Stanley Park Junior School Year 5 Science

Knowledge, Skills and Understanding Progression

National Curriculum Requirements of Science at 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.
Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.

Working scientifically
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
- 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
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a 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

Our Intent

At Stanley Park Junior School, we recognise the important role science plays in our everyday lives, today and for the future. Children have a natural curiosity about the world around them and we endeavour to develop skills associated with scientific enquiry in order to foster these interests. These include questioning, research, observation and evaluation.

Our science lessons involve children getting hands-on with experiments and investigations to ensure they are not only fulfilling their own curiosities and questions, but also enjoying their learning and increasing their enthusiasm for the subject and their own findings. The children are constantly encouraged to use scientific vocabulary that is built upon as topics are revisited during their primary school experience. This increases their confidence and prepares them for their next stage of education and life experiences.

All children will have equal opportunity to reach their full potential across the science curriculum regardless of their race, gender, cultural background, ability or of any physical or sensory disability.

		Autumn Term		Spring Term		Summer Term
	Main Theme Of Learning	**SPACE**	**FORCES**	**LIVING THINGS AND THEIR HABITATS**	**ANIMALS INCLUDING HUMANS**	**PROPERTIES OF MATERIALS**
Disciplinary Knowledge	**Working Scientifically**	• Recording data using diagrams and labels • Report and present findings from enquiries • Identify scientific evidence that has been used to support or refute ideas (the Earth being flat)	• Planning scientific experiments to answer questions and taking repeated readings where appropriate • Recording and presenting data tables • Using test results to set up further comparative data	• Using classification keys, tables and graphs to sort and present data	• Planning different types of scientific enquiries to answer questions	• Planning investigations and looking at/changing variables. • Using test results to make predictions and set up further comparative and fair tests • Report and present findings
Substantive Knowledge	**Biology**			• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; • Describe the life process of reproduction in some plants and animals.	• Describe the changes as humans develop to old age.	
	Chemistry					• 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 • To know that some materials will dissolve in 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.
	Physics	• Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the moon relative to the Earth • Describe the sun, Earth and moon as approximately spherical bodies	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces			

		• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	• Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.			
Snap Science	**Lesson topic and numbers**	**The Earth and Beyond** 2 – What is a year? 8 – Why does the moon change shape? 3 – What is a day?	**Feel the Force** 2 – Why does an object fall? 3, 4, 5 – Moving objects and resistance. 8, 9 – Pulleys, levers and gears	**Circle of Life** 1 – Introduction to life cycles. 2, 3, 4, 5 – The different life cycles of species. **Reproduction in Plants and Animals** 1, 2, 3 – How do flowering plants reproduce? 4, 5 – Animals reproducing	**Reproduction in Plants and Animals** 6 – Comparing the human life cycle to other animals 7 – How do girls become women? 8 – How do boys become men?	**Everyday Materials** 1, 3 – Grouping materials together and why they are the best choice to use. **Marvellous Mixtures** 2 – Mixing liquids and solids 1 – Separating mixtures **All Change** 1 – Reversible and irreversible changes. 4 – What happens when a candle burns?
Vocabulary	**New Vocabulary**	**Year 5**		**Year 5**		**Year 5**
		Earth, sun, moon, solar system, axis of rotation, day, night, phases of the moon, star, constellation	Friction, Air resistance, Water resistance, Force metre, Newton, Up thrust, Gravity, Weight, Mass, Stationary	Life-cycle, Reproduction, Pollination, Fertilisation, Germination, Mammal, Amphibian, Insect, Bird	Growth. Development. Changes. Experiences. Puberty. Gestation	Dissolve, solution, mixture, filtering, sieving, evaporate, condensing, reversible, irreversible, burning, rusting.
	Review of Previously Learnt Vocabulary	**Review Year 4**		**Review Year 4**		**Review Year 4**
		Sound vibration, wave, volume, pitch, tone, insulation ***Electricity*** appliance, circuit, battery, bulb, switch, buzzer, motor, conductor, insulator	***Year 3 Forces*** Magnet, Non-magnetic, Metal, Attract, Repel, Reject, Material, Opposite, Compare, Friction	Organism, habitat, vertebrate, invertebrate, predator, prey, herbivore, carnivore, omnivore	***Teeth*** Digestion, Oesophagus Stomach, Intestines, Acid, Saliva, Incisors, Canines, molars	***States of Matter*** Solid, liquid, gas, melting, freezing, condensation, evaporation