

# FELSTED PRIMARY SCHOOL

SCIENCE POLICY - January 2025



Nurturing today's minds for tomorrow's challenges

- Be Respectful
- Be Kind
- Be Safe

## INTENT

Our science curriculum is designed with the intent that each child at Felsted Primary School will become competent scientific thinkers and investigators who will encounter awe and wonder through first-hand scientific investigative experiences and approaches, which activate learning for all children. With great emphasis on providing children with a high-quality science education that offers the foundations for understanding the world through the specific disciplines of biology, chemistry and physics, our curriculum design for Science promotes specific competences, including knowledge, enquiry and investigative skills. Creative pathways to learning are planned for so that children can make links to prior learning and develop depth in key skills within Science that are rich, stimulating, challenging and real life. We aim for children to master the learning of skills, knowledge and experiences that will remain with them for the rest of their lives.

### **Our curriculum is designed to allow all pupils to:**

- ✓ Feel confident and successful in their Science learning
- ✓ Have the attitude that learning is 'hard' and mistakes are necessary for learning to happen.
- ✓ Enjoy learning and experience 'the BUZZ of Science'
- ✓ Have a voice and be able to choose how they wish to learn and think like a scientist
- ✓ Understand that Science is relevant to everyday living and a lifelong skill, by solving problems that are set in a real-life context
- ✓ Develop critical thinking and the confidence to question ideas in order to deepen their understanding
- ✓ Become interdependent as well as independent learners
- ✓ Become metacognitive learners, understanding their own abilities, what they need to do that will enable them to develop their abilities and the skill to review their learning accurately
- ✓ Develop their knowledge alongside scientific skills within Biology, Chemistry and Physics
- ✓ Develop scientific literacy using wide ranging scientific vocabulary

## IMPLEMENTATION

The school follows the Kapow scheme of learning for Science which is aligned with the National Curriculum. We make some adaptations for the local circumstances of the school and we make use of the local environment in our fieldwork.

We carry out our curriculum planning in Science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied each term by each year group. Each unit is built upon the key disciplines of either Biology, Chemistry or Physics. Content is grouped into 6 key areas:

Plants

Animals, including humans

Living things and habitats

Materials

Energy

Forces, Earth and Space

The working scientifically skills are integrated with conceptual understanding rather than taught discreetly. We utilise practical activities and provide opportunities for full investigations.

Additionally, we use the TAPS (Teacher Assessment in Primary Science) resources to support the teaching and assessment of the working scientifically strand. We teach one TAPS lesson per half term in years 1-6.


By combining the Kapow Primary Scheme with the TAPS assessments, all pupils continually develop their knowledge of the working scientifically enquiry skills of:

- Plan – Ask questions & plan enquiries / set up enquiries
- Do – Observe & Measure / Record
- Review – Interpret & Report / Evaluate

Our medium-term plans, taken from Kapow, give objectives and attainment targets for Science, and details for each unit of work. The Science subject leader keeps and reviews these plans as well as providing advice in relation to progression of skills and opportunities for scientific enquiry.

Kapow provides plans for each lesson (short-term plans) but the class teacher is responsible for adapting these plans to the needs of the individual classes. These plans list the specific learning objectives, learning opportunities and assessment opportunities of each lesson. The class teacher keeps these individual plans, and s/he and the Science subject leader discuss them on an informal basis.

The topics in Science are planned so that they build upon prior learning, using a spiral curriculum with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on previous learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build in progression to ensure that the children are increasingly challenged as they move up through the school.

 <b>FELSTED PRIMARY SCHOOL SCIENCE CURRICULUM MAP</b>						
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
EYFS	Autumn: Seasons Scavenger Sort	Arctic/Snowman: Materials Frozen Balloons	Gruffalo/Dinosaurs: Rocks and fossil Forensic Footprints	Transport: Forces Teddy Zipline	Minibeasts: Animals Incy Shelter	Plants Bubble Snake
Y1	Seasonal Changes Seasonal Change	Everyday Materials Waterproof materials	Sensitive Bodies Senses Walk	Comparing Animals Animal Classification	Introduction to plants Daisy Predictions	Investigating Science through stories Rocket Mice
Y2	Habitats Sorting Living and Non-living	Microhabitats Animal home build	Uses of everyday materials Materials hunt	Life Cycles and health Boat Materials	Plant Growth Comparing plant growth	Plant-based materials Nature Spotters
Y3	Movement and Nutrition Skeletons	Forces and Magnets Shoe Grip	Rocks and Soil Rock Report	Light and Shadow Making Shadows	Plant Reproduction Functions of a stem	Does hand span affect grip strength Ice Cream
Y4	Digestion and Food Food & Digestion	Electricity and Circuits Electrical Conductors	States of Matter Cornflour Slime	Sound and Vibrations String Phones	Classification and changing habitats	How does the flow of liquids compare? Ice Escape

					Local Survey	
<b>Y5</b>	Mixtures and separations Forensic Powders	Properties and change Thermal Insulation Layers	Earth and Space Space Questions	Life cycles and reproduction Life Cycle	Imbalance d Forces Parachute Car	Human Timeline & Asteroid Size Space Craters
<b>Y6</b>	Classifying Big and Small Invertebrates Research	Light and Reflection Light Questions	Evolution and Inheritance Fossil Habitats	Circuits, Batteries and Switches Conductive Dough	Circulation and Health Heart Rate Poses	Are some sunglasses safer than others? Paper Planes

We ensure that our implementation provides all pupils with the following opportunities:

- ✓ to develop a greater knowledge and understanding of the following key strands:
  - Biology – living organisms and vital processes
  - Chemistry – matter and it's properties
  - Physics – how the world we live in 'works'
- ✓ Working scientifically – processes and methods of Science to answer questions about the world around us
- ✓ Science in action – use and implications of science in the past, present and the future. (This strand is interwoven throughout our scheme to make the concepts and skills relevant to pupils)
- ✓ Experience enjoyment and enthusiasm for learning through real, first-hand and rich science experiences so that all children explore, question, predict, plan, carry out and make observations and conclusions about their scientific tests
- ✓ Discuss and present their work using scientific language, observations, diagrams, jottings and charts
- ✓ To foster positive attitudes such as curiosity, perseverance, willingness to use and appraise evidence, willingness to tolerate uncertainty, critical reflection and enthusiasm
- ✓ Developing an understanding of the importance of Science in everyday life

Each year group has 5 compulsory units that must be covered as set out on the curriculum map. Teachers have the flexibility to move at a faster or slower pace – as demanded by the needs of individual pupils and classes.

Each year group has an optional exploratory 'Making Connections' unit that delves beyond the essential curriculum, assimilating prior knowledge and skills to evoke excitement and to provide an additional method of assessing scientific attainment.

## FOUNDATION STAGE

In the foundation stage pupils will work from the Knowledge and Understanding of the world planning from the Early Years scheme of work. This planning aims to develop in pupils the crucial knowledge, skills and understanding that help them make sense of the world. It provides opportunities for pupils to carry out activities based on first hand experiences that encourage exploration, observation, problem solving, prediction, critical thinking, decision making and discussion. It provides the foundations for the science KS1 and then the KS2 curriculum.

## **THE CONTRIBUTION OF SCIENCE TO TEACHING IN OTHER CURRICULUM AREAS**

### **English**

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in reading are of a scientific nature. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

### **Mathematics**

Science contributes to the teaching of Mathematics in a number of ways. The children use measurement skills including reading weight and capacity scales, measuring distance and timing reactions. They have many opportunities to use and apply number skills, often when recording results and drawing conclusions. Pupils are taught to read a range of statistical diagrams, such as pie charts and bar charts. When working scientifically they learn to estimate and predict. They develop the skills of accurate observation and recording of events.

### **Computing**

Children use computing skills in Science lessons where appropriate. They use it to support their work in Science by learning how to find, select, and analyse information on the Internet and computer programmes. Children use their computing skills to record, present and interpret data and to review, modify and evaluate their work in order to improve its presentation. Visualisers and computer microscopes are used when making observations. Data loggers are used to measure and record temperature, sound and light levels. They also use e-mail to share their findings with their teachers and peers.

### **Personal, Social, Health and Relationships Education (PSHRE)**

Science makes a significant contribution to the teaching of personal, social health and relationship education. On a personal level, the children have the opportunity to talk about factors which affect their health and well-being, such as medication and drugs. At a wider level, issues relating to citizenship and social welfare, for example, the way people recycle material and how environments are changed for better or worse, are explored, discussed and debated. Science promotes the concept of positive citizenship.

### **Spiritual, Cultural and Moral development**

Science 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 affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through 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.

## **TEACHING SCIENCE TO CHILDREN WITH SPECIAL EDUCATIONAL NEEDS**

At Felsted Primary School we teach Science to all children, whatever their starting points. Science forms part of the school offer to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs.

Rigorous and ongoing assessment allows us to consider each child's attainment and progress against age related standards.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

We enable pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom, for example, a trip to a science museum, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## **IMPACT**

The impact of our Science curriculum is constantly monitored through our formative and summative assessment as well as the monitoring activities detailed below. Our curriculum is organised so that pupils will meet key end points in their learning and be ready for the next key stage. After implementing Kapow Primary Science, pupils should leave school equipped with the requisite skills and knowledge to succeed in key stage 3 Science. They will have the necessary skills and tools to confidently and meaningfully question and explore the world around them, as well as, critically and analytically experiencing and observing phenomena. Pupils will understand the significance and impact of Science on society.

The expected impact of following the Kapow Primary Science scheme of work is that children will:

- Develop a body of foundational knowledge for the Biology topics in the National curriculum: Plants; Animals, including Humans' Living Things and Their Habitats; Evolution and Inheritance
- Develop a body of foundational knowledge for the Chemistry topics in the National curriculum: Everyday Materials; Uses of Everyday Materials; Properties and Changes of Materials; States of Matter; Rocks
- Develop a body of foundational knowledge for the Physics topics in the National curriculum: Seasonal Changes; Forces and Magnets; Sound' Light' Electricity; Earth and Space
- Be able to evaluate and identify the methods that 'real-world' scientists use to develop and answer scientific questions
- Identify and use equipment effectively to accurately gather, measure and record data
- Be able to display and convey data in a variety of ways, including graphs
- Analyse data in order to identify, classify, group and find patterns
- Use evidence to formulate explanations and conclusions
- Demonstrate scientific literacy through presenting concepts and communicating ideas using scientific vocabulary
- Understand the importance of resilience and a growth mindset, particularly in reference to scientific enquiry
- Meeting the end of key stage expectations outlined in the National Curriculum for Science

## **PROGRESS AND ASSESSMENT**

As assessment is inextricably linked to planning, we use the Kapow assessment spreadsheet so our assessment is in line with our planning. All assessments in science are used to inform subsequent planning in order to impact on future teaching and learning. In Science, assessment activities are carried out prior to, during and after teaching in a variety of ways. We use the TAPS Primary Science activities every half term to support our assessment of working scientifically.



Formative assessment is continually on-going in the form of marking pupils work, giving verbal feedback to pupils, and making notes on weekly planning in order to inform planning for the next lesson. These assessments are linked to the key learning objectives for the lesson. Teachers use tapestry to support the recording of evidence for lessons which allows for assessment.

### **SUMMATIVE ASSESSMENT**

Teachers make a summative assessment of every pupils' knowledge, skills and understanding at the end of each term in line with the school's assessment schedule. End of unit quizzes, knowledge and skills catchers, pupil work, teachers' notes and ongoing observations are used to make a robust assessment of all pupils. These assessments inform future planning and are shared with new teachers when children move up a year. All summative assessments are recorded termly on Insight.

Pupils' progress is monitored by both class teachers and subject leaders. Pupils who are making less than expected progress are identified and measures can be put in place to support these pupils. For example, this may involve adaptations being made to remove barriers to learning, such as the need to complete extended writing.

### **MONITORING**

The science subject leader regularly conducts:

- Work scrutiny
- Drop in observations
- Pupil/staff surveys
- Data analysis
- Resource audits
- Tapestry Checks

Feedback is shared with Phase Leaders and teachers with 'next steps' identified and actioned as required.

### **ROLES AND RESPONSIBILITIES**

It is the responsibility of the science subject leader and Senior Leadership Team to monitor the standards of children's work and the quality of teaching in Science. The Science subject leader is also responsible for supporting colleagues in the teaching of Science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. SLT regularly monitor and evaluate the termly, summative assessments. Areas identified are taken to key stage meetings where teachers are supported to ensure all pupils are making expected progress.

As well as making its own distinctive contribution to the school curriculum, Science contributes to the wider aims of primary education.

### **RESOURCES**

We have sufficient resources for all Science teaching units in the school. We keep these in a central practical room with equipment stored in catalogued boxes detailing the content and quantity of resources. The library contains a good supply of Science information books. Technological devices with accompanying computer software are available to support children's individual research and data collection.

The Science subject leader regularly audits resources and requests can be made for additional or replacement resources, such as batteries and filter papers.

## **PROFESSIONAL DEVELOPMENT**

The Science Subject leader meets at least termly with the DEEP cluster group for Science. All further opportunities for professional development are pursued, such as participation in research projects. It is the responsibility of the subject leader to maintain up-to-date subject knowledge and to disseminate this to all staff. This will be done through staff training sessions and in response to actions identified through monitoring activities. The subject leader is also responsible for identifying staff that require additional support or subject areas that are in need of improvement.

Kapow is also a source of professional development material for both the subject leader and class teachers.

## **HEALTH AND SAFETY**

In this subject the general teaching requirement for health and safety applies. We teach children how to follow the proper procedures for safety and hygiene.

## **EQUAL OPPORTUNITIES**

Careful planning and awareness of individual children's needs and interests will ensure that every child will have equal access to the Science Curriculum regardless of race, gender or class.

## **POLICY MONITORING**

The Science leader is responsible for the monitoring of the implementation of this policy. The leader reports to the head teacher on the effectiveness of the policy.

## REVIEW

This policy will be reviewed annually.

Signed by:

Role: Headteacher

Date: Jan 2025