Science

Long-term plan

Standard

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Suggested long-term plan: Science

Overview (All year groups)

	Autumn	Spring	Summer	Across the year
EYFS	Animal adventures	I am a scientist	Our beautiful planet	Changing seasons

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Forces and space: Seasonal changes	Materials: Uses of everyday materials	Animals: Sensitive bodies	Animals: Comparing animals	Plants: Introduction to plants	Making connections: Investigating science through stories
Year 2	Living things: Habitats	Living things: Microhabitats	Materials: Uses of everyday materials	Forces and space: Seasonal changes	Plants: Plant growth	Making connections: Plant-based materials
Year 3	Animals: Movement and nutrition	Forces and space: Forces and magnets	Materials: Rocks and soil	Energy: Light and shadows	Plants: Plant reproduction	Making connections: Does hand span affect grip strength?

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	Animals including humans: Digestion and food	Energy: Electricity and circuits	Materials: States of matter	Energy: Sound and vibrations	Living things: Classification and changing habitats	Making connections: How does the flow of liquids compare?
Year 5	Materials: Mixtures and separation	Materials: Properties and changes	Forces and space: Earth and space	Living things: Life cycles and reproduction	Forces and space: Unbalanced forces	Animals: Human timeline (3 lessons)/ Making connections: Does the size of an asteroid affect the diameter of its crater? (3 lessons)
Year 6	Living things: Classifying big and small	Energy: Light and reflection	Living things: Evolution and inheritance	Energy: Circuits, batteries and switches	Animals, including humans: Circulation and health	Making connections: Are some sunglasses safer than others?

Suggested long-term plan: Science

Overview - EYFS

EYFS

Unit 1	Animal adventures 5 lessons Exploring animals big and small on the school grounds and further afield, identifying similarities and differences and sorting animals into groups.	**Unit 2**	I am a scientist 5 lessons Encouraging curiosity, the children explore the natural world through hands-on investigation, discovering how processes and changes occur around us.
Unit 3	Our beautiful planet 5 lessons Exploring outdoors, the children discover the wonders of the natural world by planting seeds, mixing plants in the mud kitchen and learning to care for our beautiful planet.	**Unit 4**	Changing seasons 6 lessons Observing how the natural world transforms through the year and recognising how these changes affect the weather, plants and animals.

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Overview - EYFS

EYFS

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Suggested long-term plan: Science

Overview - Key stage 1

Year 1

Unit 1	Forces and space: Seasonal changes 7 lessons Reflecting on their experiences, the children learn about the four seasons and their associated weather, explore how seasonal changes affect trees, daylight hours and clothing and plan and present weather reports, considering the knowledge needed for the role.	**Unit 2**	Materials: Uses of everyday materials 7 lessons Recognising the suitability of materials for specific purposes, the children explore how actions like stretching and bending affect solid objects, compare material suitability through tests and record data.
Unit 3	Animals: Sensitive bodies 7 lessons Identifying and naming body parts, the children conduct practical activities with the senses to spot patterns and answer questions.	**Unit 4**	Animals: Comparing animals 7 lessons Learning about animals, the children compare and group them by similarities and differences in characteristics, physical features and diets.

Year 1

Unit 5	Plants: Introduction to plants 7 lessons Venturing outside, the children identify and name common wild and garden plants (including deciduous and evergreen trees), observe plant parts with magnifying glasses and name them, sort leaves by appearance, investigate whether beans need water to grow and identify edible plant parts.	**Unit 6**	Making connections: Investigating science through stories 6 lessons Using picture books as inspiration, the children broaden their understanding of plants and animals by gathering and recording data to investigate if taller trees have larger trunks, recap the features of animal groups, build waterproof animal homes with natural materials and sort birds according to their diet.

Suggested long-term plan: Science

Overview - Key stage 1

Year 2

Unit 1	Living things: Habitats 7 lessons Considering the life processes shared by all living things, the children classify objects as alive, once alive or never alive, explore a range of habitats by naming plants and animals found there, learn how different living things depend on each other for food and shelter and create food chains to show the sequence in which living things eat each other.	**Unit 2**	Living things: Microhabitats 7 lessons Building on their knowledge of habitats, the children explore how microhabitats meet the needs of minibeasts, learn about scientific skills used to answer questions and plan and carry out an experiment to determine the conditions woodlice prefer.
Unit 3	Materials: Uses of everyday materials 7 lessons Recognising the suitability of materials for specific purposes, the children explore how actions like stretching and bending affect solid objects, compare material suitability through tests and record data.	**Unit 4**	Forces and space: Seasonal changes 7 lessons Reflecting on their experiences, the children learn about the four seasons and their associated weather, explore how seasonal changes affect trees, daylight hours and clothing and plan and present weather reports, considering the knowledge needed for the role.

Year 2

Unit 5	Plants: Plant growth 7 lessons Carrying out comparative tests, the children investigate the conditions for seed germination, measure stem height with rulers, record data in tables and learn through practical activities that plants need water, light and suitable temperatures to grow and stay healthy.	**Unit 6**	Making connections: Plant-based materials 6 lessons Identifying ways to reduce, reuse and recycle, the children use their knowledge of material properties to invent creative uses for old objects, discover that some natural materials come from plants, explore paper-making processes, conduct tests to select suitable materials for homemade plant pots and venture outdoors to gather natural materials for decoration.

Suggested long-term plan: Science

Overview - Lower key stage 2

Year 3

Unit 1	Animals: Movement and nutrition 7 lessons Studying the human skeleton, the children identify key bones, explore how muscle changes cause movement, learn how the body uses energy, understand what constitutes a balanced diet and discover how research informs nutritionist expertise.	**Unit 2**	Forces and space: Forces and magnets 7 lessons Investigating motion on different surfaces, the children learn about friction, compare its uses and disadvantages, explore contact and non-contact forces and study the properties and uses of magnets.
Unit 3	Materials: Rocks and soil 7 lessons Observing the appearance and physical properties of rocks, the children compare and group different rock samples, learn about fossil and soil formation and record soil drainage rates in a bar chart.	**Unit 4**	Energy: Light and shadows 7 lessons Identifying light sources, the children learn that light is needed to see, explore how its absence causes darkness, investigate reflection and shadow formation and create shadow puppets to explore how light can be used in the arts.

Year 3

Unit 5	Plants: Plant reproduction 7 lessons Explaining how plants reproduce within the life cycle of a flowering plant, the children gather data on plant growth and investigate the structure and function of its parts.	**Unit 6**	Making connections: Does hand span affect grip strength? 6 lessons Exploring the relationship between hand span and grip strength through scientific enquiry, the children apply their understanding of friction to make predictions, plan investigations and carry them out.

Suggested long-term plan: Science

Overview - Lower key stage 2

Year 4

Unit 1	Animals including humans: Digestion and food 7 lessons Using models, the children describe the function of key organs in the digestive system, identify types of human teeth, investigate factors affecting dental health, compare human teeth to those of other animals and examine animal faeces to explore diet, digestion and dentition.	**Unit 2**	Energy: Electricity and circuits 7 lessons Exploring appliances that use electricity, the children learn to work safely with electricity, build circuits, investigate conductors and insulators, examine the relationship between the number of cells and bulb brightness and use real scenarios and historical discoveries to understand scientific progression and home safety.
Unit 3	Materials: States of matter 7 lessons Investigating the properties of solids, liquids, and gases, the children learn about states of matter, explore changes of state through relatable examples, explain water cycle changes and study how temperature affects the rate of evaporation.	**Unit 4**	Energy: Sound and vibrations 7 lessons Exploring different ways of producing sounds, the children learn how vibrations relate to what they hear, how pitch and volume can be altered and how sound can be insulated with different materials.

Year 4

Unit 5	Living things: Classification and changing habitats 7 lessons Exploring ways to group living things, the children create classification keys, study how habitats change over time and understand the positive and negative effects humans have on their surroundings.	**Unit 6**	Making connections: How does the flow of liquids compare? 6 lessons Exploring the relationship between viscosity and the flow of liquids through experiments, the children analyse data, draw conclusions and apply their understanding of states of matter to make predictions, plan and carry out an enquiry.

Suggested long-term plan: Science

Overview - Upper key stage 2

Year 5

Unit 1	Materials: Mixtures and separation 7 lessons Exploring different types of mixtures, the children learn methods of separation, dissolve various substances, investigate how temperature affects dissolving time, design and create a water filter, sieve soil and evaporate solutions.	**Unit 2**	Materials: Properties and changes 7 lessons Broadening their understanding of material properties, the children investigate hardness, transparency and conductivity, explore how these properties influence material uses, study reversible changes like dissolving and changes of state and compare them to irreversible changes like rusting, burning and mixing vinegar with bicarbonate of soda.
Unit 3	Forces and space: Earth and space 7 lessons Exploring the movement of celestial bodies in the Solar System, the children learn about the Earth, other planets and the Moon, discover how the Earthâ€™s rotation causes night and day, understand how sundials work and investigate satellite uses and the issue of space junk.	**Unit 4**	Living things: Life cycles and reproduction 7 lessons Comparing the life cycles of plants, mammals, birds, amphibians and insects, the children investigate asexual reproduction in plants and compare sexual and asexual reproduction.

Year 5

Unit 5	Forces and space: Unbalanced forces 7 lessons Building on their knowledge of contact and non-contact forces, the children explore gravity, friction, air resistance and water resistance, consider the effects of unbalanced forces, plan investigations and test ideas using models to create the most effective pulley system.	**Unit 6**	Animals: Human timeline (3 lessons)/ Making connections: Does the size of an asteroid affect the diameter of its crater? (3 lessons)

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Overview - Upper key stage 2

Year 6

Unit 1	Living things: Classifying big and small 7 lessons Broadening their knowledge of grouping vertebrates, invertebrates, plants and micro-organisms by shared characteristics, the children learn about Carl Linnaeusâ€™s development of the Linnaean and binomial classification systems and use branching and number keys to sort and identify organisms.	**Unit 2**	Energy: Light and reflection 7 lessons Proving that light travels in a straight line, the children explain observations of reflection and shadows, how our eyes allow us to see, how mirrors can be used in various ways and investigate factors affecting the size of shadows and the laws of reflection.
Unit 3	Living things: Evolution and inheritance 7 lessons Studying patterns in humans and other species, the children learn about inherited and environmental characteristics, understand how observations led Darwin and Wallace to develop theories, model finch variation and natural selection to explain species evolution and explore fossil evidence supporting this theory.	**Unit 4**	Energy: Circuits, batteries and switches 7 lessons Revisiting electrical circuits, the children draw conventional circuit diagrams, use models to explain current, resistance and voltage, compare batteries and their effects on bulb brightness and apply their knowledge to design and create practical devices.

Year 6

Unit 5	Animals, including humans: Circulation and health 7 lessons Studying the human circulatory system, the children learn about the roles of the heart, blood and blood vessels, use models to demonstrate their functions, explore how lifestyle choices affect health, advise patients using secondary sources, investigate the relationship between exercise and heart rate and analyse secondary data to understand fitness.	**Unit 6**	Making connections: Are some sunglasses safer than others? 6 lessons Exploring sun safety, the children investigate the efficacy of different sunglasses, devise enquiries to test light and UV transmission of the lenses, draw a conclusion about the best sunglasses and summarise their findings through presentations and advertisements.