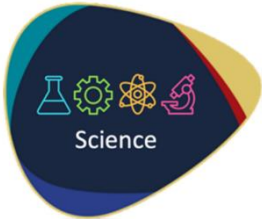
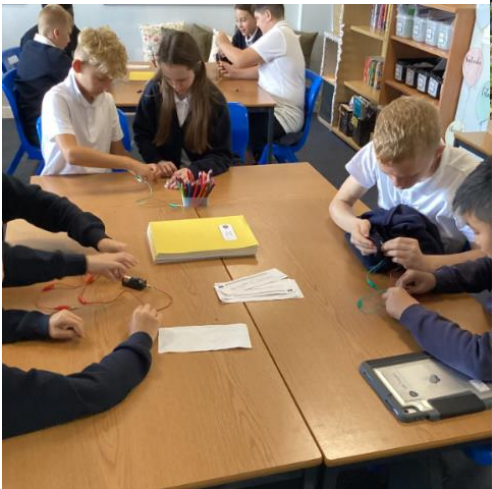


Temple Learning Academy – Science Curriculum Long Term Plan



Curriculum Leader Andrew Crawford	Programme Leader Ethan Johnson	Line Manager Amy Thompson/Alex Clark
<u>Topic Area</u> Key Knowledge, Scientific Enquiry Skills, Key Vocabulary		





Science in the EYFS

Area of Learning: ***Understanding the World***



EYFS Statutory Educational Programme:

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

EYFS Statutory Characteristics of Effective Learning:

The teaching and provision of 'Understanding the world' provides opportunities for the three characteristics of effective teaching and learning to be realised:

- playing and exploring – children investigate and experience things, and 'have a go'
- active learning – children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
- creating and thinking critically – children have and develop their own ideas, make links between ideas, and develop strategies for doing things

EYFS Statutory Early Learning Goal – Understanding the World: The Natural World:

Children at the expected level of development (end of year) will:

Explore the natural world around them, making observations and drawing pictures of animals and plants;

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Development Matters – Non - Statutory Curriculum Guidance;



Birth to three – babies, toddlers and young children will be learning to:

Repeat actions that have an effect.
Explore materials with different properties.
Explore natural materials, indoors and outside.



Birth to three – babies, toddlers and young children will be learning to:

Explore and respond to different natural phenomena in their setting and on trips.



3 and 4-year-olds will be learning to:

Explore and talk about different forces they can feel.

Talk about the differences between materials and changes they notice.



3 and 4-year-olds will be learning to:

Use all their senses in hands-on exploration of natural materials.
Explore collections of materials with similar and/or different properties.
Talk about what they see, using a wide vocabulary.



Explore how things work.
Plant seeds and care for growing plants.
Understand the key features of the life cycle of a plant and an animal.
Begin to understand the need to respect and care for the natural environment and all living things.



Children in reception will be learning to:

Understand the effect of changing seasons on the natural world around them.

Explore the natural world around them.



Children in reception will be learning to:

Describe what they see, hear and feel whilst outside.

Recognise some environments that are different from the one in which they live.



Science in EYFS Provision –

Continuous provision of Science is offered for child-initiated learning in GOAL (Go Off And Learn) time, areas can be enhanced with stimuli or invitations to explore

- Investigation area includes resources such as magnifying glass and magnets for children to interact with.
- Indoor/ outdoor water area includes sea animals' funnels, pipes and a range of other resources to explore sinking and floating.
- Outdoor minibeast door in the ground for children to explore and discuss findings
- Daily calendar draws children's attention to weather and seasonal features.
- Small world area includes a range of animals and natural objects for children to discuss, label, sort etc
- Curiosity Cube – objects thoughtfully placed e.g. such as plant may be featured in the Cube for children to help learn about change and growth.
- Books will support children's investigation and extend their knowledge and ways of thinking.

Adult interactions to scaffold and extend, assessment and planning for enhancements is fundamental in the progression of skills.

Science Enhancement

In EYFS the topics 'Shall we Explore the wonders of our world?' and 'How does your garden grow?' provides plenty of opportunities for children to explore the science curriculum.

Primary Science Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Rec	<u>Marvellous me!</u> I can talk about the environment and recognise that some environments are different to the one we live in. I can say what is the same and what is different when comparing environments. I can name different parts of my body. I can name some of the senses Same, different, body parts, head, leg, arm, hand, knee, toes, smell, touch, hear, sight, taste	<u>Marvellous me!</u> I can talk about the changing season. I can describe the natural world around me by talking about what I see, hear, and feel outside. Seasons, same, different, Autumn, Winter, Summer, Spring	<u>Helpful Heroes!</u> I can understand the importance of healthy food choices. I can say why toothbrushing is important and why we do it. Healthy, unhealthy, toothbrush, toothpaste, dentist	<u>Amazing animals in our wonderful world!</u> I know why its's important to take care of living things (Tadpoles in class). I can talk about the lifecycle of a frog. Spawn. tadpoles, froglets, frog, pond	<u>Can you tell me a tale?</u> I can talk about the life cycle of a plant I know how to take care of a plant. I can talk about the lifecycle of a butterfly I know why its's important to take care of living things. Plant, flower, leaf, stem, seed, soil, water, sunlight, caterpillar, egg chrysalis, butterfly	<u>Transport and Travel!</u> I can explore different materials and say how they are the same and different. I can talk about how some materials change I can investigate materials which float and sink Same, different, hard/ soft, shiny/ dull, smooth/rough, ice, water, melt, float, sink
	1. Asking simple questions and recognising they can be answered in different ways 2. Observing closely, using simple equipment 3. Performing simple tests. 4. Using their observations and ideas to suggest answers to questions. 5. Gathering and recording data to help answer questions.					
	<u>Autumn</u>		<u>Spring</u>		<u>Summer</u>	
Year 1	<u>Human Body</u> I know how to label all my body parts	<u>Everyday materials and their properties</u>	<u>Animals (including humans)</u>	<u>Plants</u>	<u>Seasonal Changes (Plants)</u>	<u>Everyday materials and their properties</u>

	<u>Autumn</u>		<u>Spring</u>	<u>Summer</u>	
Year 2	<u>Everyday Materials</u> <u>(focus manipulating and waterproof materials)</u> I know that different materials have different properties I know that materials can be changed by manipulating I know that materials are suited to different jobs I know Charles Mackintosh invented waterproof bricks I know John Dunlop invented the air-filled rubber tyre Materials, suitability, properties, waterproof	<u>Animals including humans</u> I know how animals and human babies grow I know a baby animal needs air, food and water I know what a human baby needs to stay alive I know that there are healthy and unhealthy diets I know how and why you should keep myself clean Dehydrate, diet, disease, energy, exercise, germs, heart rate, hygiene, nutrition, pulse, adult, develop, life cycle, young, live young	<u>Plants</u> I know the right conditions for seeds and bulbs to grow and stay healthy I know that plants are living things I know that plants can be called crops if they are eaten by humans I know that seed dispersal is key to the life cycle of a plant Sunlight, water, temperature, seed, dispersal, germination, nutrition, sprout, shoot	<u>Living things and their habitats</u> I know that I can classify objects using alive, not alive, never been alive I know how habitats can be classified I know how animals might have special adaptations to help them live in different habitats (Y6) I know that animals in the wild are part of a food chain I know that a food chain starts with a producer and ends with a top predator Life processes, living, dead, never lived, food chain, food sources, habitat, microhabitat, depend, survive	<u>Everyday Materials</u> <u>(focus sustainability)</u> I know what sustainability means I know what recyclable material means I know how to plan to save energy in my class and at home I know how to save water I know how to plan to gather data scientifically (litter pick) Renewable, energy, environment, recyclable, non-recyclable
	Working Scientifically: 1. Begin to ask relevant questions and use different types of scientific enquiries to answer them 2. With some independence, set up simple practical enquiries, comparative and fair studies including: <i>Observing changes over time in the local environment across seasons of the year and grouping and classifying and finding things out using a secondary source of information classification keys to identify different plants and animals and noticing observing patterns.</i> 3. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment. 4. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions 5. Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables with some independence, report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 6. Begin to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 7. Identifying some differences, similarities or changes related to simple scientific ideas and processes 8. With support, use straightforward scientific evidence to answer questions or to support their findings				

PD Links: What Helps us grow and stay healthy?					
	<u>Autumn</u>		<u>Spring</u>	<u>Summer</u>	
Year 3	<u>Humans</u>	<u>Magnets and Forces</u>	<u>Rocks and soils</u>	<u>Light and Dark</u>	<u>Plants</u>
	I know that animals, including humans and plants need nutrients I know plants make their own food I know humans do not make their own food I know that humans have skeletons to support and protect them I know that humans and animals have different types of skeletons I know that muscles contract and relax to help us move Healthy, nutrients, energy, saturated fats, unsaturated fats, tendons, joints	I know that some forces push and some forces pull I know that a rough surface causes friction I know that opposite ends of a magnet attract I know that a magnet has two poles (+ and -) I know that only certain metals are magnetic I know that some metals are attracted to magnets Force, push, pull, open, surface, magnet, magnetic, attract, repel,	I know that different kinds of rocks can be classified based on their appearance and simple physical properties I know how fossils are formed I know that soils are made from rocks and organic matter I know how to collect data of rocks in my local area I know what permeable means I know how to plan a fair test (hardness and permeability) I know William Smith created the first geological maps Appearance, physical, properties, absorbent/not absorbent, fossils, sedimentary, organic matter	I know that I need light in order to see I know that dark is the absence of light I know that light can be reflected I know that I should protect my eyes from the sun I know that a shadow forms when an object block a light source I know that ultra violet light from the sun can be dangerous Light, source, dark, reflect, ray, shadow, opaque	I know that roots anchor the plan to the ground and transport water and nutrients I know plants need sunlight to make their own food I know how water is transported in a plant stem I know the leaves are used by the plant to expel oxygen I know that plants have male and female parts I know that there are 5 key stages to a plants life cycle I know some plants produce flowers to help with pollination by insects Evaporation, fertilisation, stamen, carpel, pistil, sepal, pollination, pollinator, germination, seed dispersal
	- Continue to ask relevant questions and use different types of scientific enquiries to answer them - With greater independence, set up simple practical enquiries, comparative and fair tests including: observing changes over time in the local environment across seasons of the year and grouping and classifying and finding things out using a secondary source of information classification keys to identify different plants and animals and noticing/observing patterns. - 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				

6. With greater independence, report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
7. Continue to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
8. Identifying differences, similarities or changes related to simple scientific ideas and processes
9. With growing independence, use straightforward scientific evidence to answer questions or to support their findings

PD Links:

Why should we keep active and sleep well?
why should we eat well and look after our teeth?

	<u>Autumn</u>		<u>Spring</u>		<u>Summer</u>
Year 4	<u>States of Matter</u> I know that water changes states at 100 and 0 degrees centigrade I know the three states of matter are solids, liquids and gases I know that a thermometer measures temperate. I know how to measure with a thermometer I know that evaporation and condensation are stages of the water cycle I know how particles are structured in each state of matter states, matter, solids, solidify, liquids, gases, water vapour, melt, freeze, evaporate/evaporation	<u>Animals Including Humans</u> I know that chewing is part of the digestion process I know that nutrients are stored in foods I know that water and nutrients are absorbed through the small and large intestines digest/digestion, transports, oesophagus, stomach, small intestine, large intestine, rectum	<u>Sound</u> I know that sound travels in waves I know that sound travels through liquids, solids and gases I know that sounds are made by vibrations I know how to present information in a table accurately vibration, sound wave, volume, amplitude, pitch, ear, particles, distance, soundproof, absorb sound, vacuum, eardrum	<u>Things and their habitats</u> I know that plants and animals can be grouped according to characteristics I know that vertebrates have a spine and invertebrates do not I know that an environment can contain more than one habitat I know how to create a question that I can investigate organisms, life processes, respiration, sensitivity, reproduction, excretion, environment, endangered, species, extinct, specimen, characteristics	<u>Electricity</u> I know that large appliances need mains electricity I know that a circuit must be complete for electricity to flow I know electricity runs from negative to positive in a circuit I know that a battery is a source of stored electricity I know that electricity can be generated by the sun and wind and is called renewable I know what a conductor and insulator mean and can test these in a circuit I know that the unit of measurement, volts, is named after a scientist Circuit, symbol, voltage, cell, battery, resistance, current

	condense/condensation, precipitation		.		
	1. Plan different types of scientific enquires to answer questions including and recognising controlling variables where necessary. 2. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. 3. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Use test results to make predications to set up further and comparative fair tests. 5. Report and present findings from enquires including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations 6. Identify scientific evidence that has been used to support or refute ideas or arguments. 7. Scientific enquires including: Group and classify things. Carry out comparative and fair tests. 8. Observe changes over different periods of time. Draw conclusions based on data and observations. Use evidence to justify ideas. Noticing patterns. Finding things out using wider range if secondary sources.				
PD Links: How will we grow and change?					
	Autumn		Spring	Summer	
Year 5	<u>Forces</u> I know that weight is the measurement of gravity acting on a subject I know that mass is the amount of material an item is made of I know that friction slows an object I know that having a larger surface area increases the effects of air resistance I know that streamlined objects are affected less by water resistance and air resistance	<u>Living things and their habitats</u> I know that plants can reproduce sexually and asexually I know how plants use flowers to attract pollinating insects I know that Jane Goodall carried out research about chimpanzees I know that birds, mammals, insects and amphibians share some similarities in their life cycles	<u>Properties and changes in materials</u> I know that some changes are irreversible I know that irreversible changes produce new materials I know how independent variables need to be controlled to ensure a fair test I know that some substances dissolve to make a solution I know that water is known as the universal solvent solids, liquids, gases, melting, freezing, evaporating, condensing, conductor, insulator, transparency, hardness, properties, solubility, transparency,	<u>Earth and Space</u> I know that the Earth and other planets orbit the Sun I know the moon orbits Earth I know that night and day happen due to the Earth’s rotation on its axis I know it takes 365.25 days for the Earth to orbit the Sun I know there are eight planets in our solar system I know the order of the phases of the moon	<u>Animals including humans</u> I know there are 6 stages to human development I know that hormones have physical, mental and emotional influences during puberty I know that boys produce semen I know that girls produce an egg I know that humans have a gestation period of nine months

	forces, gravity, gravitational pull, weight, mass, friction, surface, air resistance, water resistance, buoyancy, streamlined, mechanism	asexual reproduction, fertilise, gestation, life cycle, metamorphosis, pollination, sexual reproduction,		Earth, Moon(s), sun, star, moon, planet, sphere, spherical bodies, satellite, orbit, rotate, axis, geocentric, heliocentric, astronomer	fertilisation, prenatal, gestation, reproduce, adolescence, puberty, menstruation, adulthood, life expectancy
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	1. Plan different types of scientific enquires to answer questions including and recognising controlling variables where necessary. 2. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. 3. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Use test results to make predications to set up further and comparative fair tests. 5. Report and present findings from enquires including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. 6. Identify scientific evidence that has been used to support or refute ideas or arguments. 7. Scientific enquires including: Group and classify things. Carry out comparative and fair tests. 8. Observe changes over different periods of time. Draw conclusions based on data and observations. Use evidence to justify ideas. Noticing patterns. Finding things out using wider range if secondary sources.
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PD Links:

What are healthy/unhealthy habits?

What jobs would we like?

Year 6	Autumn		Spring 1	Spring 2 and Summer 1		Summer 2
	<u>Electricity</u> I know that a circuit must be complete for electricity to flow I know that electricity runs from negative to positive in a circuit I know that a battery is a source of stored electricity I know that the unit of measurement, volts, is named after the scientist Volta	<u>Habitats – Classification</u> I know that Carl Linnaeus compiled a scientific classification system I know that all plants and animals can be classified into groups based on observable characteristics I know that some micro-organisms can be harmful or helpful to humans species, micro-organisms, characteristics, taxonomist,	<u>Light</u> I know that light travels in straight lines I know that light travels from a source to an object to the eye I know how visible light is made up of a spectrum of colours shadows, source, reflection, refraction, spectrum, prism, transparent, pupil	<u>Evolution and inheritance</u> I know that Charles Darwin was the first scientist to explain the ideas of evolution I know that evolution occurs over thousands of years I know that humans evolved from apes I know that adaptations are random mutations I know that physical traits are passed from one generation to the next through genes offspring, inheritance, variations, characteristics, adaptation, habitat, environment, evolution, natural selection, adaptive traits, inherited traits, genes,	<u>Humans</u> I know humans have an internal skeleton I know that muscles and attached to bone with tendons I know the body needs nutrients to survive I know that exercise and diet directly impact on health I know that the heart is a muscle that pumps blood around the body	

	circuit, symbol, voltage, cell/battery, resistance, electrons, amps, current,	classify/classification, bacteria, microscope,			I know that arteries carry oxygenated blood I know that veins carry deoxygenated blood blood vessels, heart, circulatory system, oxygenated, deoxygenated, drug, alcohol, nutrients
	1. Plan different types of scientific enquires to answer questions including and recognising controlling variables where necessary. 2. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. 3. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Use test results to make predications to set up further and comparative fair tests. 5. Report and present findings from enquires including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. 6. Identify scientific evidence that has been used to support or refute ideas or arguments. 7. Scientific enquires including: Group and classify things. Carry out comparative and fair tests. 8. Observe changes over different periods of time. Draw conclusions based on data and observations. Use evidence to justify ideas. Noticing patterns. Finding things out using wider range if secondary sources.				
PD Links: How can we make healthy choices?					

Links to Secondary Curriculum		
Scientific Skills	Scientific Knowledge	Scientific Vocabulary
• Planning and carrying out investigations • making precise observations and measurements • collecting and presenting data in tables and graphs • analysing data to find patterns and draw conclusions • evaluating the validity of experimental results	• <i>Cells & Organ Systems (Year 1 & 2 & 4)</i> • <i>Reproduction (Year 6 & 4)</i> • <i>Ecology & Photosynthesis (Year 1 & 2 & 3)</i> • <i>Particles and Chemical Changes (Year 4 & 5)</i> • <i>Forces (Year 5)</i> • <i>Speed (Year 2)</i> • <i>Energy (Year 1)</i> • <i>Breathing & Gas Exchange (Year 3 & 4 & 5 & 6)</i> • <i>Adaptations (Year 3 & 4 & 5 & 6)</i> • <i>Rates of reaction (Year 5)</i> • <i>Atmosphere, pollution and the rock cycle (Year 2 & 3)</i> • <i>Electricity (Year 6)</i> • <i>Waves (Year 4)</i> • <i>Light & Sound (Year 3 & 4)</i> • <i>Fluids (Year 6)</i> • <i>Electromagnetic waves (Year 4)</i> • <i>Microbiology (Year Rec & 1)</i> • <i>Genetics (Year Rec & 1 & 6)</i>	<u>Year 7</u> matter, cells, forces, acids, elements, cell, atom, element, mixture, force, gravity, friction, magnetism, energy, matter, particles, photosynthesis, respiration, and investigation <u>Year 8</u> atom, cell, ecosystem, element, energy, gene, habitat, molecule, nutrition, proton, and scientist, <i>Breathing & Gas Exchange, adaptation, rates of reaction, atmosphere, pollution and the rock cycle, electricity, wave, light & Sound</i> <u>Year 9</u> <i>Molecular Chemistry, applications of Collision Theory, Newtonian Mechanics, fluids, electromagnetic waves, microbiology, genetics, transporting Substances, cell, gene, ecosystem, photosynthesis, atom, element, ion, mixture, compound, energy, force, mass, circuit, resistance</i>

National Curriculum

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. 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.

Aims

The national curriculum for science aims to ensure that all pupils:

- 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
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

KS1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping

and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways **(Year 1 & 2)**
- observing closely, using simple equipment **(Year 1 & 2)**
- performing simple tests **(Year 1 & 2)**
- identifying and classifying **(Year 1 & 2)**
- using their observations and ideas to suggest answers to questions **(Year 1 & 2)**
- gathering and recording data to help in answering questions **(Year 1 & 2)**

Lower KS2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them **(Year 3 & 4)**
- setting up simple practical enquiries, comparative and fair tests **(Year 3 & 4)**
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers **(Year 3 & 4)**
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions **(Year 3 & 4)**
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables **(Year 3 & 4)**
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **(Year 3 & 4)**

- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **(Year 3 & 4)**
- identifying differences, similarities or changes related to simple scientific ideas and processes **(Year 3 & 4)**
- using straightforward scientific evidence to answer questions or to support their findings. **(Year 3 & 4)**

Upper KS2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary **(Year 5 & 6)**
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate **(Year 5 & 6)**
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs **(Year 5 & 6)**
- using test results to make predictions to set up further comparative and fair tests **(Year 5 & 6)**
- 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 **(Year 5 & 6)**
- identifying scientific evidence that has been used to support or refute ideas or arguments **(Year 5 & 6)**

What do we learn at Temple Learning Academy?

EY

In early years, children are exposed to science learning through teaching and provision in 'Understanding the World'. They will explore the world around them and understand key concept of seasons and changing states of matter.

KS1

In KS1 children will work collaboratively in a hands-on style to investigate key concepts. They will perform simple tests and make observations to answer questions.

Key concepts will build on seasonal changes and states of matter.

New concepts will include the materials, the human body, animals and plants.

KS2

In KS2 children will continue to study all of concepts from KS1 but in more detail, growing in confidence when conducting investigations.

New concepts will include forces, sound, electricity, Earth and space, rocks and soils and evolution.

Why is Science important?

At TLA we believe that learning in science should be engaging, inspirational and challenge all children to ask questions, plan investigations and engage with the world around them. They appreciate how and why science impacts on our lives.



Our aims

- Children should investigate key ideas to form understanding about the world around them.
- Children should ask questions that show understanding of key concepts in all areas of science.
- Children should build up strong communication skills to work as a team to solve problems and make conclusions.

How do we learn at Temple Learning Academy?

We use hands-on real-life experience to make strong links to key concepts and prior learning.

We use video clips, investigations and stories to bring concepts to life and help children to understand some often complex ideas.

Class and group investigations support children to use key vocabulary to explain their ideas and findings using an investigation cycle to build confidence.

We use wow experiences in science every year group in school to help inspire children to explore careers in STEM.

We ensure that practical learning is cross-phase, in school laboratory teaching spaces to celebrate the work of real scientists and help inspire future generations.