**Our Science Curriculum**

**A parent's guide**

Our science curriculum is designed to nurture your child's innate curiosity about the world, anchored right here in our local community. Below is a clear, engaging map of the core scientific knowledge your child will build year after year, transforming them into a confident and capable young scientist.

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🔬 Core Knowledge Progression

Year R (Reception): The World Around Me 🌍

The focus is on exploring through the senses and noticing change.

- Seasons & Change: Observing the four seasons and identifying signs of change (e.g., flowers in spring).
- Living Things: Understanding that humans and animals grow and change over time (life stages).
- Materials: Identifying common objects and the basic materials they are made from (e.g., wood, plastic).

Year 1: Our Senses & Local Life 🌱

Children begin to use scientific language to describe the world.

- Plants: Identifying common plants and the basic parts of a plant (roots, stem, leaves).
- Animals: Naming basic body parts and using the five senses. Grouping animals into categories like carnivore, herbivore, or omnivore.
- Materials: Distinguishing between an object (like a cup) and the material it's made from (like ceramic).

Year 2: Needs and Survival 🏠

Learning what life needs to flourish and how things are classified.

- Plants: Conducting simple investigations to show that seeds need water, light, and warmth to grow.
- Animals: Describing simple food chains and understanding how to keep the human body healthy (diet, exercise).
- Habitats: Grouping things as living, dead, or never alive and exploring local micro-habitats.
- Materials: Comparing materials and exploring how the shape of a solid can be changed (e.g., bending, twisting).

Year 3: Earth, Forces, and the Human Body 🦴

The curriculum expands to internal body systems and non-living elements.

- Plants & Humans: Explaining what plants need to survive and identifying the role of skeletons and muscles in supporting the human body.
- Geology: Investigating different types of rocks and fossils and understanding how soil is formed.
- Forces & Light: Exploring magnetic attraction and repulsion and learning that we need light to see—and that shadows change throughout the day.

Year 4: Matter and Electricity ⚡

Focus shifts to understanding states of matter and the basics of energy.

- Humans: Identifying the different types of human teeth and understanding their function in the basic process of digestion.
- Materials: Grouping materials into the three states of matter (solid, liquid, gas) and observing changes of state (melting, freezing).
- Electricity: Building a simple electric circuit and identifying materials that are conductors or insulators.
- Sound: Explaining how sound is made by vibrations and how to change its pitch and volume.

Year 5: Space, Forces, and Chemical Change 🚀

Understanding complex concepts related to Earth's place in space and how things interact.

- Life Cycles: Describing the reproductive process in plants (pollination) and the human life cycle (including puberty).
- Chemistry: Understanding dissolving and how mixtures can be separated (e.g., filtering); distinguishing between reversible and irreversible changes.
- Earth & Space: Explaining that the Earth and planets orbit the Sun and what causes day and night.
- Forces: Defining gravity and exploring air resistance, water resistance, and levers.

Year 6: Evolution and Advanced Systems 🔬

The final year integrates all prior knowledge to explore complex systems and big ideas.

- Humans: Exploring the circulatory system (heart and blood) and the impact of lifestyle choices (diet, drugs, exercise).
- Evolution: Understanding how living things have changed over time (evolution) and explaining how fossils provide evidence of the past.
- Light & Electricity: Explaining that light travels in straight lines and using the correct symbols to draw circuit diagrams.

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🧑‍🔬 How They Learn: "Working Scientifically"

Science isn't just about facts; it's about the skills used to discover them! Across all years, your child is developing the ability to be a working scientist:

- Year R-2 (The Curious Explorer): Focus on Observing differences, Naming things, and Asking simple questions (What is it made of? What happens if I add water?).
- Year 3-4 (The Experimenter): Progress to setting up and conducting basic investigations (e.g., testing friction or magnets). They learn to Group and Classify using simple keys.
- Year 5-6 (The Investigator): Develop Fair Test skills, learning to Predict, Measure, Record data accurately in tables/graphs, and Draw Conclusions based on evidence. They can use scientific models to explain complex ideas.

We are excited for your child to embark on their scientific journey with us! Our goal is to transform their natural curiosity into deep understanding, all while anchoring their learning in our local community.

Here is an engaging, concept-focused map showing what your child will be learning—and why it matters—in each year group.

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🔬 A Parent's Guide to Scientific Concepts

🚀 Early Explorers: Year R (Reception)

The Big Idea: Observing the World and Noticing Change. Your child is using their senses to explore basic life and matter.

- Life Stages: Understanding that living things (including themselves!) grow and change over time.
- Basic Needs: Recognizing that all living things require food, water, and care to survive.
- The World's Building Blocks: Identifying that everyday objects are made from different materials (e.g., wood, plastic).
- Seasonal Cycles: Observing and describing the distinct features of the four seasons throughout the year.

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🌼 Year 1: Starting to Classify

The Big Idea: Using Scientific Language to Name and Group. Children move from simple observation to using correct vocabulary for plants, animals, and materials.

- Plant Structure: Identifying common plants and the function of their basic parts: roots, stem, and leaves.
- Animal Diets: Classifying animals by what they eat: carnivore, herbivore, or omnivore.

- Senses & Body: Naming basic body parts and understanding the role of the five senses.
- Matter vs. Object: Distinguishing between the material itself (like metal) and the thing it makes (an object like a spoon).

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🦋 Year 2: Survival and Habitats

The Big Idea: Understanding What Keeps Life Thriving. Learning how plants grow and what makes a healthy human and animal.

- Plant Needs: Discovering the three essentials for plant growth: water, light, and warmth.
- Simple Food Chains: Explaining how energy is transferred from one organism to another.
- Health Focus: Understanding the importance of a healthy diet, exercise, and hygiene.
- Material Uses: Comparing materials to see how they are best used (e.g., glass for windows) and how their shape can be changed.

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⛰️ Year 3: Earth, Forces, and the Invisible

The Big Idea: Digging Deeper into the Earth and Its Interactions. The focus expands to non-living elements like geology and forces.

- Human Support: Identifying the role of skeletons and muscles in moving and supporting the body.
- Geology: Investigating different types of rocks and learning how fossils tell us about the past.
- Forces: Exploring magnetic attraction and repulsion and comparing how different surfaces create friction.
- Light & Shadow: Understanding that dark is simply the absence of light and observing how shadows change position and size.

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💡 Year 4: Matter and Energy

The Big Idea: Exploring States of Matter and Harnessing Power. Children learn about energy, from the human body's fuel to electrical power.

- Digestion & Teeth: Understanding the process of digestion and the different functions of human teeth.
- States of Matter: Grouping substances as a solid, liquid, or gas and observing changes of state (like ice melting).
- Electricity: Building a simple circuit and identifying materials that allow electricity to flow (conductors) or stop it (insulators).

- Sound: Explaining how sound is made by vibrations and how to change its pitch (high/low) and volume (loud/quiet).

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🪐 Year 5: Space, Forces, and Chemical Change

The Big Idea: Looking Up and Making Changes. The concepts become more complex, involving global forces and molecular change.

- Life Cycles: Describing how plants reproduce (pollination) and identifying key stages in the human life cycle (including puberty).
- Chemistry: Distinguishing between reversible changes (like dissolving salt in water) and irreversible changes (like baking a cake).
- Earth in Space: Explaining the relationship between the Sun, Earth, and Moon, and what causes day and night.
- Forces: Defining the force of gravity and exploring how levers and pulleys can amplify force.

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🧬 Year 6: Advanced Systems and Big Ideas

The Big Idea: Applying Knowledge to Complex Systems and Evolution. The final year integrates all learning to explore the most complex topics.

- The Circulatory System: Understanding the function of the heart and blood vessels.
- Lifestyle Impact: Analysing the effect of diet, drugs, and exercise on the human body.
- Evolution: Understanding how living things have adapted and changed over time.
- Fossils: Explaining how fossils provide evidence of life from the past.
- Electricity & Light: Understanding that light travels in straight lines and using the correct symbols to draw circuit diagrams.

<u>How you can help your child at home:</u>

🔬 1. Explore Everyday Science

Children can see science in action in daily life.

- Cooking & Baking: Show chemical reactions (baking soda + vinegar, bread rising).
- Gardening: Plant seeds, observe growth, discuss sunlight, water, and soil nutrients.
- Weather & Environment: Track daily weather, discuss seasons, clouds, and temperature.

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🧪 2. Do Simple Experiments

Hands-on experiments help children learn the scientific method: observe, predict, test, conclude.

- Water Experiments: Sink or float objects, make ice melt faster with salt.
- Magnets: Test what objects are magnetic.
- Density: Layer liquids like honey, oil, and water to explore density.

*(Tip: Always supervise experiments for safety, especially with heat or chemicals.)*

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🌱 3. Encourage Observation & Recording

Science is about noticing patterns and asking questions.

- Keep a science journal: draw plants, track the moon phases, or record experiment results.
- Take photos or make charts of plant growth, weather changes, or insect activity.

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🧠 4. Ask Open-Ended Questions

Encourage curiosity and critical thinking.

- “Why do you think the leaves change colour in autumn?”
- “What would happen if we planted seeds in the dark?”
- “How could we test if something floats or sinks?”

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🖥️ 5. Use Everyday Resources

Science doesn’t need a lab.

- YouTube & educational apps: Watch safe videos from National Geographic, BBC Bitesize.
- Science kits or puzzles: Affordable kits for building circuits, volcanoes, or simple machines.
- Nature walks: Count bugs, observe plants, or compare rock types.

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⚡ 6. Make Science Social & Fun

Learning is easier when it’s interactive.

- Family experiments: Compete to make the tallest paper tower or fastest paper boat.

- Science games: Board games that involve logic, problem-solving, or coding.
- Museums & Science Centres.: Encourage hands-on exhibits and questions.

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