



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. In the Shine Curriculum, we make the most of the overall phase coverage, ensuring that all phase Science topics for Key Stage 1 are divided into a 2 year rolling programme and all phase topics for Key Stage 2 are divided into a four year rolling programme. Physics is not formally introduced until Key Stage 2. However, in Key Stage 1, children have opportunities to explore natural phenomena, such as shadows. 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 into a study of humans and a study of 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 Key Stage 1 cycle C, 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. In the Shine Curriculum, having learned about human body parts, the senses and survival in Acorn Class, Oak Class children then focus on specific body systems and nutrition. For example, when Oak class children 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 during their time in Acorn Class. Children also learn about healthy diets alongside Key Stage 1 children.

In Key Stage 1 cycle A, 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. 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.

In cycle B, Acorn 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 cycle A in the 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 Oak Class cycle B topics, children learn about 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 cycle A topics, 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.

In Key Stage 2 In the autumn term cycle D, 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 Key Stage 1, cycle B 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.

Throughout the science scheme, there is complete coverage of all national curriculum programmes of study over the course of each phase. The Shine Curriculum allows us to cover all topics and build on learning from one Key Stage to the next. It also

allows us develop aspects and concepts, vocabulary and connectivity of scientific principles with other curriculum subjects.