Aston Rowant C†E Primary School

Growing together we inspire each other to achieve our full potential as courageous life long learners.

Science Growth at Aston Rowant C†E Primary School 2021-2022

The goal of education in Aston Rowant *C†E Primary School is* to enable our children be curious in their approach to learning, to be courageous in their attitude to learning, to be empowered to work both independently and collaboratively, to understand the impact their learning has had on them so far and be inspired to keep learning.

	Hedgehog (R)	Squirrel (1/2)	Fox (3/4)	Owl (5/6)
What do we teach?	**Understanding the World** Discovery and learning related to EYFS topics takes place throughout the year.	**Autumn Term:** Seasonal Changes (Autumn/Winter) Animals Including Humans (Year 2 NC) **Spring Term:** Seasonal Changes (Spring) Living things and their habitats **Summer Term:** Seasonal Changes (Summer) Plants	**Autumn Term:** Rocks, fossils and soils **Spring Term:** Light Animals Including Humans (Year 3 NC) **Summer Term:** Living things and their habitats	**Autumn Term:** Properties and Changes of Materials **Spring Term:** Electricity Light **Summer Term:** Evolution and Inheritance
How do we teach?	Child initiated, topic based learning rich with practical experiences and questions to encourage curious learning.	• Enquiry/practical based units of study with 'I wonder…' pages at the beginning of each unit to encourage curious learning. • Tasks differentiated into Bronze, Silver and Gold to empower chn to choose the level. • Lessons are discussion based on discussion, scientific working and demonstration of knowledge and understanding of scientific concepts. • Lessons include pattern seeking,	• Enquiry/practical based units of study with 'I wonder…' pages at the beginning of each unit to encourage curious learning. • Tasks differentiated into Bronze, Silver and Gold to empower chn to choose the level. • Lessons are discussion based on discussion, scientific working and demonstration of knowledge and understanding	• Enquiry/practical based units of study with 'I wonder…' pages at the beginning of each unit to encourage curious learning. • Tasks differentiated into Bronze, Silver and Gold to empower chn to choose the level. • Lessons are discussion based on discussion, scientific working and demonstration of knowledge and understanding of scientific concepts. • Lessons include pattern seeking, observing over time, comparative

		observing over time, comparative tests, identifying and classifying and research all as means of gaining knowledge and demonstrating understanding. • Children are encouraged to independently make predictions about and draw conclusions from their scientific work. • Children are encouraged to work collaboratively when working scientifically to develop their ideas. • I Wonder… is on the white board during lessons for chn to write their questions on which are answered during the plenary or added to the class 'Wonder Wall' to encourage curious learning • Marking uses green for positive feedback and pink for I Wonder… questions • The I Wonder… marking takes the learning on to the next level by asking deep questions. this is to encourage reflective learning and stimulate further thought to keep learning	of scientific concepts. • Lessons include pattern seeking, observing over time, comparative tests, identifying and classifying and research all as means of gaining knowledge and demonstrating understanding. • Children are encouraged to independently make predictions, observe changes, collect and record data, draw conclusions and evaluate their work. • Children are encouraged to work collaboratively when working scientifically to develop their ideas, collect data, conduct research and present their findings. • I Wonder… is on the white board during lessons for chn to write their questions on which are answered during the plenary or added to the class 'Wonder Wall' to encourage curious learning • Marking uses green for positive feedback and pink for I Wonder… questions • The I Wonder… marking takes the learning on to the next level by asking deep questions. this is to encourage reflective learning and stimulate further thought to keep learning	tests, identifying and classifying and research all as means of gaining knowledge and demonstrating understanding. • Children are encouraged to independently make predictions, observe changes, collect and record data, draw conclusions and evaluate their work. • Children are encouraged to work collaboratively when working scientifically to develop their ideas, collect data, conduct research and present their findings. • • I Wonder… is on the white board during lessons for chn to write their questions on which are answered during the plenary or added to the class 'Wonder Wall' to encourage curious learning • Marking uses green for positive feedback and pink for I Wonder… questions • The I Wonder… marking takes the learning on to the next level by asking deep questions. this is to encourage reflective learning and stimulate further thought to keep learning
What Resources?	Variety of everyday materials Outdoor environment	Twinkl (to be used as non-prescriptive starting point for planning and delivery of lessons) Variety of everyday materials Outdoor environment	Twinkl (to be used as non-prescriptive starting point for planning and delivery of lessons) Variety of everyday materials Outdoor environment Electricity resource box (circuits)	Twinkl (to be used as non-prescriptive starting point for planning and delivery of lessons) Variety of everyday materials Outdoor environment Electricity resource box (circuits)

Assessment?	EYFS Continually assessed by class teachers against framework/ELGs End of unit Twinkl assessments used may be used as summative assessments for Years 1-6 where teachers deem appropriate. Teachers input data against objectives taught into OTrack (online assessment tracker) to monitor attainment and progress. Over the course of the year there is: one formal lesson observation, one learning walk, one book look (one per term)			
Intervention?				
Outcomes?	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	**Autumn Term:** Observe the changes across the four seasons; Observe and describe weather associated with the seasons and how the day length varies. Notice that animals, including humans, have offspring which grow into adults; Find out about and describe the basic needs of animals, including humans, for survival (water, food and air); Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. **Spring Term:** Observe the changes across the four seasons; Observe and describe weather associated with the seasons and how the day length varies. 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 an animals obtain their food from plants	**Autumn Term**: Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties; Describe in simple terms how fossils are formed when things that have lived are trapped within rock; Recognise that soils are made from rocks and organic matter. **Spring 1:** Recognise that they need light in order to see things and that dark is the absence of light; Notice that light is reflected from surfaces; Recognise that light from the sun can be dangerous and that there are ways to protect their eyes; Recognise that shadows are formed when the light from a light source is blocked by a solid object; Find patterns in the way that the size of shadows change. **Spring 2:** Identify that animals, including humans, need the right types and right amount of nutrition, and that they cannot make their own food – they get nutrition from what they eat; Identify that humans and some other animals have skeletons and muscles for support,	**Autumn Term:** Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets; Know that some materials will dissolve into liquid to form a solution, and describe how to recover a substance from a solution; Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating; Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic; Demonstrate that dissolving mixing and changes of state are reversible changes; Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Spring 1**: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit; Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches; Use recognised symbols when

		and other animals, using the idea of a simple food chain, and identify the name of different sources of food. **Summer Term:** Observe the changes across the four seasons; Observe and describe weather associated with the seasons and how the day length varies. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees; Identify and describe the basic structure of a variety of common flowering plants, including trees; Observe and describe how seeds and bulbs grow into mature plants; Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Working Scientifically:** **Working Scientifically (to be taught throughout the two year cycle, alongside the objectives above where judged to be most beneficial by the class teacher):** Asking simple questions and recognising that they can be answered in different ways; Observing closely, using simple equipment; Performing simple tests; Identifying and classifying; Using their observations and ideas to suggest answers to questions; Gathering and recording data to help in answering questions.	protection and movement. **Summer Term:** Recognise that living things can be grouped in a variety of ways; Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment; Recognise that environments can change and that this can sometimes pose dangers to living things. **Working Scientifically (to be taught throughout the two year cycle, alongside the objectives above where judged to be most beneficial by the class teacher):** Asking relevant questions and using different types of scientific enquiries to answer them; Setting up practical inquiries, comparative and fair tests; Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables; Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; Using results to draw simple conclusions, make	representing a simple circuit in a diagram. **Spring 2:** Recognise that light appears to travel in straight lines; Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; Explain that we see things because light travels from light sources to objects and then our eyes; Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them. **Summer Term:** Recognise that living things have changed over time and that fossils are provide information about living things that inhabited the Earth millions of years ago; Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents; Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Working Scientifically (to be taught throughout the two year cycle, alongside the objectives above where judged to be most beneficial by the class teacher):** Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate; Recording data and results

			predictions for new values, suggest improvements and raise further questions; Identifying differences similarities or changes related to simple scientific ideas and processes; Using straightforward scientific evidence to answer questions or to support their findings.	of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; Using test results to make predictions to set up further comparative and fair tests; Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations; Identifying scientific evidence that has been used to support or refute ideas or arguments.
Progression? See separate skills and knowledge progression document also.	**40-60+ months:** Looks closely at similarities, differences, patterns and change. **ELGs:** Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes. **Exceeding:** Children know that the environment and living things are influenced by human activity. They can describe some actions which people in their own community do that help to maintain the area they live in. They know the properties of some materials and can suggest some of the purposes they are used for. They are familiar with basic scientific concepts such as floating, sinking and experimentation.	**Vocabulary (Green indicates new vocabulary for the year group):** **Seasonal Changes:** Summer winter autumn spring day daytime wind rain snow hail sleet fog sun hot warm cold **Plants:** **Year 1:** Common wild plants garden plants deciduous evergreen tree trunk branches leaf/leaves root bud flowers blossom petals stem fruit vegetables bulb seed **Year 2:** Common wild plants garden plants deciduous evergreen tree trunk branches leaf/leaves root bud flowers blossom petals stem fruit vegetables bulb seed water light suitable temperature grow healthy germination reproduction **Living Things and their Habitats:** living dead never alive habitats	**Vocabulary (Green indicates new vocabulary for the year group):** **Rocks, fossils and soils:** appearance physical properties hard/soft shiny/dull rough/smooth absorbent/not absorbent fossils sedimentary rock soils organic matter buildings buildings gravestones grains crystals **Light:** light see dark reflect surface natural star Sun Moon shadow blocked solid artificial torch candle lamp sunlight dangerous protect eyes **Animals Including Humans:** nutrition nutrients carbohydrates protein fats fibre water vitamins minerals skeleton bones joints endoskeleton exoskeleton hydrostatic skeleton vertebrate invertebrate contract relax	**Vocabulary (Green indicates new vocabulary for the year group):** **Properties and changes of materials:** properties hardness solubility transparency electrical conductor thermal conductor response to magnets dissolve solution separate separating solids liquids gases evaporating reversible change mixing filtering sieving melting irreversible changes burning rusting magnetism electricity chemists conductivity insulator **Electricity:** voltage brightness volume switches danger series circuit electrical safety sign circuit diagram switch bulb buzzer motor symbols **Light:** light travels straight reflect reflection light source object

		micro-habitats food food-chain sun grass cow human healthy leaf litter stony path under bushes shelter seashore woodland ocean rainforest conditions hot/warm/cold dry/damp/wet bright/shade/dark **Working Scientifically:** Question answer observe observing equipment identify classify sort diagram chart map data compare contrast describe biology chemistry physics group record	muscles ball joint socket joint hinge joint gliding joint **Living Things and their Habitats:** environment flowering non-flowering plants animals vertebrate dangers fish amphibians reptiles birds mammals insects human impact **Working Scientifically:** Research relevant question scientific enquiry comparative and fair test systematic careful observation accurate measurement equipment thermometer data logger data gather record classify present diagram key bar chart table oral and written explanation conclusion prediction difference similarities changes evidence improve secondary sources guides construct interpret	shadows mirrors periscope rainbow filters **Evolution and Inheritance:** evolution adaptation inherited traits adaptive traits inheritance DNA genes variation parent offspring fossil environment habitat fossilisation plants animals living things **Working Scientifically:** plan variables measurement accuracy precision repeat findings data scientific diagrams classification keys scatter graphs line graphs predictions comparative and fair test report and present conclusions causal relationships explanations degree of trust oral and written presentation evidence support refute identify classify describe patterns systematic quantitative
What does it look like in the classroom?	• Opportunities for play based discovery to encourage questioning and curiosity. • Children have the freedom to ask questions and build on what they already know.	• Science display including topic vocabulary. • Discovery table to encourage questioning and curiosity. • During the lesson there is the I Wonder… board which chn can go and write their questions on at any point. • Children have the freedom to ask questions and build on what they already know.	• Science display including topic vocabulary. • Discovery table to encourage questioning and curiosity. • During the lesson there is the I Wonder… board which chn can go and write their questions on at any point. • Children have the freedom to ask questions and build on what they already know.	• Science display including topic vocabulary. • Discovery table to encourage questioning and curiosity. • During the lesson there is the I Wonder… board which chn can go and write their questions on at any point. • Children have the freedom to ask questions and build on what they already know.