

Science Curriculum

Science vision statement

Children have an innate curiosity to explore the world around them. At Sunnybrow Primary School, we encourage children to be curious, inquisitive and passionate about science. We seek to promote open-mindedness and encourage children to ask questions without being afraid of making mistakes; in science this is an opportunity to learn. Our desire to enthuse and inspire children is reflected in our curriculum, extra-curricular activities and learning environments.

We want children to experience the joy of exploring and investigating. We believe it is important that children have frequent, high quality first-hand experiences in order to make meaningful links between classroom learning and the real world. Through regular use of the school grounds and local area, we encourage children to be responsible and respectful of their immediate and wider environment.

In our increasingly scientific and technological age, children need to acquire scientific knowledge, skills and attitudes to prepare themselves for their adult lives. We want children to continue exploring science beyond primary school and become confident, lifelong learners, therefore we aim to maintain a high profile for the subject within school. Even if children do not choose a career within science, in our modern world they require scientific literacy and critical thinking skills that we help to develop at our school.

Intent

By the end of their time in each class, the key information and skills that we want children to have and apply is as follows.

Class 1:

Children will explore the world around them and develop a stronger understanding of the world. They will know about similarities and differences in relation to places, objects, materials and living things. They will be able to talk about the features of their own immediate environment and discuss how environments may vary from one to another. Pupils will be able to make observations of animals and plants, explain why some things occur and talk about changes.

Class 2:

Children will be able to ask questions and recognise that they can be answered in different ways. Children will be able to measure and record data through making close observations using simple equipment and performing simple tests. They will gather and record data to help in answering questions. Children will develop their ability to identify and classify a range of subjects. Pupils will be able to use their observations and ideas to suggest answers to questions. The skills described previously will be used when learning about the following topics: plants, animals including humans, living things and their habitats, seasonal changes and materials.

Class 3:

Children will be able to ask relevant questions and use different types of scientific enquiries to answer them, as well as setting up simple practical enquiries, comparative and fair tests. Children will develop their measuring and recording skills. They will make systematic and careful observations and take accurate measurements using standard units and a range of equipment. Pupils will record their findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables, as well as presenting their data in a variety of ways. Children will be able to conclude by identifying differences, similarities or changes related to simple scientific ideas and

processes. They can report on findings from enquiries in a range of ways (oral & written explanations, displays, presentations). They will use straightforward scientific evidence to answer questions or to support their findings. Pupils will be able to evaluate by using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. The skills described previously will be used when learning about the following topics: plants, animals including humans, light, forces and magnets, materials, living things and their habitats, states of matter, sound and electricity.

Class 4:

Pupils will plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. They will be able to take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Children will record their findings of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs. Children will report on their finds from enquiries in oral and written forms such as displays and other presentations. They will identify scientific evidence that has been used to support or refute ideas or arguments. Pupils will use their test results to make predictions to set up further comparative and fair tests. The skills described previously will be used when learning about the following topics: living things and their habitats, animals including humans, evolution and inheritance, earth and space, forces, light, electricity and properties and changes of materials.

Implementation

Science is taught for 2 hours a week on a two-week cycle. This means that a whole afternoon can be spent on science every two weeks, allowing staff to plan lessons in greater depth, including investigations and written explanations. We find this allows our lessons to flow well and children are able to retain knowledge from fortnight to fortnight.

As we teach mixed age year groups, topics from the National Curriculum are taught across two cycles. Topics that are repeated in both year groups (such as animals, including humans) are taught together to give children an in-depth understanding of how these elements of science are linked together. Topics that involve using our surrounding environment (such as plants) are taught in the summer term when the weather is most suitable. As a school, we make regular use of the school grounds (including the school field) and the local area throughout the year. We recognise that our surroundings offer a rich resource which can be used to inspire children and meet the requirements of the EYFS framework and National Curriculum Progression of Skills.

Planning involves teachers creating engaging lessons involving high quality science resources and equipment to aid understanding of conceptual knowledge. Teachers demonstrate how to use scientific equipment and working scientific skills in order to embed scientific understanding. Opportunities for children to use working scientifically skills are included in every lesson to ensure skills are developed throughout school. New vocabulary and challenging concepts are introduced through direct teaching. Teachers use targeted questions to test/assess children's conceptual knowledge and skills.

The understanding of key ideas is built upon across the key stages. Our stimulating EYFS curriculum nurtures children's natural curiosity and on-going knowledge as children make early observations and explorations. This continues and progresses throughout KS1 and KS2. As children's knowledge and understanding increases, and they become more proficient in selecting and using scientific equipment and collecting and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

As well as lessons based on the National Curriculum, pupils come off timetable where possible (for example, during British Science Week) to provide broader provision and the acquisition and application of knowledge and skills. Extra-curricular opportunities are provided such as after school clubs.

Impact

Science is monitored through lesson observations, book scrutinies and termly teacher assessments. Pupil voice is heard through interviews and questionnaires conducted throughout the year to evaluate the effectiveness of the curriculum and understand which techniques are found to be the most effective and enjoyable for children.

There is evidence of a range of activities in our books. In KS1 learning may be evidenced by pictures in books, demonstrating knowledge children have gained or investigations children have conducted. We aim to provide practical, hands-on experiences and therefore examples of scientific skills (e.g. identifying, classifying, gathering data) may be evidenced through pictures throughout school. In LKS2, diagrams and written explanations can be found in children's books. Children may display findings from investigations in different ways such as tables, bar charts and line graphs (with support). In UKS2, children's books with show pictorial evidence, diagrams, written explanations and written investigations with predictions. Results may be displayed in tables, written conclusions and a range of graphs/charts. Oral and written feedback is regularly provided to children.

Formative assessment evident throughout topics, with key questioning taking place every lesson to ensure understanding of key concepts is checked. Teacher assessment is recorded in a working document where children are assessed as working towards, achieved or mastery for key objectives in each topic, as well as working scientifically skills. Pupils who regularly achieve mastery comments may be added to the gifted and talented register.

Due to our engaging and hands-on curriculum at Sunnybrow, children gain the foundations and knowledge for understanding the world around them. Through the topics we cover and extra-curricular opportunities, children understand that science has and continues to change our lives, and that it is vital for our futures. Children discover the possibilities for careers in science and the relevance it has in their lives through lessons and extra-curricular opportunities. We hope to become more involved in the science community and invite guest speakers into school, as well as teachers from local secondary schools to further emphasise the possibilities within science.

Through hearing pupil voice, it's clear that children are engaged in and enjoy science lessons. They enjoy exploring the world around them and understanding new and interesting concepts. Children are eager to learn and particularly enjoy coming off timetable for different science events when possible.