River Primary School
Science Policy

Our school policies reflect our commitment to an inclusive, creative and exciting curriculum, based around high quality teaching and learning.

PURPOSE OF STUDY

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

CURRICULUM DRIVERS in Science

Collaboration: Science is a collaborative endeavour in which working together and discussing ideas are central to practice. Children ask questions about the physical and natural world they live in. They work together to plan different types of scientific enquiries (observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing and researching using secondary sources) to answer questions. They know precise, technical scientific vocabulary and apply this to reporting and presenting findings in group presentations. Being able to formulate a hypothesis about a concept and support it with scientific understanding is important. Pupils work in groups to take measurements, using a range of scientific equipment such as data loggers, with increasing accuracy and precision, taking repeat readings when appropriate. Learning will be engaging through practical and hands-on experience.

Initiative: Pupils use their science experiences to explore ideas and raise different kinds of questions. They develop and employ initiative to select and plan the most appropriate type of scientific enquiry to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. They make their own decisions about what observations to make, what measurements to use and how long to make them for as well as whether to repeat them. They choose the most appropriate equipment to take measurements and explain how to use it accurately. They decide how to record data from a choice of familiar approaches. Children will be encouraged to recognise patterns and explore the questions they raise. They will work scientifically when conducting experiments to help them understand more about a process or observation. The more they learn, the more questions they will have, and will leave school with 'the fire in their belly' to go and explore further. We want them to be stimulated by the discoveries they make and the implications of their results.

Diversity: Through the specific disciplines of biology, chemistry and physics children develop a sense of excitement and curiosity about natural phenomena. They learn about the variety and variability of life on Earth. Pupils are able to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They are curious and ask questions about what they notice. Engaging in such things as British Science Week and exploring Scientists of the past as well as those who are currently leading scientific change and enquiry, encourages children to look beyond the stereotypical image of a scientist, celebrating the diverse people and careers in Science and Engineering.

AIMS

The national curriculum for *Science* aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- 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
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

SUBJECT SKILLS

The Kent Agreed Science scheme of work is used explicitly for the teaching of Science across the school but where possible links are made to the Cornerstones theme. Some science topics have to be taught discreetly as they do not link directly with the chosen Cornerstones themes.
As a school, we recognise Cornerstones' ten Big Ideas across the National Curriculum. Big Ideas are present within each subject. In *Science* the Big Ideas are:

- Humankind: Understanding what it means to be human and how human behaviour has shaped the world.
- Nature: Understanding the complexities of the plant and animal species that inhabit the world.
- Processes: Understanding the many dynamic and physical processes that shape the world.
- Place: Understanding the visual, cultural, social and environmental aspects of places around the world.
- Creativity: Understanding the creative process and how everyday and exceptional creativity can shape the world.
- Comparison: Understanding how and why things are the same or different.
- Investigation: Understanding the importance of investigation and how this has led to significant change in the world.
- Materials: Understanding the properties of all matter, living and non-living.
- Change: Understanding why and how things have changed over time.

For each subject, the Big Ideas are split into aspects to help us ensure progression in key elements across the curriculum.

Big Idea	**Aspect**
Change	• Living things
Comparison	• Phenomena • Physical things
Creativity	• Gather and record • Report and conclude
Humankind	• Human body • Healthy lifestyle • Staying safe
Investigation	• Investigation • Measurement • Observation • Questioning
Materials	• Identification and classification • Properties and uses

Nature	• Identification and classification • Parts and functions • Nutrition • Survival
Place	• Habitats
Processes	• Changes • Earth • Forces • Modelling • Pattern seeking • Phenomena

SUBJECT CONTENT

For specific year group Science objectives for each theme, please refer to the National Curriculum.

https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study#contents

Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Our curriculum includes the themes: plants, seasonal changes, everyday materials and animals including humans, in Year 1.

Our curriculum includes the themes: all living things, habitats, uses of everyday materials, animals including humans and plants in Year 2.

Lower key stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. 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. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills

might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.
Our curriculum includes the themes: plants, forces and magnets, animals including humans, rocks and light in Year 3.
Our curriculum includes the themes: states of matter, electricity, animals including humans, all living things and sound in Year 4.

Upper key stage 2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, 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. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.
Our curriculum includes the themes: all living things (life cycles), Earth and Space, Forces, Properties and changes of materials and animals including humans in Year 5.
Our curriculum includes the themes: animals including humans, electricity, living things, evolution and inheritance and light.

CROSS-CURRICULAR LEARNING

We approach learning through cross-curricular themes so that children make links and see the relevance of their learning in different subjects. More detail can be found in our Curriculum Policy and on our school website www.river.kent.sch.uk.
Consistent with our curriculum aims, we identify learning by subject so children know when they are learning Science. This ensures that the integrity of the subject is not degraded and children acquire the underlying knowledge needed to access the subject in later years, including the acquisition of specific subject vocabulary.

ASSESSMENT AND REPORTING

Assessment of Science at both KS1 and KS2 is be based on teacher assessment. This is recorded using subject specific statements on our assessment system, Target Tracker. Parent consultations provide a formal opportunity to discuss both progress and attainment and parents also have the opportunity to have a look at the learning that children have been doing in Science, through their books. Pupil annual reports shared with parents in July provide a formal report of attainment in Science.

Subject Leader Evaluation, overview of Assessment and Monitoring

To ensure best practice, the subject leader has been involved in curriculum review and has worked with the teaching team to ensure that our current curriculum is well-designed to include all the required aspects of Science, whilst making it relevant to our children in our context. In taking this approach, we capitalise on the locality and learning from direct experiences as far as possible.

To evaluate the impact of the curriculum and the quality of teaching and learning, the subject leader
works alongside the senior team to monitor standards of teaching and learning. This is achieved through evidence gathering such as: a structured approach to planning, lesson visits, conversations with teachers, conversations with children together with the outcomes of their learning.

Equality in the curriculum

The two strands to ensuring equality in the curriculum

Equality of access to learning: This means that we have a responsibility to ensure that all children, regardless of their profile, have **access to the same opportunity** to learn within each subject. This means that adaptations need to be made to resources and facilities, ensuring that children feel safe and any barriers to learning are addressed. This is the means to give each child and **equal chance of success**.

Equality as part of the Curriculum: This means that our topics for study reflect the diverse population and that our curriculum supports social inclusion through promoting acceptance and appreciation of the similarities and differences of ourselves and of others. Our focus on diversity as a driver reflects our commitment to equality. Through valuing diversity, we learn to expect, respect and value difference in others. We aim for children to recognise and understand their responsibilities towards themselves and others.

Children with Special Educational Needs or Disabilities

We have a firm commitment to inclusion so that appropriate adjustments are made for children with special educational needs or disabilities. All children in school have an entitlement to a full education and we will modify and differentiate the curriculum to ensure access to the curriculum for all children.

Gifted and Talented Children

We have a commitment to meeting the needs of all children, including those with an aptitude in one or more areas. It is our responsibility to maximise knowledge, skills, strengths and talents in all children, enabling them to extend and develop their potential. Gifted and talented children are recognised as having particular learning needs and the curriculum is extended in this subject through learning challenges to ensure that positive learning and progress is sustained.

Signed:_____Date: _____

Chair of Learning and Development Team

Linked Documents

Whole School Long Term Curriculum Plan
Year Group Medium Term Curriculum Plans
History - Quick Reference including Big Ideas