Lawley Primary School – Science UKS2 progression of knowledge and working scientifically skills

Happiness Responsibility Friendship Respect Courage

SCIENCE

Animals inc. Humans

Year 5 – Growing Up and Growing Old		Year 6 – Healthy bodies	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
I know humans change as they develop to old age. *Supporting resource: Rising Stars – Growing up.* I know some of the changes experienced in puberty. I know that gestation is the period of time between conception and birth. I know that animals and humans have different gestation periods. *Supporting resource: Rising Stars – Gestation periods of different animals.*	I can describe patterns in data and suggest why larger animals have a longer gestation period.	I know the human circulatory system is a system of organs and tissues which include the heart, arteries and veins which circulate blood around the body. *Resouce: Rising Stars – What do you want to know?* I know the functions of the heart, blood vessels and blood. I know how diet, exercise drugs and lifestyle impact on the way our bodies function. *Practical activity idea: Rising Stars – Lung capacity.* I know how nutrients and water are transported within animals, including humans. Supporting resource: Circulatory System For Kids | How Does Your Heart Work - Bing video	I can plan a scientific enquiry to answer questions. I can collect valid data, explain my data and say why I trust my results. I can use my knowledge of the circulatory system to explain my results.

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Properties and changes of materials (follows on from States of Matter in Y4)

Year 5 – Material World		Year 6	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
I know that everyday materials can be grouped together on the basis of their properties: hardness, solubility, transparency, conductivity and response to magnets. *Practical activity idea: Rising Stars – Testing, Testing.* I know that some materials will dissolve in liquid to form a solution. *Practical activity idea: Rising Stars – Searching for a Solution.* I know what dissolve, solution and solute mean. I know that a substance can be recovered from a solution. *Practical activity: CLEAPSS – Making a salt solution and recovering the salt.* I know that some mixtures can be separated through filtering, sieving and evaporating. *Practical activity idea: Rising stars – Sort this out.* I know that dissolving, mixing and changes of state are reversible changes. I know that some changes result in the formation of new materials and that this change is irreversible. I know that burning and the action of acid on bicarbonate of soda are irreversible changes. Practical activity ideas:	I can plan a scientific enquiry and use the results to answer my question. I can test and identify materials that dissolve. I can report and present my findings, including conclusions and explanations. I can plan (using my prior knowledge of solids, liquids and gases) a scientific enquiry to answer questions. I can explain which variables need to be controlled and why. I make observations and use my knowledge to explain them.	Strand not taught in Year 6	Strand not taught in Year 6

https://www.science-sparks.com/baking-soda-rocket/ *or CLEAPSS - Vinegar and bicarbonate balloons*			

Living Things and their Habitats

Year 5 – Circle of Life		Year 6 – Classifying Living Things	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
I know the differences in the life cycles of a mammal, an amphibian, an insect and a bird. *Useful resource/activity idea: Rising Stars – Unusual life cycles.* I know the life process of reproduction in some animals. *Practical activity: Rising Stars – Life cycle of a frog.* I know that reproduction in plants can be sexual and asexual. *Practical activity idea: Rising Stars – New plants from old.* I know and can name the main parts of a flower – petal, anther, stamen, filament, stigma, ovary, ovule, nectary and sepal. I know which in part of the flower the seed develops.	I can present my findings demonstrating scientific knowledge and using scientific language. I can use scientific language to explain the advantages and disadvantages between asexual and sexual reproduction of plants.	I know living things are classified into broad groups according to common observable characteristics. I know these groups are based on similarities and differences, including micro-organisms, plants and animals. I know that broad groups of plants and animals can be sub-divided into smaller groups. *Practical activity idea: Rising Stars – Classifying the local area.*	I can use classification systems and keys to identify animals and plants in the immediate environment.

Light

Year 5	Year 6

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Knowledge	Working Scientifically	Knowledge	Working Scientifically
I know light travels in straight lines. *Practical activity idea: CLEAPSS - Drawing reflected light.* I know objects are seen because they give out or reflect light into the eye. I know we see things because light travels from light sources to our eyes. *Practical activity idea: Rising Stars – Seeing is believing.* I know light travels from a light sources to objects and then to our eyes. I know shadows have the same shape as the objects that cast them because light travels in straight lines. *Practical activity idea: Rising Stars – Introduction to puppets.* I know the key vocabulary: cornea, lens, iris, light ray, pupil and reflection.	I can use equipment, make observations, and draw a model of the concept. I can draw a scientific diagram, with labels, which demonstrates what happens when light is reflected from objects into our eyes. I can take and record measurements and present my findings from enquiries.	Strand not taught in Year 6	Strand not taught in year 6
Forces and Magnets			
Year 5		**Year 6**	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
Revisit: Magnets from Y3 I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. *Research opportunity: Isaac Newton and Galileo.* *Practical activity idea: Rising stars – Investigating gravity.* I know that air resistance is a type of friction between air and another material.	I can use equipment and test Newton's and Galileo's ideas about gravity and how things fall. I can carry out a fair test including repeat readings and	Strand not taught in Year 6	Strand not taught in Year 6

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Practical activity idea: Rising Stars – falling cupcake cases. I know that friction is a force between one object rubbing against or over another object. *Practical activity idea: Rising Stars – The big trainer test.* I know that water resistance is a type of force that uses friction to slow things down that are moving through water. *Practical activity idea: Rising Stars –Force of water.*	use my data to draw conclusions and explain why I trust my results. I can measure accuarately using scientific equipment and record my data including the units. I can use the concept of water resistance to explain how different shapes move through water.		

Electricity

Year 5		Year 6	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
Strand not taught in Year 5	Strand not taught in Year 5	I know the reasons for variations in how components function such as: the brightness of bulbs, the loudness of buzzers and the on/off position of switches I know the brightness of a lamp or the volume of a buzzer is dependant on the number and voltage of cells used in the circuit. *Practical activity idea: CLEAPSS – Investigating how changing the voltage across a motor affects how powerful it is.* I know the recognised symbols to use when representing a simple circuit in a diagram. I know that salt conducts electricity because it carries charges.	I can plan a fair test to answer a question. I can take readings. I can interpret data. I can recognise and control variables where necessary e.g bulb, buzzer, battery.

		Practical activity idea: CLEAPSS – Lights on Lights off.	I can systematically identify the effect of changing one component at a time in a circuit.

Earth and Space

Year 5		Year 6	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
I know that the Earth moves around the Sun and that the Sun does not move across the sky. I know how the other planets in the solar system move relative to the Sun. I know how the Moon moves relative to the Sun. I know that early ideas about the solar system were changed by two scientists. *Supporting material – Galileo and Copernicus video.* *Copernicus -* *https://www.youtube.com/watch?v=s6efb-Lz1N4* *Galileo-* *https://www.youtube.com/watch?v=aZX9kN6MNgc* I know that the Sun, Earth and Moon are approximately spherical bodies. I know that the Earth rotates, and this is why we have day and night. I know that the moon has phases. *Practical activity idea: Rising Stars – Biscuit moons.*	I can identify scientific evidence that has been used to support or refute ideas or arguments. I can demonstrate how the phases occur in the context of the Moon orbiting the Earth.	Strand not taught in Year 6	Strand not taught in Year 6

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Rocks, Soils and Fossils			
Year 5		**Year 6 (Four Weeks)**	
		Knowledge	Working Scientifically
Strand not taught in Year 5	Strand not taught in Year 5	<u>Revisit Year 3 knowledge from Rock and Soils unit including sedimentary rocks.</u> I know Igneous rocks begin as molten magma from inside the Earth and as the magma moves, it cools and forms Igneous rocks. I know that Metamorphic rocks are rocks that have been changed by heat or pressure. *Practical activity idea: Rising Stars (Year 3) chocolate metamorphic/Igneous rock.* I know fossils are the prehistoric remains of plants or animals that have been preserved. I know that fossils provide information about living things that inhabited the Earth millions of years ago. *(Fieldwork: Stokes Barn visit – Wenlock Edge: Fossil hunting)*	I can demonstrate my understanding of different rock types by creating models.
Evolution and Inheritance			
Year 5		**Year 6**	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
Strand not taught in Year 5	Strand not taught in Year 5	I know that living things have changed over time. *Practical activity: Rising Stars -Life on Earth Timeline.*	I can identify scientific evidence that has been used to support or

		I know that living things produce offspring of the same kind. I know that characteristics are passed from parents to their offspring. I know that offspring normally vary and are not identical to their parents. I know that animals and plants are adapted to suit their environment in different ways. I know that adaptation may lead to evolution. Enrichment opportunity: hropshire Wildlife Trust; Darwin's World Schools | Shropshire Wildlife Trust	refute ideas or arguments in relation to evolution.

Sound

Year 5		Year 6 (3 weeks)	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
Strand not taught in Year 5	Strand not taught in Year 5	I know that vibrations from sounds travel through solids, liquids or gases to the **ear but that they cannot travel through an empty space (vacuum).** I know that there is a pattern between the pitch of a sound and features of the object that produce it **and I can plan an investigation to control this pattern.** I know that there is a pattern between the volume of a sound and the strength of the vibrations that produce it **and I can plan an investigation to control this pattern.** *Practical investigation: CLEAPSS Elastic band guitar.*	I can independently plan a fair test to investigate change in pitch. I can independently plan a fair test to investigate change in volume. I can measure my results using a decibel meter and use appropriate units (dB). I can use my results to make predictions to set up further fair tests. I can draw conclusions from my results.

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Plants			
Year 5		**Year 6 (3 weeks)**	
Knowledge	Working Scientifically	Knowledge	Working Scientifically
Strand not taught in Year 5	Strand not taught in Year 5	<u>*Revisit from Year 3:*</u> I know that the roots take up water and nutrients from the soil and also keep plants steady and uprightl. I know the stem of a plant carries water and nutrients to different parts of the plants. I know that leaves use light from the sun, **carbon dioxide from air and water** to make food for the plant. **I know that this process is called photosynthesis.** I know that flowers are involved in plant reproduction and produce seeds from which new plants grow. I know that seed dispersal happens in lots of different ways: **wind, wind (spinning), water, animal (interior), animal (exterior) and explosion.** *Practical investigation: Seed dispersal (see resource in curriculum folder).*	I can independently plan a fair test to investigate seed dieperal. I can record my results in a table. I can present my findings including a conclusion and explain why I trust the results.