



# 'Where Stars Shine'

*Belonging, Ambition, Respect, Kindness*

# SCIENCE POLICY

Policy Lead Committee:	<b>Local Academy Committee</b>	In consultation with:	<b>Senior Leadership Team</b>
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## 1. Aims and Objectives

Science teaches an understanding of natural phenomena, it aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

## 2. Intent

At Severnbanks Primary School, we follow the Kapow Science scheme of work for Science lessons. The scheme is enhanced by other resources such as Explorify and Kahoot quizzes to support learning and to maintain and review knowledge.

Kapow Primary's Science curriculum aims to develop a sense of excitement and curiosity about natural phenomena and an understanding of how the scientific community contributes to our past, present and future.

We want pupils to develop a knowledge of Biology, Chemistry and Physics, but also adopt a broad range of skills in working scientifically and beyond. The scheme of work is inclusive and meaningful, so all pupils may experience the joy of science and make associations between their science learning and their lives outside the classroom. Studying science allows children to appreciate how new knowledge and skills can be fundamental to solving arising global challenges.

The curriculum aims to encourage critical thinking and empower pupils to question the hows and whys of the world around them

The scheme encourages:

- A strong focus on developing knowledge *alongside* scientific skills across Biology, Chemistry and Physics.
- Curiosity and excitement about familiar and unknown observations.
- Challenging misconceptions and demystifying truths.
- Continuous progression by building on practical and investigative skills across all units.
- Critical thinking, with the ability to ask perceptive questions and explain and analyse evidence.
- Development of scientific literacy using wide-ranging, specialist vocabulary.

Kapow Primary's Science scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those set out in the National curriculum.



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### 3. Implementation

In order to meet the aims of the National curriculum for Science and in response to the Ofsted Research review into Science, the scheme has identified the following key strands:

- Scientific knowledge and understanding of:
  - Biology; living organisms and vital processes
  - Chemistry; matter and its 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 - uses and implications of science in the past, present and for the future.

Kapow Primary's Science scheme is a spiral curriculum, with essential knowledge and skills revisited with increasing complexity, allowing pupils to revise and build on their previous learning. A range of engaging recall activities promote frequent pupil reflection on prior learning, ensuring new learning is approached with confidence. The Science in action strand is interwoven throughout the scheme to make the concepts and skills relevant to pupils and inspiring for future application. Cross-curricular links are included throughout each unit, allowing children to make connections and apply their Science skills to other areas of learning.

Each unit is based upon one of the key science disciplines; Biology, Chemistry and Physics and to show progression throughout the school we have grouped the National curriculum content into six key areas of science:

- Plants
- Animals, including humans
- Living things and habitats
- Materials
- Energy
- Forces, Earth and Space

Pupils explore knowledge and conceptual understanding through engaging activities and an introduction to relevant specialist vocabulary. As suggested in Ofsted's Science research review (April 2021), the 'working scientifically' skills are integrated with conceptual understanding rather than taught discretely. This provides frequent, but relevant, opportunities for developing scientific enquiry skills. The scheme utilises practical activities that aid in the progression of individual skills and also provides opportunities for full investigations.



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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.

Lessons incorporate various teaching strategies from independent tasks to paired and group work, including practical, creative, computer-based and collaborative tasks. This variety means that lessons are engaging and appeal to those with different learning styles. In Year 1, the scheme eases the transition into Key stage 1, by providing a selection of activities: some adult-led, some independent tasks, and some tasks that can be used during continuous provision.

Guidance for adapting the learning is available for every lesson to ensure that all pupils can access learning, and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit help to identify prior and future curriculum links to make the scheme as meaningful as possible and reinforce key technical terms.

Strong subject knowledge is vital for staff to deliver a highly effective and robust Science curriculum. Each unit of lessons includes multiple teacher videos and resources to develop subject knowledge, target fundamental misconceptions effectively and support ongoing CPD. Kapow has been created to build confidence amongst non-specialist primary teachers who are required to deliver and assess the full Science curriculum and maximise pupil progression. Videos created by subject specialists feature troubleshooting advice for practical work that does not go to plan, suggested questioning and support for tackling misconceptions, as well as recording of practical tasks that can be utilised as demonstrations in the classroom or to support pupil reflection on their own observations.

Kapow Science is intended to promote inclusion within classrooms because it emphasises full-class instruction and varied challenges. Some children will need a higher level of adult support to access the teaching material and to demonstrate their learning and this is indicated on work through the use of marking codes. We can use pre-teaching of Scientific vocabulary to support pupils with their Scientific understanding.

At Severnbanks, we recognise that all Science teachers are SEND Science teachers and we plan for and deliver inclusive Science lessons, using scaffolds, questioning and support where appropriate to enable all students to access the learning and to achieve.

### **3.1 Useful Documentation to Support Implementation**

The National curriculum coverage document shows which of the units cover each of the National curriculum attainment targets and the strands within it. The Progression of skills and knowledge shows the skills and key knowledge that are taught within each year group and how these skills develop year on year to ensure attainment targets are securely met by the end of the key stage.



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#### 4. Impact

The impact of Kapow Primary's Science scheme can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives and any relevant scientific enquiry skills. Furthermore, each unit has a unit quiz and a knowledge and skills catcher, which can be used at the end of the unit to provide a summative assessment. Opportunities for children to communicate using scientific vocabulary will also form part of the assessment process in each unit.

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 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 growth mindset, particularly in reference to scientific enquiry.
- Meet the end of key stage expectations outlined in the National curriculum for Science.



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## 5. Children with Special Educational Needs

At Severnbanks, we recognise that children with identified Special Educational Needs and Disabilities (SEND) may have strengths in different areas. We strive to ensure they are included in all aspects of the curriculum and wider school life. We also acknowledge that children with SEND may require adapted work or additional support tailored to their specific needs and abilities, enabling them to participate as fully as possible in all school activities.

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## 6. Foundation Stage

The EYFS provide opportunities for children to develop their knowledge and understanding of their familiar world and the natural environment. Children are encouraged to differentiate between similarities and differences in relation to places, objects, materials and living things.

Learning and development within The World strand of this area of learning is implemented through planned purposeful play activities that reflect the children's current interests and a mix of adult led and child-initiated activity in addition to a weekly session of Forest School. Planned learning opportunities are informed by the Development Matters Statements (the developmental continuum from birth to 60+ months) and the Early Learning Goals (the end of year statements which are used to define attainment at the end of the Early Years Foundation Stage).

## 7. The Contribution of Science to Teaching in other Curriculum Areas.

### 7.1 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 within literacy are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information. Writing across the curriculum is actively promoted in Severnbanks.



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## **7.2 Mathematics**

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

## **7.3 Information and Communication Technology (ICT)**

Children use ICT 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 on CD-ROMs. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

## **7.4 Personal, Social and Health Education (PSHCE) and Citizenship**

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. They organize campaigns on matters of concern to them, such as helping the poor or homeless. Science promotes the concept of positive citizenship.

## **7.5 Spiritual, Moral, Social and Cultural Development**

Science teaching 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 the teaching of 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.

## **7.6 Teaching Science to Children with Special Needs**

We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide



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learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the targets set in the children's My Plans or My Plan +.

## 8. Assessment and Recording

We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. Teachers assign an achievement level against objectives and this is recorded on the INSIGHT tracker in school. The subject coordinator then analyses the data and produces a report about the standards in their subject. We use these grades as the basis for assessing the progress of each child and we pass this information on to the next teacher at the end of the year.

## 9. Resources

We have sufficient resources for all science teaching units in the school and these are updated as required. We keep these in a central store where there is a box of equipment for each unit of work. There is also a collection of science equipment which the children use to gather weather data. The library contains a good supply of science topic books and computer software to support children's individual research.

## 10. Staff Training and Development

The Science Subject Lead will be responsible for ensuring that Severnbanks staff are confident in delivering the 'Kapow' scheme of work and are supported in the use of other resources to enhance teaching and learning in all year groups. Any training needs will be addressed by the Science Subject Lead.

## 11. Monitoring and Review

It is the responsibility of the science subject leader 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. The science subject leader gives the head teacher an annual summary report in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The science subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

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This policy is available on the school website: [Severnbanks Primary School - Policies](#)