

# Progression in Science



## **Who's who?**

Subject Leader: Mr  
Armstrong  
Teaching staff: Miss  
Jardine, Mr Armstrong,  
Miss Dixon

## **Our Aims**

At Rosley CE School, we believe that all students should be provided with the necessary scientific skills and knowledge to develop their understanding of the world around them. Students should become curious and excited by a variety of opportunities to test, explore and question things encountered and often taken for granted on a daily basis. Science has the potential to help unlock a huge expanse of opportunities, vital to the world's sustainability, and we want to provide our children with the building blocks for developing ideas and scientific working.

We encourage our children to collaborate and build upon one another's ideas. Through observations, research and practice of scientific skills children can begin to utilise and embed scientific vocabulary and build on this within their topics as they move through our school. We allow children to make sense of different ideas through investigations and opportunities to explore the outdoor environment. With this immersion in learning and vocabulary, we aim to draw predictions, explanations and analysis to ensure our pupils are developing a well-rounded and secure understanding of each concept before they revisit and develop these ideas across future key stages.

## **Working Scientifically**

All working scientifically planning and assessment to follow the STEM Learning Solutions Ltd (SLS) assessment board. The SLS scheme of work also provides a suggested progression of lessons, enquiry opportunities and skill objectives for each module. Below are some of the key focuses each year group will be accessing through their science lessons.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

| RECEPTION & YEAR 1  |  |   |
|---|--|---|
| AUTUMN  | SPRING   | SUMMER  |
| <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> <li>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul> | <p><b>Animals Including Humans</b></p> <ul style="list-style-type: none"> <li>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> <li>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul> | <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>observe and describe how seeds and bulbs grow into mature plants</li> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> <li>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul> <p><b>Seasons and Weather</b></p> <ul style="list-style-type: none"> <li>observe changes across the 4 seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul> |

| YEAR 3 & 4  |   |  |
|---|---|--|
| AUTUMN  | SPRING  | SUMMER   |
| <p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts with component symbols (named)</li> <li>• recognise and solve 'errors' in circuits to make them work</li> <li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> <p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>• notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li> <li>• observe how magnets attract or repel each other. Magnets have two poles</li> <li>• compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• predict whether magnets will attract or repel each other, depending on which poles are facing</li> </ul> | <p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul> | <p><b>Living Things and Their Habitats</b></p> <ul style="list-style-type: none"> <li>• recognise that living things can be grouped in a variety of ways</li> <li>• explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul> |

| YEAR 5 & 6  |  |   |
|---|--|---|
| AUTUMN  | SPRING   | SUMMER  |
| <p><b>Earth and Beyond</b></p> <ul style="list-style-type: none"> <li>describe the movement of the Earth and other planets relative to the sun in the solar system</li> <li>describe the movement of the moon relative to the Earth</li> <li>describe the sun, Earth and moon as approximately spherical bodies</li> <li>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul> | <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul> | <p><b>Light</b></p> <ul style="list-style-type: none"> <li>recognise that light appears to travel in straight lines</li> <li>use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</li> <li>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</li> <li>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul> <p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>use recognised symbols when representing a simple circuit in a diagram</li> </ul> |