accurate diagrams using scientific language. Create your own results table including cause and effect. Record results systematically and repeat readings. Use	Record data and results with increasing complexity e.g. accuracy of measurements. Use scientific diagrams, models and labels accurately with clarity and using precise scientific language. Calculate mean and rage of a set of data. Can use and produce classification keys independently by posing questions. Can independently collect data and produce scatter and line graphs. Can

			and explain the reason for choices. Record using prepared bar charts.	give reasons for criteria. Can produce bar charts adding their own axis labels and headings.	using line/scatter graphs. Can construct bar charts independently.	and develop classification keys. Can classify in a number of ways. Use line or scatter graphs to calculate range in a set of data using different scales. Can produce line graphs with various increments.	create bar charts and pie charts to present data.
Interpreting and concluding	Offer explanations for why things happen- making use of some recently introduced scientific vocabulary. Develop your own narrative and explain by connecting ideas or events. Develop vocabulary which meets the breadth of their experiences.	Can use evidence from simple tests when answering questions. With help, begin to notice patterns and relationships. Talk about what they have found out and how they found it out. Can make comparisons and recognise biggest/smallest, most effective/least effective from data. Can use simple models to explain processes e.g.	Communicate findings to an audience using relevant scientific language and illustrations. Can identify causal relationships and patterns in results. Can identify which results do not fit the overall pattern and explain findings. Refers to the table of results when describing what has happened. Draws a basic conclusion (with support from the teacher) using	Draws conclusions based on observations. Can compare something using results and the conclusion is consistent with the data. Able to adjust opinion and predictions based on results. Can give reasons for results including any anomalies. Use simple scientific language to discuss ideas and communicate their findings in ways appropriate for different	Draws simple conclusions from results to answer questions and support their ideas. Look for casual relationships in data and identify evidence that refutes/supports ideas. Report on findings to an audience orally and in writing using appropriate scientific vocabulary for a range of audiences. Children use evidence to suggest values	Identify patterns and casual relationships that may be found in the natural environment. Children interpret data to generate simple comparative statements based on evidence. Use results to draw conclusions and can identify external factors that cannot be controlled e.g.temperature inside and outside. Use scientific language and	Look for patterns and relationships using a suitable sample. Use oral and written forms such as displays to report conclusions, casual relationships and give an explanation of the degree of trust in their results. Makes suggestions for ideas that can be explored using pattern seeking. Can spot anomalies and identify results that do not fit the overall pattern. Use data to refute or support ideas or arguments. Focuses on scientific reasons for overall pattern rather than a

		seasonal changes, lifecycles.	own scientific knowledge, observations and comparisons. Uses results of investigations to answer enquiry questions.	audiences orally and written	for different items tested using the same method. Draw conclusions based on straightforward evidence and current subject knowledge to support their findings, Suggest improvements and raise further questions.	illustrations to discuss, communicate and justify scientific ideas. Can use comparative statements to explain results and how things work.	comparison. Uses labelled diagrams to support their explanation. Use ideas from secondary sources to support their ideas, choosing appropriate websites.Create detailed models to explain processes such as circulatory systems and lifecycles.
Evaluating				Apply their knowledge of the topic when evaluating. Explain any amendments and how this impacted the investigation/test.		Evaluate how effectively variables were controlled and what they may do to improve the enquiry.	

KNOWLEDGE

The programmes of study taken from the National Curriculum describe a sequence of knowledge and concepts that develop pupils' scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. The spiral nature of the Science curriculum ensures that knowledge is revisited during children's learning journey, providing students with multiple opportunities to reinforce their understanding and retention of material, allowing for deeper understanding of topics. Teachers are supported in making these connections and deepening understanding through the use of Switched on Science, which builds on knowledge gained at the previous stage of learning and provides opportunities to revisit and revise learning. Pupils are given opportunities to describe associated processes and key characteristics in common language, and use technical terminology accurately and precisely. They also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Science Curriculum Overview

Knowledge and Skills Progression Map

Year Group	Biology	Chemistry	Physics	Working Scientifically
Year 1	Animals including Humans, Plants, Seasonal Changes	Everyday Materials	Everyday Forces	Observe closely, ask simple questions, carry out simple tests
Year 2	Living Things and Habitats, Growth and Survival	Uses of Materials	Simple Forces	Compare, classify and record findings
Year 3	Nutrition, Skeletons, Plant Growth	Rocks and Soils	Forces and Magnets, Light	Fair testing, accurate observation and measurement
Year 4	Digestion, Food Chains, Classification	States of Matter	Sound, Electricity	Collect, record and interpret data
Year 5	Life Cycles, Reproduction, Adaptation	Properties and Changes of Materials	Earth and Space, Forces	Plan enquiries, identify variables and analyse results
Year 6	Evolution, Inheritance, Classification, Circulatory System	Reversible and Irreversible Change	Light, Electricity	Design investigations, evaluate evidence and draw conclusions

Progression Across the Curriculum

Key Stage 1

- Explore and observe
- Ask simple questions
- Recognise patterns
- Record findings using pictures and simple charts

Lower Key Stage 2

- Develop scientific explanations
- Use fair testing
- Measure accurately
- Present data systematically

Upper Key Stage 2

- Plan investigations independently
- Control variables
- Analyse evidence critically
- Evaluate methods and reliability
- Communicate scientific conclusions clearly

Science Progression Map (Years 1–6)

Working Scientifically: Skills Progression Grid

Skill Area	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking Questions	🟢 Ask simple questions	🟢 Ask questions and suggest answers	🟡 Ask relevant scientific questions	🟡 Develop investigable questions	🔵 Plan enquiries from questions	🔵 Refine questions and identify variables
Observing	🟢 Observe closely	🟢 Make careful observations	🟡 Observe systematically	🟡 Observe changes over time	🔵 Use observations to support predictions	🔵 Use observations to evaluate evidence
Investigating	🟢 Perform simple tests	🟢 Carry out comparative tests	🟡 Begin fair testing	🟡 Conduct fair tests	🔵 Plan investigations independently	🔵 Design and evaluate investigations
Measuring	🟢 Use simple equipment	🟢 Measure using simple tools	🟡 Use standard units	🟡 Measure accurately	🔵 Select appropriate equipment	🔵 Consider accuracy and precision
Recording Data	🟢 Drawings and simple charts	🟢 Tables and tally charts	🟡 Tables and diagrams	🟡 Bar charts and keys	🔵 Graphs and tables	🔵 Select suitable presentation methods
Classifying	🟢 Sort objects	🟢 Use simple criteria	🟡 Use classification keys	🟡 Create classification keys	🔵 Apply complex criteria	🔵 Use scientific classification systems
Pattern Seeking	🟢 Notice patterns	🟢 Describe relationships	🟡 Identify patterns	🟡 Explain patterns	🔵 Identify causal relationships	🔵 Interpret trends and anomalies
Predicting	🟢 Suggest outcomes	🟢 Make simple predictions	🟡 Predict using prior knowledge	🟡 Justify predictions	🔵 Make reasoned predictions	🔵 Evaluate predictions against evidence
Explaining Results	🟢 Describe findings	🟢 Explain simply	🟡 Use scientific vocabulary	🟡 Draw conclusions	🔵 Explain using evidence	🔵 Link conclusions to scientific concepts
Evaluating	🟢 Discuss findings	🟢 Say what worked well	🟡 Suggest improvements	🟡 Identify strengths and weaknesses	🔵 Evaluate methods	🔵 Critically evaluate reliability

Switched On Science

• Knowledge Progression by Strand (Years 1–6)

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals Including Humans	Common animals, body parts, senses	Survival needs, exercise, hygiene	Nutrition, skeletons, muscles	Teeth, digestion, food chains	Human life cycles	Circulatory system; diet, exercise, lifestyle
Plants	Identify plants and trees; plant parts	Growth from seeds and bulbs	Plant functions; water transport; pollination	Plant habitats and ecosystems	Life cycles of flowering plants	Application through classification and adaptation
Living Things & Habitats	Observe habitats and seasonal change	Habitats, microhabitats, food chains	Relationships between living things	Classification and grouping	Life cycles and reproduction	Classification systems; microorganisms
Evolution & Inheritance	—	—	—	—	Similarities between offspring and parents	Evolution, adaptation, inheritance, fossils

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials	Everyday materials and properties	Uses of materials	Rocks, fossils and soils	States of matter	Properties and changes of materials	Reversible and irreversible changes
Rocks & Soils	—	—	Compare rocks, fossils and soils	Environmental applications	Material properties links	Fossils as evidence for evolution
States of Matter	—	—	—	Solids, liquids, gases; evaporation	Material changes and particle behaviour	Applied investigation of changes

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces	Pushes and pulls	Simple forces in everyday life	Forces and magnets	Applied forces in context	Gravity, friction, air and water resistance	Investigation and application of forces
Light	Light and dark; observation	Light sources	Light, reflection and shadows	—	Properties of light and reflection	Light travel; how we see objects
Sound	—	—	—	Vibrations; pitch and volume	Application of sound knowledge	—
Electricity	—	—	—	Simple circuits and switches	—	Complex circuits; symbols; components
Earth & Space	Seasonal changes	Weather and patterns	—	—	Earth, Sun, Moon, planets	Scientific application and enquiry
Seasonal Changes	Weather and seasons	Seasonal patterns	Links to habitats and plants	Applied understanding	Earth and space links	Environmental science links

Strands covered within the switched on science topics

Year group	SOS Topic	Strands covered
Yr 1	Who am I	Animals including humans
	Celebrations	Materials / Plants
	Additional to the SOS topic – needs to be covered as it's in the curriculum	***Seasonal changes***
	Polar adventure	Materials/ Animals including humans
	Treasure island	Materials/ Plants/ Animals including humans
	Additional to the SOS topic – needs to be covered as it's in the curriculum	***Seasonal changes***
	On safari	Animals including humans
	Holiday	Materials/ Animals including humans
Yr 2	Healthy me	Animals including humans
	Materials monster	Uses of everyday materials
	Mini world	Uses of everyday materials/ Living things and their habitats
	Move it	Uses of everyday materials
	Young gardeners	Plants
	Young chef	Animals including humans
Yr 3	Earth rocks	Rocks, soil, fossil
	Food in our bodies	Animals including Humans Nutrition / skeleton
	Mirror, Mirror.	Light
	How does your garden grow?	Plants
	Opposites attract	Forces and magnets
	We are astronauts	Space
Yr 4	What's that sounds?	Sound
	Living things	Living things and their habitats
	Looking at states	States of matter
	Teeth and eating	Animals including humans
	Power it up	Electricity
	Brilliant bubbles	Working scientifically
Yr 5	Out of this world	Earth and space
	Material world	Properties and change of material
	Circle of life	Living things and their habitats
	Let's get moving	Forces
	Growing up and growing old	Animals including humans

	Brilliant scientists	Working scientifically
Yr 6	Classifying critters	Living things and their habitats
	Staying alive	Animals including humans
	We're evolving	Evolution and inheritance
	Staying alive	Light
	Electrifying	Electricity
	We are dinosaur hunters	Evolution and inheritance

CONSOLIDATION

REVISITS

Our Science curriculum is designed to support children's learning and retention over time; its progressive and cyclical nature ensures that children revisit learning, make connections and build knowledge over time, retaining children's knowledge in their long-term memories and progressively broadening their understanding of Science. We support this in lessons by using previous learning slides.

Previous Learning Slides

At the beginning of the lesson, teachers will share a 'Previous Learning' slide with pupils. This provides teachers with the opportunity to discuss prior knowledge and previously taught skills from past lessons. The aim is that children are supported in making connections between what they already know and their new learning. Previous learning links could be drawn from a previous lesson, previous unit of work or learning from a previous year group or key stage. Children are prompted to recall previous learning with a question and an associated image. This short quiz encourages pupils to remember knowledge content covered in previous learning. Pupils work on whiteboards, discuss with their peers and have access to exercise books and working walls. It is not graded or recorded. The aim is to retain knowledge over time.

KEY VOCABULARY

In order for pupils to be confident Scientists, we expect them to accurately and confidently use scientific vocabulary. The vocabulary that they need to know in each topic is mapped out on the progression of learning, ensuring children build on their vocabulary each year or each time they revisit a topic, and is detailed on the first page of each medium term plan. This aligns with the vocabulary provided by knowledge organisers and unit starters. In addition, this vocabulary is displayed on working walls with appropriate accompanying visuals or symbols, to support pupils' understanding.

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, to both themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Vocabulary progression

2. KEY STAGE 1 VOCABULARY (YEARS 1–2)

Strand	Year 1	Year 2
Animals Including Humans	animal, human, body, head, senses	survival, basic needs, food, exercise, hygiene, offspring
Plants	plant, tree, leaf, flower, root, stem	seed, bulb, growth, light, water, habitat
Living Things & Habitats	living, dead, senses	habitat, microhabitat, food chain
Everyday Materials	material, wood, plastic, metal, glass, hard, soft	bendy, rigid, suitable, object, purpose
Forces	push, pull, move	force, twist, stretch, movement
Seasonal Changes	weather, season, spring, summer, autumn, winter	temperature, day, night, seasonal change
Working Scientifically	observe, question, sort	compare, classify, investigate, measure, record

3. LOWER KEY STAGE 2 VOCABULARY (YEARS 3–4)

Strand	Year 3	Year 4
Animals Including Humans	skeleton, muscles, nutrition, balanced diet	digestion, teeth, food chain, producer, consumer
Plants	function, transport, pollination	reproduction, ecosystem, environment
Living Things & Habitats	predator, prey, environment	classification, vertebrate, invertebrate
Rocks & Soils	rock, fossil, soil, permeable	erosion, sediment, rock cycle
States of Matter	—	solid, liquid, gas, evaporation, condensation, particles
Forces & Magnets	magnet, attract, repel	friction, gravity
Light	light source, shadow, reflect, opaque	reflection, shadow, darkness
Sound	—	vibration, pitch, volume
Electricity	—	circuit, battery, bulb, switch, conductor
Working Scientifically	fair test, predict, measure	variable, pattern, conclusion, classify

4. UPPER KEY STAGE 2 VOCABULARY (YEARS 5–6)

Strand	Year 5	Year 6
Animals Including Humans	life cycle, reproduction, gestation	circulatory system, heart, blood, nutrients, lifestyle
Living Things & Habitats	species, reproduction, life cycle	classification system, microorganism, diversity
Plants	germination, reproduction	adaptation, variation, classification
Materials	dissolve, mixture, solution	reversible change, irreversible change, reaction
Forces	gravity, air resistance, water resistance, friction	force meter, resistance, explanation
Earth & Space	planet, orbit, solar system, Earth, Sun, Moon	axis, rotation, scientific model
Light	reflection, refraction	light travel, ray, vision
Electricity	—	voltage, circuit diagram, series, parallel, component
Working Scientifically	hypothesis, evidence, accuracy	evaluate, reliability, justify, conclusion

Progression of Vocabulary – Working Scientifically

KS1		LKS2	UKS2
aim answers block diagrams changes compare comparative test data describe difference different do equipment explore findings gather group identify (name) identifying, grouping and classifying investigate measure notice observe observing over time patterns pattern seeking pictogram plan questions record researching review same scientific enquiry secondary sources	similarity sort sorting diagrams table tally chart test What will we do? (plan) What do you think will happen? (prediction) What happened? (results) What have we found out? (conclusion)	accurate bar chart chart classify conclusion (What have we found out?) criteria data develop diagram evaluate evidence explanation key making a test fair method observations practical enquiry prediction (What do you think will happen?) primary sources questioning reasoning relationships results (What happened?) secondary sources standard units What do we change, what do we keep the same, what are we measuring?	accuracy causal relationship justify line graph precision readings refute repeat readings scatter graph support variables control variable (What do we keep the same?) independent variable (What do we change?) dependent variable (What do we measure?)

INCLUSION

When planning for children with SEND, teachers consider ways of minimising or reducing barriers so that children can fully take part and learn. This is done with an awareness and understanding of individual children's needs and preferred methods of working. This may mean meaning modifications or adjustments to ensure all children are included, or planning a 'parallel' activity for pupils with SEN so that they can work towards the same lesson objective as their peers, eg. using audio recorders instead of written notes during investigations, accessing simulations or simple diagrams during the explanation of concepts, and making difficult-to-see processes visible through the use of a camera. For some children it may be necessary to pre-teach vocabulary or provide cards with symbols or images to support understanding, and classroom displays are used to support this. Teachers consider the questions that will be asked of groups and individuals, and the ways they will check pupils' understanding. Working scientifically skills are revisited and built on through the key stages; planning considers the objectives and outcomes more suited to the stage of learning of individual pupils, eg. the support needed for a child to use equipment to take measurements.

Vocabulary

In order for pupils to be confident Scientists, we expect them to accurately and confidently use scientific vocabulary. The vocabulary that they need to know in each topic is mapped out on the progression of learning, ensuring children build on their vocabulary each year or each time they revisit a topic. This aligns with the vocabulary provided by knowledge organisers. In addition, this vocabulary is displayed on working walls

with appropriate accompanying visuals or symbols, to support pupils' understanding.

Environment

All classrooms feature a Science working wall; regularly updated to reflect current learning, the working wall serves as a memory aid to children during lessons, displaying relevant prompts that will support pupils to recall and remember more over time. Science working walls include the symbols representing the focus enquiry type and 'working scientifically' skill for that week, supporting children's knowledge and understanding of these in context with their lessons and lessons where these may previously have been referenced. Key vocabulary is displayed, with appropriate visuals or symbols, and added to over the course of the topic gradually to support children's understanding of terms. Depending on the topic and learning journey, working walls may also include diagrams, images, children's work, children's post-it note questions or concept maps.

G&T

Gifted and talented children are challenged through differentiated tasks and optional POP tasks, which are provided in each lesson. These tasks enable the children to complete set tasks in any way they wish to show their understanding.

IMPACT

The impact and measure of this is to ensure children not only acquire the appropriate age-related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives.

All children will have:

- *A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.*
- *A richer vocabulary which will enable to articulate their understanding of taught concepts.*
- *High aspirations, which will see them through to further study, work and a successful adult life.*

Assessment

Assessment of Science is ongoing, with teachers assessing knowledge and skills throughout topics, using previous learning slides and through a range of enquiry types. Attainment is measured summatively during termly assessments, the results of which are recorded and analysed. Pupils complete a knowledge quiz at the end of each topic. This helps teachers to assess who has gained the key knowledge detailed on the MTP. It is important that pupils have acquired and remembered this knowledge, to aid their retention of knowledge over time as well as to help them build on learning in future topics and year groups. Questions will take different formats, including multiple choice or open-ended questions. Quizzes and tests are designed by teachers using key knowledge from the Switched on Science scheme.

What's that sound? – Test

1. Finish the sentence.

The parts of our body we use to hear with are our _____.

1 mark

2. Jane drives a tractor. She wears ear defenders. Why does she wear them?

_____

_____

1 mark

3. Richard hits the surface of his drum with a stick.

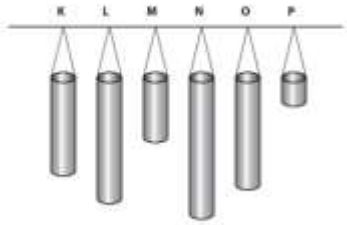
a) What does the surface do to produce a sound? _____

1 mark

b) How can he make a louder sound with the drum? _____

1 mark

4. Mike has made a set of tubular bells and hung them up.



Mike did not arrange the tubes in any order.

Write the letters of the tubes, K to P, in the correct order starting with the lowest pitched tube.