Curriculum Overview Science

Intent

We teach Science:

To stimulate children's curiosity & develop their ideas to encourage enquiring minds and equip them with key skills. In this way, they are increasingly able to research answers to their own questions and make sense of the world around them today and for the future.

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.

Our curriculum aim is:

For our young scientists to develop both scientific knowledge and scientific skills which is based fundamentally on the principles that science:

- is relevant and related to real life
- allows us to ask questions and develop our vocabulary
- lets us investigate and explore in a practical way
- challenges our understanding and encourages us to think about scientific ideas
- encourages us to apply our knowledge, skills and understanding
- gives us opportunities to work with others and to use appropriate resources.

We know that children are naturally curious and we encourage this inquisitive nature throughout their time with us and beyond through the science curriculum as well as all other aspects of their learning and other areas of the curriculum.

How is Science taught at Heatherside Infants?

At Heatherside Infants, we provide a stimulating science curriculum which is developed from the Hamilton Science scheme. Science lessons nurture children's natural curiosity and offer exciting, practical experiences through exploration and investigation.

By working scientifically, skills are embedded into lessons to ensure these are being developed throughout the children's school journey and new vocabulary and challenging concepts are introduced through direct teaching. Throughout the school there are high standards of teaching and learning in science, enabling all children to build on their prior learning, all whilst developing their skills which will prepare them for the next step in their education, in an ever changing world.

Hamilton Science

Vocabulary

Theme / area	Year R	Year 1	Year 2
Everyday materials (Y2: and their uses)	Wet, dry, shiny, dull, bendy, stiff, squashy, hard/soft, lumpy, wrinkly. Smooth, rough.	rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, useful, waterproof, absorbent, lightweight, breaks/tears, water, ice, melts, frozen, water, puddle, evaporation, bigger, smaller	material, properties, absorbency, waterproof, strong, weak, resist, melting, particles, changing/changed shape, twist/twisting, squash/squashing, bend/bending, stretch/stretching, rigid/rigidity, flexible/flexibility, hard, soft, stretchy, stiff, rip, concertina
Animals including humans	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws	behaviour, habitat, living things, damp, shady, dry, vertebrate, invertebrate, backbone, habitat, happy, healthy, birds, fish, amphibians, reptiles, mammals, invertebrates, pets, health, care, baby, adult, changes, growing, ears, senses, hear/hearing, tongue, taste, touch, sight, smell, hear, sense	egg, chick, hatch, baby, adult, grow, change, feathers, young, old, change, adults, basic needs, water, food, air, breathing, survival, heart, beating, healthy, exercise, fruit, vegetables, bread, rice, potatoes, pasta, milk, dairy, food high in fat, sugar, meat, fish, egg, beans
Living things & their habitats	N/A	N/A	living, dead, never been alive, categories, classification, needs air, feeds, grows, reproduces, gets rid of waste, microhabitat, damp/wet/dry, dark/light, features, habitat, savannah, rainforest, tundra, food chain, predator, dependence, light, dark, shady, damp, dry, seasons, sun, growth, germination, planting, edible, mini-beasts, energy, transfer, harvest, allotment, produce, soil, wash, cook

Vocabulary

Theme / area	Year R	Year 1	Year 2
Plants	plant, leaf, stem, flower, grow, rain, sun, water, soil, seed	plant, leaf/leaves, grow, weed, change, living, water, healthy, seeds, garden centre, pollen, flower deciduous, evergreen, roots, stem, trunk, bark	seed, disperse, wind, pollination, bulb, hydroponics, water, warmth, nutrients, light, water, dry, wet, moist, growth, germination, bean, leaves, stem, roots
Seasonal changes	Snow, wind, rain, sun, day, night, stormy, cloudy, hot, cold, foggy, spring, summer, autumn, winter.	rain, snow, storm, thunder, lightning, cloudy, clothing, warm, cold, forecast, summer, autumn, winter, spring, seasons, shadow, sun, earth, spin, day, night, light, dark, weather, rainfall, precipitation, wind, direction, gauge, temperature, thermometer	
Working scientifically	look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group, see, notice, wonder	notice, patterns, observe/observations, predict/prediction, explore, investigate, group, classify, identify, compare, describe, similar/similarities, different/differences, measure, record, test, data, gather, centimetre, millimetre	Hypothesis, weight, grams, bar chart, results, predict, observe, record, questions, answers, gather

Progression map / end points

Theme / area	Year R
The Natural World	• 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

Theme / area	Year 1	Year 2
Plants	• To identify and name a variety of common wild and garden plants, including deciduous and evergreen • To identify and describe the basic structure of a variety of common flowering plants, including trees	• To observe & describe how seeds & bulbs grow into mature plants • To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
Animals including humans	• To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • To identify and name a variety of common animals that are carnivores, herbivores and omnivores • To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • To identify, name, draw & label the basic parts of the human body & say which body part is associated with each sense	• To notice that animals, including humans, have offspring which grow into adults • To find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

Progression map / end points

Theme / area	Year 1	Year 2
Everyday materials and their uses	• To distinguish between an object and the material from which it is made • To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • To describe the simple physical properties of a variety of everyday materials • To compare and group together a variety of everyday materials on the basis of their simple physical properties	• To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
Seasonal changes	• To observe changes across the four seasons • To observe and describe weather associated with the seasons and how day length varies	N/A
All living things & their habitats	N/A	• To explore and compare the differences between things that are living, dead, and things that have never been alive • To 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 • To identify and name a variety of plants and animals in their habitats, including micro-habitats • To describe how animals obtain their food from plants & other animals, using the idea of a simple food chain, & identify & name different sources of food

Progression map / end points

Theme / area	Year 1	Year 2
Working Scientifically	***To use the following practical scientific methods, processes and skills (adult support may be needed):***	***To use the following practical scientific methods, processes and skills with increasing confidence:***
Questioning & Research **S12: Asking simple questions and recognising that they can be answered in different ways**	• Ask simple questions about the world around us • Begin to recognise that they can be answered in different ways (different types of enquiry including observing changes over time, noticing patterns, grouping & classifying, carrying out simple comparative tests, finding things out from secondary sources e.g. books & computers with help)	• Ask questions about the world around us • Recognise that they can be answered in different ways (different types of enquiry including observing changes over time, noticing patterns, grouping & classifying, carrying out simple comparative tests, finding things out from secondary sources e.g books & computers with help)
Observing & Measuring **S13: Observing closely, using simple equipment**	• Observe closely, using simple equipment safely (e.g. hand lenses and egg timers)	• Observe closely, using simple equipment safely (e.g. hand lenses and egg timers) • Observe changes over time and, with guidance, begin to notice patterns and relationships • Say what they are looking for and what they are measuring • Begin to progress from non-standard units, reading mm, cm, m, ml, l, °C
Investigating **S14: Performing simple tests**	• Perform simple tests with support • Begin to discuss my ideas about how to find things out • Begin to say what happened in my investigation	• Perform simple tests • Discuss my ideas about how to find things out • Say what happened in my investigation

Progression map / end points

Theme / area	Year 1	Year 2
Identifying, grouping and classifying **S15: Identifying and classifying**	• Identify and classify with some support • Begin to observe and identify, compare and describe • Begin to use simple features to compare objects, materials & living things and, with help, decide how to sort and group them	• Identify and classify • Observe and identify, compare and describe • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them
Conclusions **S16: Using their observations and ideas to suggest answers to questions**	• Begin to talk about what they have found out and how they found it out • Begin to say what happened in their investigation • Begin to say whether the results were surprising or not • Begin to say what they would change about their investigation	• Use observations and ideas to suggest answers to questions • Talk about what they have found out and how they found it out • Say what happened in my investigation • Say whether the results were surprising or not • Say what they would change about their investigation
Recording and reporting findings **S17: Gathering and recording data to help in answering questions**	• Gather and record simple data, with some adult support, to help in answering questions • Begin to record and communicate findings in a variety of ways • Show results in a simple table that an adult has provided	• Gather and record simple data to help in answering questions • Record and communicate findings in a variety of ways • Show results in a table that an adult has provided