Science Curriculum Intent statement

"The important thing is not to stop questioning. Curiosity has its own reason for existence."
Albert Einstein

What is the intention of our Science curriculum?

What are our aims?

At Whybridge Junior School, we follow the National Curriculum in England: Science programmes of study and aim to give all pupils a strong understanding of the world around them, whilst acquiring specific skills and disciplinary knowledge to help them to think scientifically. Pupils develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. This will help them to gain an understanding of scientific processes, and also an understanding of the uses and implications of science, today and for the future. We aim to promote children's active care for the environment, as growing climate change becomes a global concern and to develop children into adults that will have a conscientious awareness of these issues.

Pupils are taught to understand how science can be used to explain what is occurring, predict how things will behave and analyse causes. All pupils are given opportunities to develop and use a range of skills including planning, investigation and observation, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Through allowing pupils to answer their own scientific questions, we aim to develop a sense of excitement and curiosity towards science and the world around them, today and in the future.

What is our rationale?

Our rationale for teaching science at Whybridge Junior School is that science is a body of knowledge built up through a range of experimental investigations and science based observations and questions. Science is a methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working scientifically that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills. We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class or ability. The sequence of units are taught in the order chosen to allow the best progression possible for children.

What are the attitudes we want to foster?

- To develop positive attitudes to science that will start from the time they join the school and will follow into secondary education and beyond.
- To build upon children's natural curiosity, facilitating them approaching problems with a scientific lens.
- As in all areas of school life we will always encourage open-mindedness, self-assessment, perseverance and responsibility in science.
- Giving children opportunities to work both as part of a team as well as independently

How will we implement our Science curriculum?

At Whybridge Junior School, scientific enquiry skills are embedded in each science unit that the children study and these themed units are revisited and developed throughout their time at school. Themed units, such as

Electricity, are taught in year 4 and again in year 6 in further detail. This model allows pupils to build upon their prior knowledge and increases their enthusiasm for the topics, whilst embedding this procedural knowledge into the long-term memory. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Science is taught outside the classroom, as well as within the classroom. It is taught regularly and systematically, as well as through themed Science Weeks.

Science is taught discreetly, for 2 hours each week, following the National Curriculum Science. Evidence of scientific investigations and the development of children's scientific conceptualisations should be recorded regularly in science books. Science lessons are a balanced mix of observation, investigation and practical lessons that follow a sequential order.

During lower key stage 2, pupils broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments. 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.

During upper key stage 2, pupils should develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. They should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Year 3	**Animals inc. humans (moving and feeding)** • Nutrition, linked to what we eat • Skeletons and muscles Working Scientifically	**Rocks (and soils)** • How rocks are formed • Different kinds of rocks • Fossils Working Scientifically	**Forces (magnets and forces)** • How magnets attract some materials • Floating and sinking Working Scientifically	**Light (and shadows)** • Sources inc. the Sun and electricity • Shadows • Reflection • Vocab: e.g. translucent Working Scientifically	**Plants (what plants need & parts of plants)** • Function of different parts of a plant • What different plants need to flourish? • Journey of the food in a plant • Life cycle of a plant Working Scientifically	
Year 4	**Electricity** • Alternative sources of energy Working Scientifically	**All living things and their habitats** • Identify and name a variety of living things (plants and animals) in the local and wider environment • Recognise that environments can change and can pose dangers Working Scientifically	**Animals including humans (human nutrition)** • The digestive system materials • Teeth Working Scientifically	**Sound** • Sources • Vibration • Loud and faint • Pitch • Volume Working Scientifically	**States of matter (changes of state)** • Solids, liquids and gases • Heating a cooling • Evaporation and condensation Working Scientifically	
Year 5	**Properties of, and changes in, materials** • Dissolving • Evaporating • Filtering • Reversible and irreversible changes • Properties of materials Working Scientifically		**All living things (life cycles)** • Life cycle of plants and animals Birth, growth, development and reproduction Working Scientifically	**Animals Inc. humans** • Changes as humans develop from birth to old age Working Scientifically	**Forces** • Gravity • Air resistance • Water resistance • Friction • Gears, Pulleys, Leavers and Springs Working Scientifically	**Earth, Space and Magnetism** • Earth relative to the Sun • Moon relative to the Earth • Relationship between the Sun, Earth and Moon • Earth's rotation • Day and Night Working Scientifically
Year 6	**Animals incl. humans (our bodies)** • Circulatory system • Heart, blood vessels • Diet, exercise and drugs • Transport of nutrients through the body Working Scientifically	**Living things and their habitats (classifying living things)** • Classification of living things • Vertebrates and invertebrates • Classifying reptiles, amphibians, mammals, insects, etc. Working Scientifically	**Evolution and Inheritance** • Fossils tell us about the past • Off spring • Changes to the human skeleton over time • Darwin Working Scientifically	**Electricity (changing circuits)** • Electrical circuits (series) • Designing traffic lights Working Scientifically	**Light (and sight)** • How light travels • The eye • Shadows Working Scientifically	

How will we judge the impact of our Science curriculum?

Our Science Curriculum is clearly designed with subject plans that contain clearly defined and ambitious aims for what pupils should know and by when. Assessment of science aims to evaluate progress and attainment in the two areas of science education: scientific knowledge and scientific skills.

The statutory requirements for working scientifically (skills) must be achieved at least once through the listed science units in each year group and recorded on Target Tracker once the assessment is complete. The scientific knowledge must be assessed through ongoing teacher assessments, including the use of Knowledge Organisers and retrieval exercises, and recorded on Target Tracker once an assessment is complete.