

UKS2 Science Medium Term Planning- Cycle A

KS1	Aspect	Main Enquiry Question	Learning Challenges	Knowledge	Working Scientifically
Autumn	Chemistry <i>Properties and changes in materials</i>	<i>Can you be the next CSI investigator?</i>	<p>LC1- Can you think of 5 materials that can be changed and reversed and 5 that cannot? LC2- How have scientists made use of changes to create materials that make our lives easier e.g clingfilm? LC3- Which materials dissolve and evaporate and why can this sometimes be an important quality in those materials? LC4- How are reversible and irreversible changes important to forensic scientists? LC5- How could you solve a crime by using forensic evidence? LC6- what is bicarbonate of soda and what impact does it have on different materials? LC7- Reflection: Create your own version of 'Brainiac' and present it to Key Stage 1 children.</p>	<ul style="list-style-type: none"> - Compare and group together everyday materials on the basis of their properties (hardness, solubility, transparency, conductivity [electrical and thermal], and response to magnets. - Know that some materials will dissolve in liquid to form a solution and describe how to revert a substance from a solution. - Know and demonstrate how some mixtures can be separated, through filtering, sieving and evaporating. - Know and demonstrate that some changes are reversible and some are not. - Know and 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. 	<ul style="list-style-type: none"> - 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 when appropriate. - Recording data and results 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.
Spring 1	Biology Animals (including humans) and their habitats	<i>Do all animals start life as an egg and how different will you be when you are as old as your grandparents?</i>	<p>LC1- Can you work out which animals depend on each other for survival? LC2- What would you ask David Attenborough or Jane Goodall if you met them? LC3- How can you create a presentation to show the life cycle of a butterfly or a frog? LC4- Do all animals start life as an egg? LC5- How do humans change as they grow? LC6- Reflection: Children create a poster of a chosen animal or plant showing its life cycle.</p>	<ul style="list-style-type: none"> - Know the life cycles of different living things (mammal, amphibian, insect and bird). - Know the differences between different life cycles. - Know the life processes of reproduction in some plants and animals. - Know how to classify living things into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals. 	<ul style="list-style-type: none"> - 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.
Spring 2			<p>LC1- Choose a baby, themselves, a teenager, a young adult, their parents and their grandparents and create a chart to find out what they can and cannot do? LC2- What can you now do that you couldn't do when you were a baby? LC3- What are the important things we should do to keep fit and healthy?</p>	<ul style="list-style-type: none"> - Give reasons for classifying plants and animals based on specific characteristics. - Know the changes as humans develop to hold age. 	<ul style="list-style-type: none"> - Identifying scientific evidence that has been used to support or refute ideas or arguments.

			<p>LC4- What do we understand by the term 'puberty'?</p> <p>LC5- Reflection: How would you wish to be remembered as you make your journey through life?</p>	
Summer	<p>Physics</p> <p>Forces</p>	<p><i>Does everything that goes up always come down?</i></p>	<p>LC1- How do builders get materials to the top of skyscrapers?</p> <p>LC2- How could Philippe have got the heavy items onto the top of the towers?</p> <p>LC3- What is friction and gravity? Why is an apple linked with gravity?</p> <p>LC4- How could Philippe have protected himself against a fall?</p> <p>LC5- How much science did Philippe use when doing his circus tricks?</p> <p>LC6- How does a bicycle move?</p> <p>LC7- Reflection: Put together a presentation to show how pulleys and levers are used in everyday life.</p>	<ul style="list-style-type: none"> - Know what gravity is and its impact on our lives. - Identify and know the effect of air and water resistance. - Identify and know the effects of friction that act between two moving surfaces. - Explain how leavers, pulleys and gers allow a smaller force to have a greater effect.
	<p>Physics</p> <p>Light</p>	<p><i>How can you light up your life?</i></p>	<p>LC1- How do we know that light travels faster than sound?</p> <p>LC2- How can you set up an experiment to show that light travels in straight lines?</p> <p>LC3- How do your eyes work?</p> <p>LC4- How can you use mirrors to see around blind corners?</p> <p>LC5- Spend a small period of time being blind folded and see how successful you are at doing everyday things you take for granted?</p> <p>LC6- Can you create a shadow puppet story and present it to others?</p> <p>LC7- Reflection: Can you prepare a documentary entitled 'Let's Light it up' which shows what you have learnt in this LC.</p>	<ul style="list-style-type: none"> - Know how light travels. - Know and demonstrate how we see objects. - Know why shadows have the same shape as the object that casts them. - Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

GDS Opportunities

- Can they explore different ways to test an idea, choose the best way and give reasons?
- Can they vary one factor whilst keeping the others the same in an experiment?
- Can they use information to help make a prediction?
- Can they explain, in simple terms, a scientific idea and what evidence supports it?
- Can they decide which units of measurement they need to use?
- Can they explain why a measurement needs to be repeated?
- Can they find a pattern from their data and explain what it shows?
- Can they link what they have found out to other science?
- Can they suggest how to improve their work and say why they think this?
- Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border?
- Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests?
- Can they describe methods for separating mixtures? (filtration, distillation)
- Can they work out which materials are most effective for keeping us warm or for keeping something cold?
- Can they use their knowledge of materials to suggest ways to classify? (solids, liquids, gases)
- Can they explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda?
- Can they explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton)?
- Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction)
- Can they design very effective parachutes?
- Can they work out how water can cause resistance to floating objects?
- Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?
- Can they explain how different colours of light can be created?
- Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope)
- Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters.