Progression of Skills in Science

Saltersgate Infant School

Curriculum Intent

Science and STEM teaching at Saltersgate Infant School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future. At Saltersgate Infant School, scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory. All children are encouraged to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Curriculum Implementation

At Saltersgate Infant School we teach a broad and varied scientific curriculum linked to the National Curriculum in KS1 and Knowledge and Understanding of the World in Early Years. Through a variety of teaching methods we encourage children to question the world around them and nurture their inquisitive minds. We aim for children to have a love for Science and want them to acquire and then secure knowledge and transferrable skills that are progressively embedded from the very beginning of their learning journey to transitioning through Key Stage 1 and beyond.

Teachers create a positive attitude to science learning within their classrooms through the use of investigation areas, continuous provision and opportunities for outdoor investigation. The activities set are planned by teachers to suit children's interests, current events and to link to current or previous learning.

We have a forest school area on site which all children access on a weekly basis and are encouraged to explore in order to embed the skills taught in class. This allows children to link Science to real life contexts, to engage children's minds and evoke critical thinking when questioned on their existing knowledge and what they want to find out.

Science is mainly taught discretely, however meaningful links across the curriculum are made to ensure cross curricular learning. We want our children to make strong connections between Scientific concepts and use these to support their learning and understanding across other subjects especially Maths and Technology. Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Trips and visits from experts who enhance learning experiences as well as whole school theme days further enhance children's investigation skills and scientific knowledge in order for them to become super scientists!	
Statements from New 2020 EYFS Framework <u>Understanding the World</u>	**3 to 4 year olds will be learning to:** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. **Children in Reception will be learning to:** Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. **ELG:** Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.
KS1 Statement from National Curriculum Science	• 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

Nursery Topics	Reception	Year1	Year 2
Working Scientifically At Saltersgate Infants our children will:			
Show curiosity about objects, events and people. Engage in open-ended activity Take a risk, engage in new experiences and learn by trial and error	Across both stages: Show curiosity about objects, events and people. Engage in open-ended activity Take a risk, engage in new experiences and learn by trial and error	Scientists in Year 1 should be able to: Observe, describe and compare using simple science words Sort things Ask science questions	Scientists in Year 2 should be able to: Observe, describe and compare using science words Sort and order observations

Find ways to solve problems / find new ways to do things / test their ideas Develop ideas of grouping, sequences, cause and effect Use senses to explore the world around them Make links and notice patterns in their experience Questions why things happen Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world Closely observes what animals, people and vehicles do Builds up vocabulary that reflects the breadth of their experience	Find ways to solve problems / find new ways to do things / test their ideas Develop ideas of grouping, sequences, cause and effect Use senses to explore the world around them Make links and notice patterns in their experience Know about similarities and differences Choose the resources they need for their chosen activities Handle equipment and tools effectively Create simple representations Answer how and why questions about their experiences Develop their own narratives and explanations by connecting ideas or events	Collect evidence to answer some questions Use simple equipment Measure using non-standard units Test out ideas with help Talk about what might happen and what they found out Write and draw about science Record on a simple table	Ask scientific questions and use information to help answer them Plan how to collect data to answer questions, with help Measure using non-standard, then standard units Talk about what might happen and compare it to what did happen Plan a simple fair test, with help Test out their own/someone else's ideas Explain why (in a simple way) Record information on tables and bar charts Talk, write and draw about science
Everyday Materials At Saltersgate Infants our children will:			
Explore collections of materials	Talks about differences between materials and changes they notice. Explore collections of materials, identifying similar and different properties	• distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be

		• describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties	changed by squashing, bending, twisting and stretching
Humans and Senses At Saltersgate Infants our children will:		**Animals including humans**	
Uses senses in hands on exploration	Explain what their five senses are. Can name their 5 senses	• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• 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 **Living Things and their Habitats** • 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 microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
Natural World		Plants	
Can explain the life cycle of a daffodil and a butterfly Plants seeds and cares for growing plants with support Understands the difference between plants and animals	Explores the natural world around them Understands the need to respect and care for the natural environment and all living things. Can talk about different life cycles. Can say what plants need to survive	• 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 tree	• 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
Physics At Saltersgate Infants our children will:			
Explores how things work	Explores non-contact forces (gravity and magnetism) Explores and talks about forces (push and pull)	N/A	N/A
Seasons and Weather At Saltersgate Infants our children will:			

Understands that the weather changes and that in different countries you have different weather	Understand the effect of seasons on the natural world, discussing when and how things grow Names and orders seasons Can identify what you need to wear for each season and why	• observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	N/A
Key vocabulary			
Questions Equipment Results Sort Group Explore Describe Similar/similarities Different/differences Flowers Trees Leaf Blossom Fruit Vegetable Seeds Fish Birds Pets	Questions Equipment Results Sort Group Explore Describe Similar/similarities Different/differences Flowers Trees Leaf Blossom Fruit Vegetable Seeds Wing Claws Fins	Questions Answers Equipment Gather Measure Record Results Sort Group Test Explore Observe Compare Describe Similar Similarities Different differences Collect Evidence Data Table	Questions Answers Equipment Gather Measure Record Results Pictogram Tally Chart Diagram Venn diagram Table Chart Sort Group Test Explore Observe Compare Describe Similar Differences

Wild	Scales	Chart	Order
Senses	Feathers	Identify	Observe
Hear	Fur	Classify	Notice
See	Beak	Observe	Patterns
Smell	Senses	Patterns	Link
Touch	Hear	Relationships	Stopwatch
Feel	See	Sources	Ruler
Alive	Smell	Communicate	Tape measure
Dead	Touch		Beaker
Move	Feel	Wild plants	Pipette
Grow	Alive	Garden plants	Syringe
Feed	Dead	Flowering plants	
Food	Move	Tress	Communicate
Pond	Grow	Leaf	Identify
Sea	Feed	Leaves	Classify
Woods	Food	Flower	Data
Grass	Pond	Blossom	Evidence
Seaside	Sea	Petal	
Sea	Woods	Fruit	Seeds
Material	Forests	Berry	Bulbs
Wood	Grass	Root	Fully grown
Plastic	Seaside	Bulb	Mature
Glass	Sea	Seed	Water
Metal	Oceans	Trunk	Light
Water	Material	Branch	Damp
Rock	Wood	Stem	Wet
Paper	Plastic	Bark	Dry
Card	Glass	Stalk/stem	Dark
Fabric	Metal	Vegetable	Light
Rubber	Water	Wild	Hot
		Pets	Warm
		Body	Cool
		Head	Cold
		Neck	Temperature
		Arms	Grow
		Elbows	Growth

Hard Soft Bendy Stiff Rough Smooth Shiny Dull	Rock Paper Card Fabric Rubber Hard Soft Bendy Stiff Rough Smooth Shiny Dull Season Spring Summer Autumn Winter Weather Hot Cold Sunny Cloudy Windy Rain Snow Frost Icy Rainbow Thunder	Legs Knees Face Ears Eyes Back Hands Wrist Eyebrows Eyelashes Nose Hair Mouth Teeth Tongue Feet Toes Fingers Nails Ankle Calf Thigh Hips Waist Trunk Chest Shoulders Tail Wing Claw Fin Scales Feathers Fur Beak Senses Hear(ing)	Healthy Shoot Seedling Germination Wither Limp Die Dry Crispy Soil Earth Offspring Reproduce Life cycle Babies Young Grow Change Adults Older Younger Toddler Child Teenager Adult Elderly Basic needs Water Food Air Breathing Survival Exercise Food types Fruit and vegetable clean Carbohydrates

	Lightning Light Dark Night Day	See(ing) Touch(ing) Smell (ing) Rough Smoot Bright Dim Loud Quiet High Low Fish Amphibians Reptiles Birds Mammals Carnivores Omnivores herbivores Object Materials Wood Plastic Glass Metal Water Rock Brick Paper Fabrics Elastic Rubber Wool Clay properties	Dairy foods Fats Oils Sugars Meat Protein Hygiene Wash Healthy Medicine Drugs Living Dead Never been alive Life processes Move Grow Feed Offspring babies Young Habitat Pond Woodland Meadow Seashore Rockpool Woodland Ocean Rainforest Micro-habitat Under log Stony path Under bushes Conditions Damp

		Hard Soft Stretchy Stiff Bendy/floppy Waterproof Absorbent Breaks Tears Rough Smooth Shiny Dull See through Not see through Season Spring Summer Autumn Winter Weather Hot warm Cold cool Sunny Cloudy Windy Rain Snow Hail sleet Frost mist Icy Rainbow	Wet Dry Dark Light Hot Warm Cool Cold Suitable Basic needs Depends Food Food chain Sources of food Shelter Suitable Unsuitable Suitability purpose Use Useful Object Material Property Wood Wood Plastic Glass Metal Water Rock Brick Paper Fabrics Elastic

		Thunder Lightning storm Light Dark Night Day	Rubber Wool Clay Stretch Pinch Poke Roll Squeeze Natural Man made Hard Soft Stretchy rigid flexible Waterproof Absorbent Strong weak Rough Smooth Reflective Non reflective Transparent Opaque Translucent Shape Changed Push Pull Twist Twisting Squash bend Shiny Dull

			See through Not see through

Curriculum Impact

As a result of our broad and varied curriculum, children strive to achieve their full potential in Science whilst developing an inquiring mind and an appreciation of the world around them. The rich learning environment and experiences they have been provided with allows children to gain a deep understanding of concepts taught which builds on existing learning. The impact of this is that our children are critical thinkers who question the world around them and know how to persevere and embrace a challenge in order to achieve their Eureka moment of success! Standards in science, to ensure maximum impact, are monitored in a variety of ways. These include book scrutinies, professional dialogue, pupil voice, questionnaires, lesson observations and learning walks. School Governors are informed of standards and progression of the subject annually.