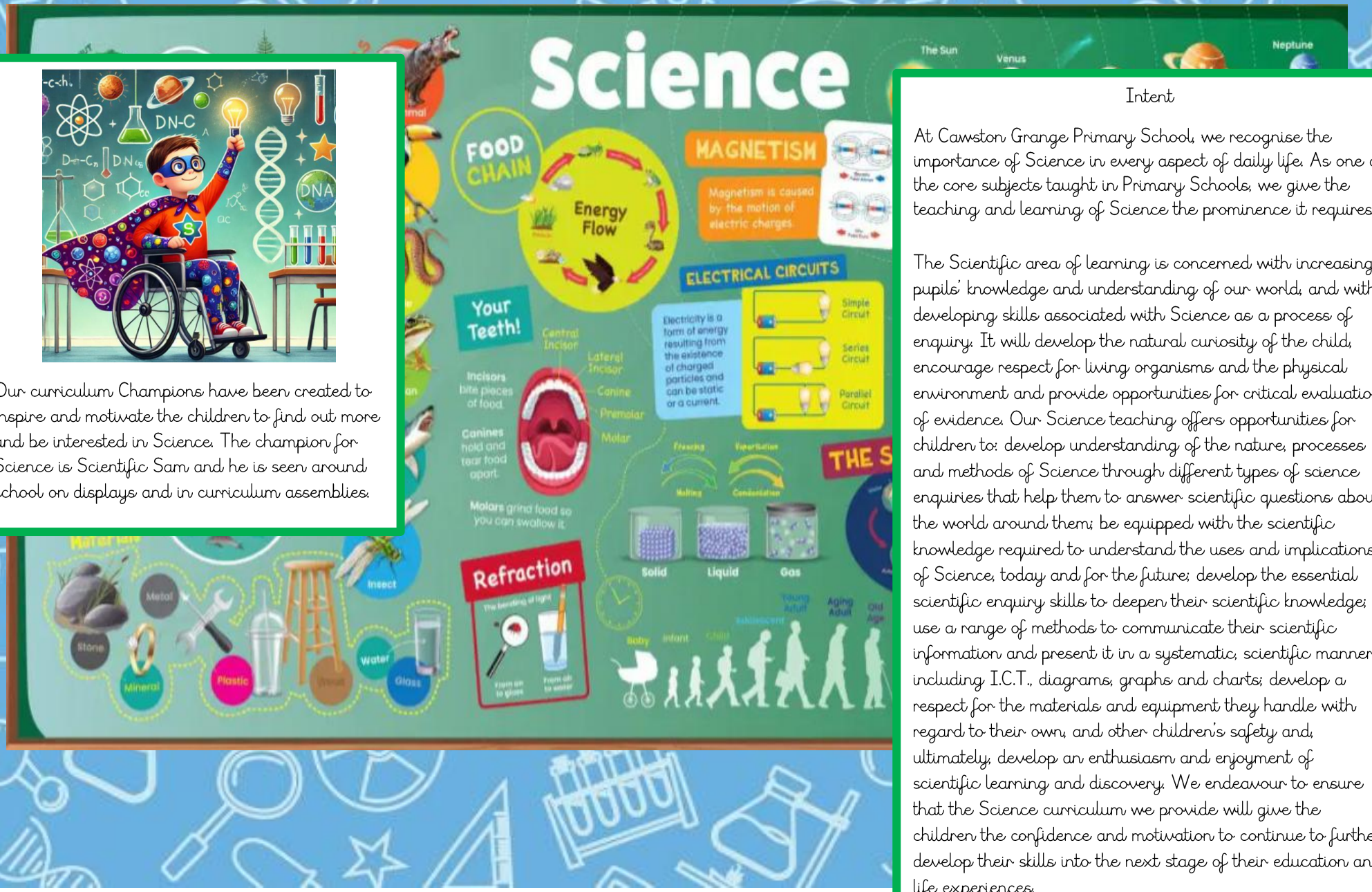
SCIENCE

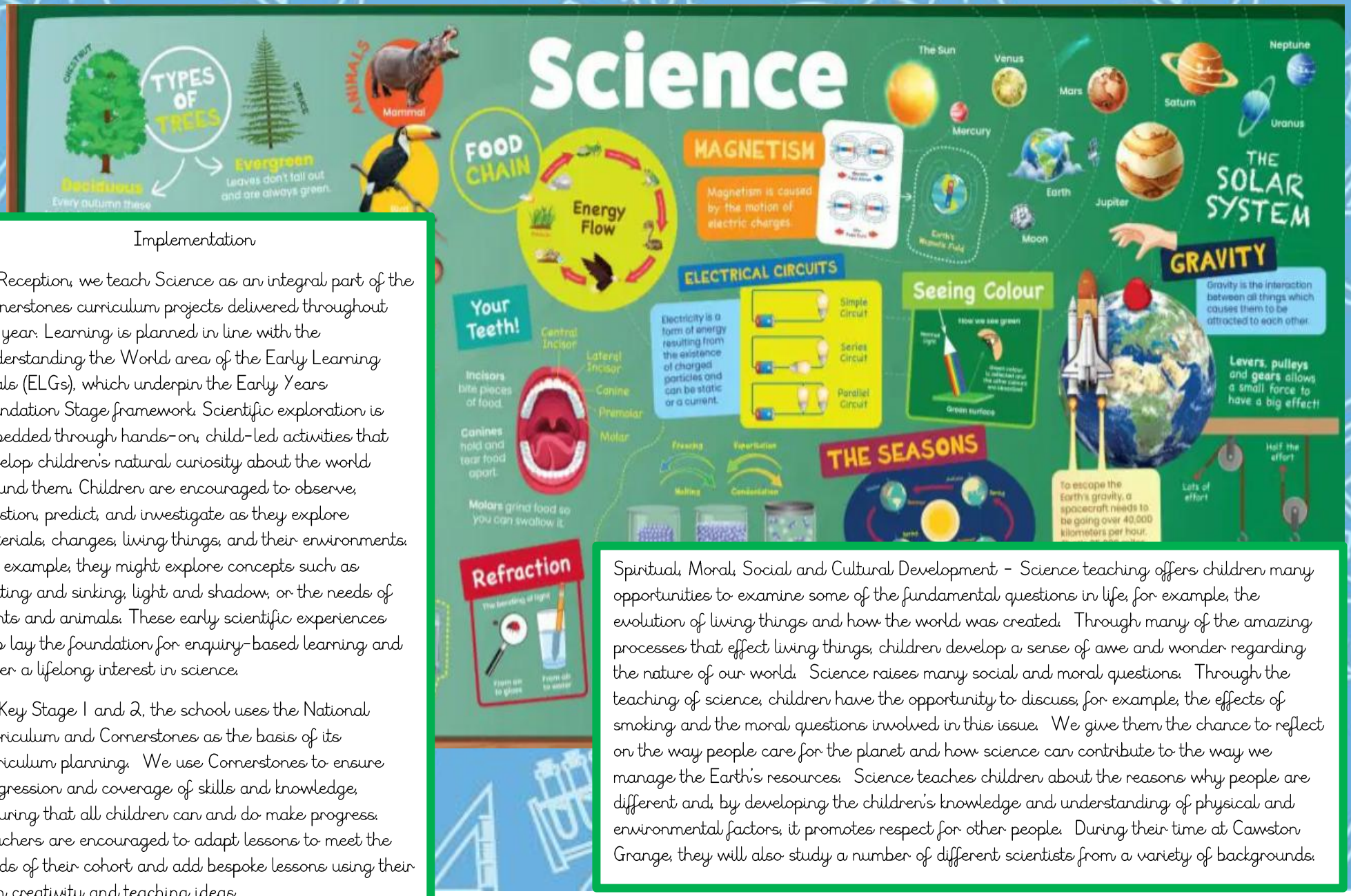
Our curriculum Champions have been created to inspire and motivate the children to find out more and be interested in Science. The champion for Science is Scientific Sam and he is seen around school on displays and in curriculum assemblies.



Intent

At Cawston Grange Primary School, we recognise the importance of Science in every aspect of daily life. As one of the core subjects taught in Primary Schools, we give the teaching and learning of Science the prominence it requires.

The Scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence. Our Science teaching offers opportunities for children to: develop understanding of the nature, processes and methods of Science through different types of science enquiries that help them to answer scientific questions about the world around them; be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future; develop the essential scientific enquiry skills to deepen their scientific knowledge; use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts; develop a respect for the materials and equipment they handle with regard to their own, and other children's safety and, ultimately, develop an enthusiasm and enjoyment of scientific learning and discovery. We endeavour to ensure that the Science curriculum we provide will give the children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.



Implementation

In Reception, we teach Science as an integral part of the Cornerstones curriculum projects delivered throughout the year. Learning is planned in line with the Understanding the World area of the Early Learning Goals (ELGs), which underpin the Early Years Foundation Stage framework. Scientific exploration is embedded through hands-on, child-led activities that develop children's natural curiosity about the world around them. Children are encouraged to observe, question, predict, and investigate as they explore materials, changes, living things, and their environments. For example, they might explore concepts such as floating and sinking, light and shadow, or the needs of plants and animals. These early scientific experiences help lay the foundation for enquiry-based learning and foster a lifelong interest in science.

In Key Stage 1 and 2, the school uses the National Curriculum and Cornerstones as the basis of its curriculum planning. We use Cornerstones to ensure progression and coverage of skills and knowledge, ensuring that all children can and do make progress. Teachers are encouraged to adapt lessons to meet the needs of their cohort and add bespoke lessons using their own creativity and teaching ideas.

Spiritual, Moral, Social and Cultural Development – Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that effect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the Earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people. During their time at Cawston Grange, they will also study a number of different scientists from a variety of backgrounds.

British Values

The teaching of Science at our school actively promotes British values by fostering curiosity, critical thinking, and respect for evidence and differing viewpoints. Through the National Curriculum and Cornerstones projects, pupils explore scientific concepts and discoveries that shape the world, learning to question, investigate, and draw conclusions based on facts. Children are encouraged to work both independently and collaboratively, developing a sense of responsibility, fairness, and mutual respect. Scientific discussions support the values of democracy and individual liberty, as pupils are given the freedom to share ideas, listen to others, and reflect on different perspectives. By exploring ethical and environmental issues, such as sustainability, health, and the use of resources, pupils begin to understand their role in society and the importance of contributing positively to their community and the wider world.

Enrichment opportunities

These opportunities are carefully mapped out so that children regularly experience trips or visits linked to the Science Curriculum. These experiences allow children to delve deeper into a topic area, therefore broadening their knowledge and understanding.

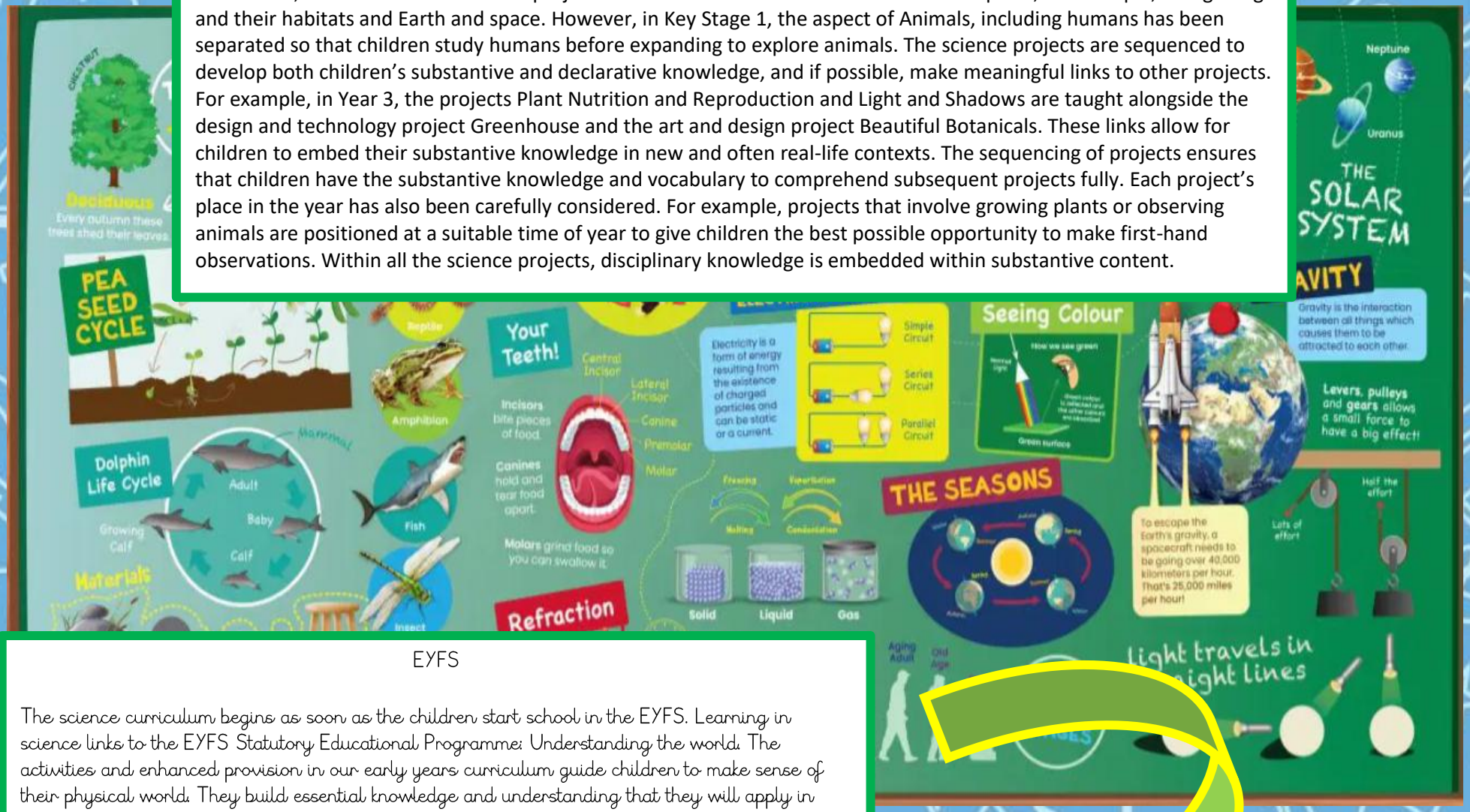
Impact

We assess children's work in Science by making informal judgements as we observe and discuss Scientific concepts with them during lessons. Each class teacher will refer regularly to the knowledge organisers, giving children time to read them and test their own knowledge and use of geographical vocabulary. Each year group has a set of sticky knowledge questions to be asked frequently to ensure that this knowledge sticks. Teachers will create their own knowledge organiser / sticky knowledge quizzes. On completion of a piece of work, the teacher marks the work and comments as necessary. Marking is often developmental and encourages children to stretch their knowledge and use of correct vocabulary. Teachers will adapt their questioning for different abilities, using Walk Thru techniques in order to question and assess all children.

Teachers will add each Science lesson (whether this be a Cornerstones lesson or Teacher created lesson) to the Cornerstones timetable. At the end of each lesson, they will select that the lesson has been taught. This then allows the subject champion to check coverage and progression of what has been taught throughout the school.

Teachers can use the Knowledge and Skills criteria in Cornerstones to assess children working at, below and above the stages expected stage for their Year group. Children's annual school reports indicate the attainment that children have made each year.

Science programmes of study in the national curriculum are assigned to year groups. However, this is not compulsory and they must be covered before the end of the phase. Physics is not formally introduced until Key Stage 2. However, in Key Stage 1, children have opportunities to explore natural phenomena, such as shadows. In the Cornerstones Curriculum, the names of the science projects are matched to the national curriculum aspects, for example, Living things and their habitats and Earth and space. However, in Key Stage 1, the aspect of Animals, including humans has been separated so that children study humans before expanding to explore animals. The science projects are sequenced to develop both children's substantive and declarative knowledge, and if possible, make meaningful links to other projects. For example, in Year 3, the projects Plant Nutrition and Reproduction and Light and Shadows are taught alongside the design and technology project Greenhouse and the art and design project Beautiful Botanicals. These links allow for children to embed their substantive knowledge in new and often real-life contexts. The sequencing of projects ensures that children have the substantive knowledge and vocabulary to comprehend subsequent projects fully. Each project's place in the year has also been carefully considered. For example, projects that involve growing plants or observing animals are positioned at a suitable time of year to give children the best possible opportunity to make first-hand observations. Within all the science projects, disciplinary knowledge is embedded within substantive content.

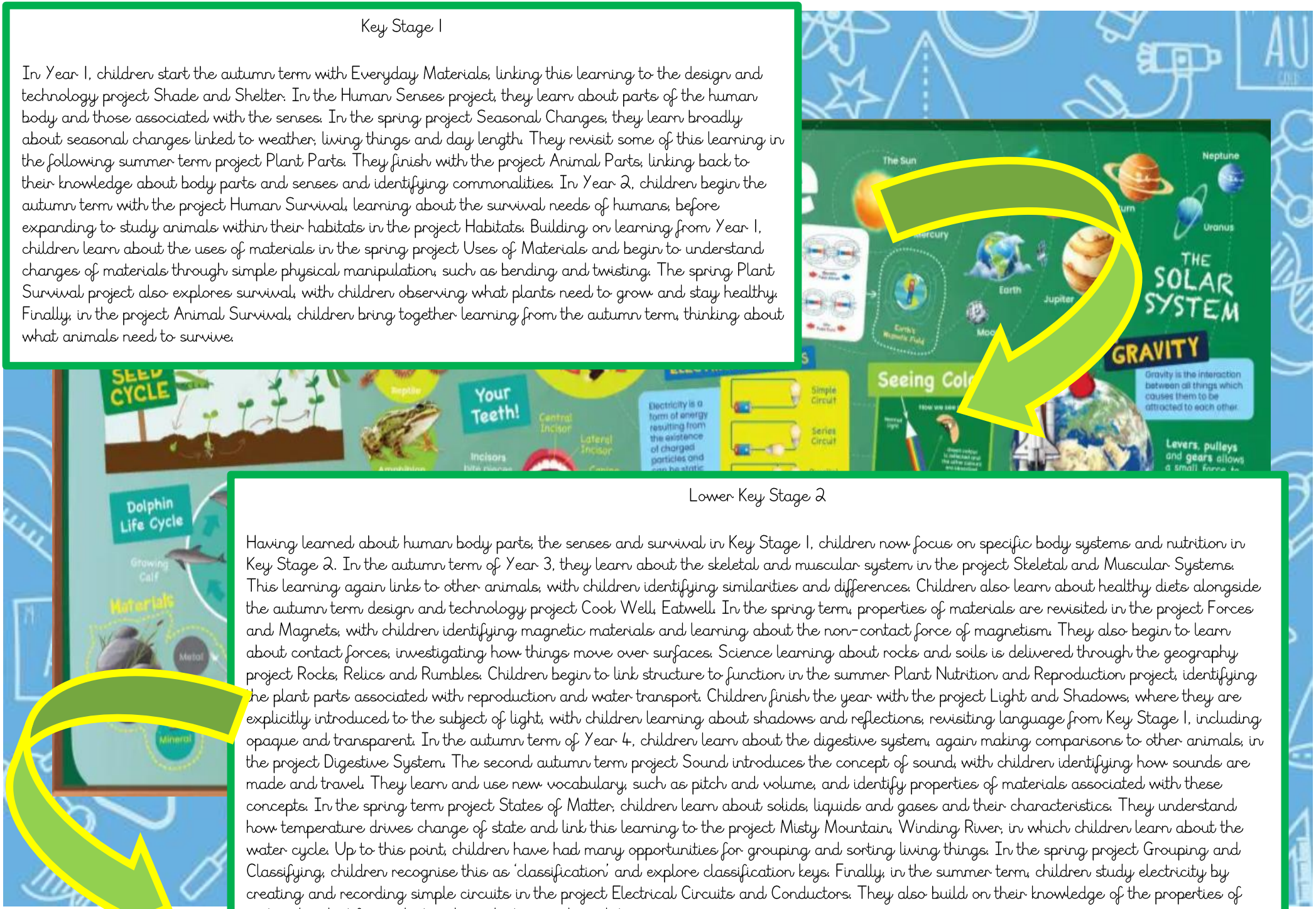


EYFS

The science curriculum begins as soon as the children start school in the EYFS. Learning in science links to the EYFS Statutory Educational Programme: Understanding the world. The activities and enhanced provision in our early years curriculum guide children to make sense of their physical world. They build essential knowledge and understanding that they will apply in science in KS1. Projects such as Exploring Autumn, Winter Wonderland and Signs of Spring support children to explore and understand seasonal changes in the natural world around them.

Key Stage 1

In Year 1, children start the autumn term with Everyday Materials, linking this learning to the design and technology project Shade and Shelter. In the Human Senses project, they learn about parts of the human body and those associated with the senses. In the spring project Seasonal Changes, they learn broadly about seasonal changes linked to weather, living things and day length. They revisit some of this learning in the following summer term project Plant Parts. They finish with the project Animal Parts, linking back to their knowledge about body parts and senses and identifying commonalities. In Year 2, children begin the autumn term with the project Human Survival, learning about the survival needs of humans, before expanding to study animals within their habitats in the project Habitats. Building on learning from Year 1, children learn about the uses of materials in the spring project Uses of Materials and begin to understand changes of materials through simple physical manipulation, such as bending and twisting. The spring Plant Survival project also explores survival, with children observing what plants need to grow and stay healthy. Finally, in the project Animal Survival, children bring together learning from the autumn term, thinking about what animals need to survive.



Lower Key Stage 2

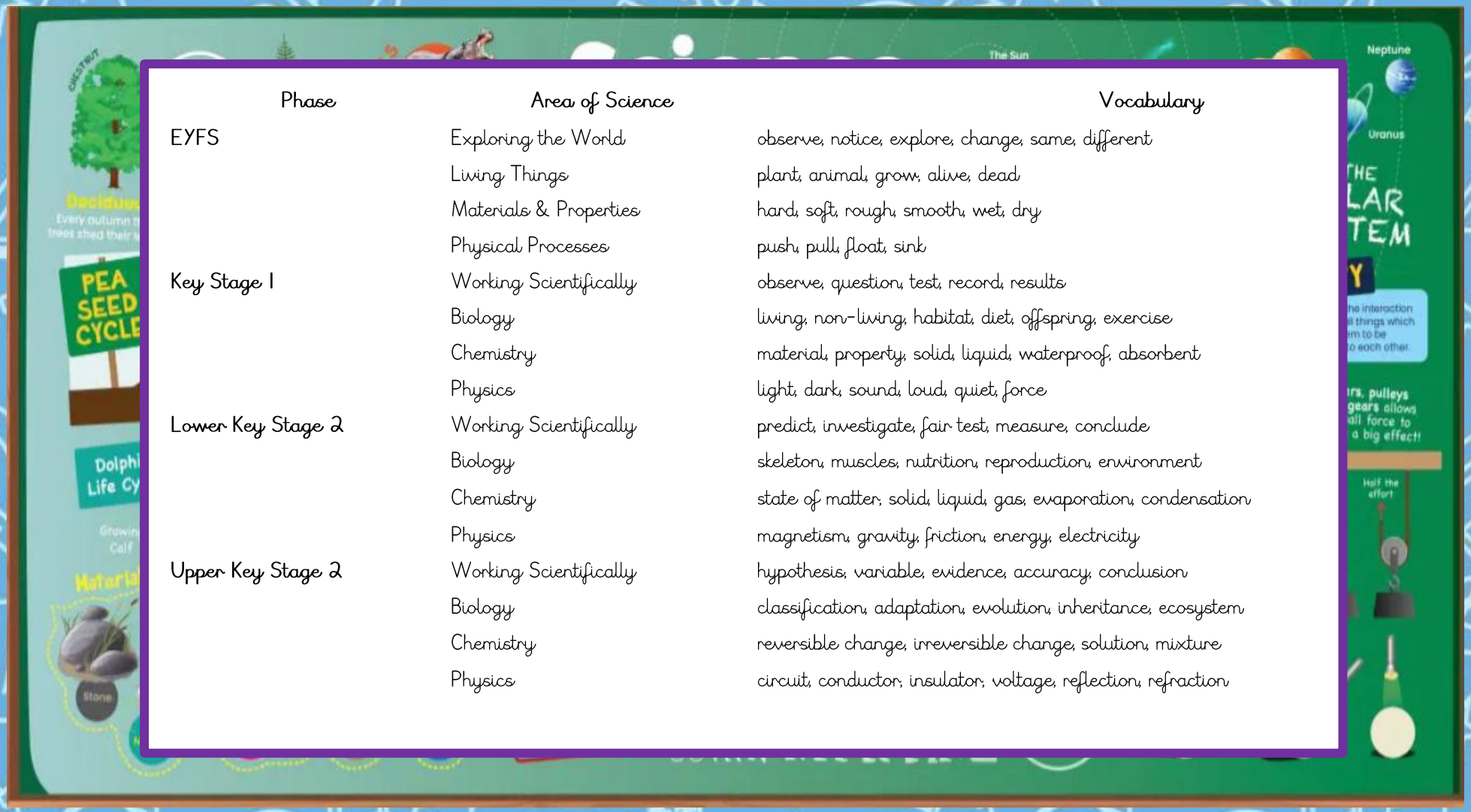
Having learned about human body parts, the senses and survival in Key Stage 1, children now focus on specific body systems and nutrition in Key Stage 2. In the autumn term of Year 3, they learn about the skeletal and muscular system in the project Skeletal and Muscular Systems. This learning again links to other animals, with children identifying similarities and differences. Children also learn about healthy diets alongside the autumn term design and technology project Cook Well, Eatwell. In the spring term, properties of materials are revisited in the project Forces and Magnets, with children identifying magnetic materials and learning about the non-contact force of magnetism. They also begin to learn about contact forces, investigating how things move over surfaces. Science learning about rocks and soils is delivered through the geography project Rocks, Relics and Rumbles. Children begin to link structure to function in the summer Plant Nutrition and Reproduction project, identifying the plant parts associated with reproduction and water transport. Children finish the year with the project Light and Shadows, where they are explicitly introduced to the subject of light, with children learning about shadows and reflections, revisiting language from Key Stage 1, including opaque and transparent. In the autumn term of Year 4, children learn about the digestive system, again making comparisons to other animals, in the project Digestive System. The second autumn term project Sound introduces the concept of sound, with children identifying how sounds are made and travel. They learn and use new vocabulary, such as pitch and volume, and identify properties of materials associated with these concepts. In the spring term project States of Matter, children learn about solids, liquids and gases and their characteristics. They understand how temperature drives change of state and link this learning to the project Misty Mountain, Winding River, in which children learn about the water cycle. Up to this point, children have had many opportunities for grouping and sorting living things. In the spring project Grouping and Classifying, children recognise this as 'classification' and explore classification keys. Finally, in the summer term, children study electricity by creating and recording simple circuits in the project Electrical Circuits and Conductors. They also build on their knowledge of the properties of materials, identifying electrical conductors and insulators.

Upper Key Stage 2

In the autumn term of Year 5, children broaden their knowledge of forces, including gravity and air and water resistance, in the project Forces and Mechanisms. They revisit learning from design and technology projects, including Making It Move and Moving Mechanisms, to explore various mechanisms and their uses. Their knowledge of gravity supports the autumn term project Earth and Space, so they can understand the forces that shape planets and our solar system. They also develop their understanding of day and night, first explored in the Year 1 project Seasonal Changes. Having learned that animals and plants produce offspring in earlier projects and studied plant and animal life cycles in Sow, Grow and Farm, children now focus on the human life cycle and sexual reproduction in the spring term project Human Reproduction and Ageing. In the summer term project Properties and Changes of Materials, children revisit much of their prior learning about materials' properties and learn new properties, including thermal conductivity and solubility. To this point, children have learned much about reversible changes, such as melting and freezing, but now extend their learning to irreversible changes, including chemical changes.

Upper Key Stage 2

In Year 6, the final body system children learn about is the circulatory system and its roles in transporting water, nutrients and gases in the autumn term project Circulatory System. Science learning about classification is delivered through the spring term geography project Frozen Kingdoms. In the spring term, children also build on their knowledge about electrical circuits from Year 4, now learning and recording standard symbols for circuit components and investigating the function of components and the effects of voltage on a circuit in the project Electrical Circuits and Components. In the summer project Light Theory, children recognise that light travels in straight lines from a source or reflector to the eye and explain the shape of shadows. Finally, in the project Evolution and Inheritance, children learn about inheritance and understand why offspring are not identical to their parents. They also learn about natural selection and how this can lead to the evolution of a species.



Phase	Area of Science	Vocabulary
EYFS	Exploring the World	observe, notice, explore, change, same, different
	Living Things	plant, animal, grow, alive, dead
	Materials & Properties	hard, soft, rough, smooth, wet, dry
	Physical Processes	push, pull, float, sink
Key Stage 1	Working Scientifically	observe, question, test, record, results
	Biology	living, non-living, habitat, diet, offspring, exercise
	Chemistry	material, property, solid, liquid, waterproof, absorbent
	Physics	light, dark, sound, loud, quiet, force
Lower Key Stage 2	Working Scientifically	predict, investigate, fair test, measure, conclude
	Biology	skeleton, muscles, nutrition, reproduction, environment
	Chemistry	state of matter, solid, liquid, gas, evaporation, condensation
	Physics	magnetism, gravity, friction, energy, electricity
Upper Key Stage 2	Working Scientifically	hypothesis, variable, evidence, accuracy, conclusion
	Biology	classification, adaptation, evolution, inheritance, ecosystem
	Chemistry	reversible change, irreversible change, solution, mixture
	Physics	circuit, conductor, insulator, voltage, reflection, refraction