



Science



Policy



2026-2027



What is science?

Science is a particular way of understanding the physical world, which requires precise approaches and ways of thinking.

The purpose of science

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.(National Curriculum 2014)

Coverage of science

Through the teaching of science, children will develop an understanding of the world through the specific disciplines of biology, chemistry and physics. They will become familiar with, and use technical vocabulary accurately and precisely, building up an extended specialist vocabulary. Children will be encouraged to work scientifically within each aspect of science, as opportunities will be embedded within the content being taught. This will give the children the opportunity to answer relevant scientific questions; make observations over time; seek and identify patterns; classify and group living and non-living things and carry out comparative and fair testing. Children will also be given the opportunity to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Aims

The national curriculum (2014) 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.

At Bankfields Primary School, we aim to:

- Produce children who are independent investigators, by providing a balanced and varied programme of scientific skills, knowledge and understanding and attitudes;
- Stimulate and excite pupil's curiosity about changes and events in the world and satisfy this curiosity with knowledge;
- Engage pupils as learners at many levels through linking ideas with practical first hand experiences;

- Help pupils to learn to question and discuss scientific issues that may affect their own lives;
- Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using criteria and creative thought;
- Show pupils how major scientific ideas contribute to technological changes and how this impacts on improving the quality of our everyday lives;
- Help pupils recognise the cultural significances of science and trace its development, including the scientists who played such a key role in each area of science;
- Teach science through a variety of individual, group and whole class teaching, providing equal opportunities for all children.

Science Intent

At Bankfields Primary School, our science curriculum is designed to inspire **high aspirations**, nurture **resilience**, **develop curiosity** and a **love of learning**. We promote a child-led approach, encouraging children to investigate independently, be creative and take ownership of their learning journey. Through hands-on investigations, experimentation with a variety of equipment, and collaborative group work, children develop a resilient mindset by understanding that perseverance is key to reaching proven conclusions.

We aim for all children to recognise that science underpins the world around us, enriching their understanding and appreciation of its impact. Opportunities to broaden scientific vocabulary, including the use of science dictionaries, empower children to communicate effectively and confidently in scientific contexts. Engagement with STEM ambassadors, local community members, and inspiring visitors helps our children to set ambitious goals and see the real-world applications of their learning.

By exploring the contributions of significant scientists and asking thoughtful questions, our children develop a deep curiosity about the world. They come to see how they, too, can make meaningful contributions to improving quality of life through science. By the end of their primary journey, we aim for every child to be excited, engaged, and prepared to continue their scientific exploration in secondary school, with a vision of how they can help shape and improve our world.

Curriculum Provision

In the Early Years Foundation Stage science activities are available daily with additional experiences provided through topic focus. Observation of children's interests and activities informs planning and provision for this area of learning. Science is a core subject of the National Curriculum and pupils undertake science activities every week at both KS1 and KS2. Science objectives are covered through half termly topics within each class and the science subject leader monitors the completion of

objectives and ensures continuity and coverage when variations in mixed aged classes occur.

Teaching and Learning

Early Years and Foundation Stage

Science is included in one of the six areas of learning known as Understanding the World. Scientific learning occurs through:

- * access to a range of developmentally appropriate practical activities based on first hand exploratory experiences. For example, a nature walk, magnifiers to explore natural objects, manipulating wet/dry sand etc.
- * enthusiastic and meaningful interaction with adults, who provide opportunities to develop communication skills, use correct scientific language and carefully framed open-ended questioning techniques to develop thinking skills.
- * exploration of both indoor and outdoor environments linking all areas of learning
- * recognition and extension of their existing knowledge and understanding gained from their home setting.

Key Stage 1

At KS1 pupils observe, explore and ask questions about plants, living things and their habitats, animals including humans, seasons and materials. They begin to work together to gather and record evidence to help them answer questions and to link this to simple scientific ideas. They begin to evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out about more scientific ideas. They share ideas and communicate them using scientific language, drawings, charts and tables with the help of ICT if it is appropriate.

Key Stage 2

At KS2 pupils learn about a wider range of plants, animals including humans, evaluation and inheritance, materials and physical phenomena. They make links between ideas and explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They think about the effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others and can suggest improvements and use findings to raise further questions. They use a range of reference sources in their work. They talk about their work and its significance, using a wide range of scientific language, conventional diagrams, charts, graphs, classification keys and ICT to communicate their ideas.

Planning

Planning takes into account that the school places a high emphasis on the development of pupil's knowledge and skills when working scientifically. In the majority of lessons, the practical scientific methods, processes and skills are taught alongside the knowledge and understanding of the statutory requirements, ensuring that there is equivalent emphasis of the skills, knowledge and understanding.

Teaching and Learning

For KS1 and 2 overall learning objectives are recorded in teachers planning each week. All lessons have clear learning objectives which are shared and reviewed with pupils effectively. A variety of strategies including questioning, discussion, concept mapping and marking are used to assess progress. The information is used to identify what is taught next. Activities are child led, challenging, motivating and extend pupil's learning. Lessons make effective links with other curriculum areas, especially Literacy, Numeracy and ICT. We use ICT widely in science. Children are given the opportunity to practise science skills and enhance their learning using carefully chosen software such as Purple Mash, Espresso and Science clips and videos and resources such as data loggers and microscopes. Activities inspire the pupils to experiment and investigate the world around them and to participate in a range of activities. These include asking questions, locating sources of information, observation, selecting appropriate equipment and using it safely, discussion, planning investigative work, raising ideas and predicting, testing, collecting evidence, measuring and checking results, making comparisons and communicating results and findings.

Cross Curricular Links

Literacy: in particular at KS1, the pupils are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At KS2, the pupils are encouraged to develop their skills of writing to record their planning, what they observe and what they find out. In science, they should be applying their literacy skills at levels similar to those which they are using in their English work.

Numeracy: At both key stages the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their numeracy skills similar to those which they are using in their maths work. Maths vocabulary will be promoted within the science curriculum.

ICT: At both key stages pupils ICT skills are used to locate and research information (Internet, Espresso, access to iPads); record findings (using text, data and tables); log changes to the environment over time (sensing equipment); gain confidence in the use of calculators, digital cameras and recording using the iPads and green screen as well as the computer.

History: At both key stages, the pupils are expected to learn about the scientists that have had an impact on science throughout history, showing how attitudes to scientific phenomenon have changed how we view the world and recognising the implications they have on the future.

Training

All staff, including managerial and student teachers, receive support from the subject leader or technicians. At Bankfields Primary, the Science subject leader will assess and address staff training needs as part of the annual development plan process or in

response to individual needs and requests throughout the year. Individual teachers should attempt to continually develop their own skills and knowledge, identify their own needs and notify the coordinator.

Assessment and Monitoring

Teachers regularly assess capability through observations and looking at completed work. Teachers assess at the end of each unit of work. Judgments are formed through assessing the children's work in science by making informal judgements as we observe the children during lessons. Use of independent child-led tasks, provide opportunities for pupils to demonstrate capability in relation to the term's work. These are often evidenced in the class teachers' floor books, on Seesaw or within the children's science books.

Throughout the academic year, class teachers can use the supporting documentation to establish whether a child has achieved the curriculum intent.

The subject leader is responsible for monitoring the standard of the children's work and the quality of teaching in line with requirements from subject leader meetings, work analysis and lesson observations. The 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. It is the responsibility of the subject leader to monitor the progress of science across the school with reference to specific action points outlined in the Science action plan.

Inclusion/ SEND/ G&T

Planning at all levels ensures that account is taken of race, gender and special educational needs, as well as catering for the range of ability within the class. The pupils work individually, in pairs, as part of a small group and as a whole class each term. They use a variety of means for communicating and recording their work. All pupils, including those with special educational needs undertake the full range of activities and identified children are supported within the group. Children that are gifted and talented are identified and highlighted on the G&T register and are given extension work to challenge their thinking and understanding even further.

Safeguarding and Health and Safety

Safe practice must be promoted at all times. Teachers must take into account any health and safety and child protection issues, particular attention must be given avoiding the use of anything which aggravates individual pupil allergies. Risk assessments are carried out to ensure safety issues have been identified and that specific attention is made when activities are unusual and beyond the scope of normal practice.

Support staff

Educational support staff work as directed by the teacher. They are able to refer to a planning sheet for the particular group with whom they are working, seek additional resources and adapt planning as directed by the class teacher. Guidance regarding

question types and related vocabulary to be used with children are highlighted on differentiated planning sheets.

Parental and Community Involvement

Parents and Governors

Parents are kept informed of activities and children's progress in science through:

- Newsletters
- Family learning days
- Parent consultation evenings and drop in sessions
- End of year reports
- School website

Governors are kept informed of activities and developments in science through:

- Curriculum learning walks
- Meeting with the science coordinator.

Promoting Science

Science weeks - Each year the school holds an interactive Science Week. This offers the opportunity to engage all children in cross curricular approaches to science based activities. Outside agencies and organisations provide links to the greater community and offer a wider experience for children to engage in fun and interesting science themes.

Science clubs - children throughout the school have access to a science club throughout the school year. Each club is level appropriate and focuses on fun, practical experiments that can be completed using everyday resources and equipment.

Family Learning Days - children and their parents have the opportunity to work alongside each other to complete an activity with a science focus and objective.



Science Whole School Overview



Term	EYFS	KS1		KS2			
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn Term	Autumn	Living things and their habitats	Uses of everyday materials	Rocks	States of matter	Earth and Space	Living things and their habitats
	All about me	Plants	Living things and their habitats	Forces	Sound	Forces	Animals Including humans
	Materials	Animals Including humans					
		Changing Seasons					
Spring Term		Materials					
	Winter	Animals Including humans	Animals Including humans	Light	Electricity	Properties of materials	Evolution and Inheritance
	Magnets	Changing seasons		Animals Including humans			
	Floating and Sinking						
Summer Term							
	Animals	Animals Including humans	Plants	Plants	Animals Including Humans	Living things and their habitats	Light
	Plants	Plants				Animals Including humans	Electricity
		Changing Seasons					

Chemistry

Physics

Biology



Science Key Concepts Progression Map



Key Concept	EYFS	KS1		KS2			
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Chemistry	Materials – Whatever Next -Children will understand objects are made from different materials. -Children will identify objects and sort according to their materials: wood, plastic, metal, glass. Winter -Children will understand that water freezes when it gets cold and ice melts when it gets warm	Everyday materials - Children will distinguish between an object and the material from which it is made - Children will identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - Children will describe the simple physical properties of a variety of everyday materials -Children will compare and group together a variety of everyday materials on the basis of their simple physical properties.	Uses of everyday materials - Children will identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - Children will find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Rocks - Children will compare and group together different kinds of rocks on the basis of their appearance and simple physical properties -Children will describe in simple terms how fossils are formed when things that have lived are trapped within rock - Children will recognise that soils are made from rocks and organic matter.	States of matter - Children will compare and group materials together, according to whether they are solids, liquids or gases - Children will observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) -Children will identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Properties and changes of materials - Children will compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - Children will know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - Children will use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - Children will give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - Children will demonstrate that dissolving, mixing and changes of state are reversible changes - Children will explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	

	Autumn -Children will observe the 4 different seasons and the changes in the environment Magnets -Children will recognise that some materials are magnetic and will attract to the magnet. Floating and sinking -Children will recognise that some materials will float in water and some materials will sink.	Seasonal changes - Children will observe changes across the four seasons - Children will observe and describe weather associated with the seasons and how day length varies.		Light - Children will recognise that they need light in order to see things and that dark is the absence of light - Children will notice that light is reflected from surfaces - Children will recognise that light from the sun can be dangerous and that there are ways to protect their eyes - Children will recognise that shadows are formed when the light from a light source is blocked by an opaque object - Children will find patterns in the way that the size of shadows change. Forces and Magnets - Children will compare how things move on different surfaces - Children will notice that some forces need contact between two objects, but magnetic forces can act at a distance -Children will observe how magnets attract or repel each other and attract some materials and not others - Children will 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 - Children will describe magnets as having two poles - Children will predict whether two magnets will attract or repel each other, depending on which poles are facing.	Sound - Children will identify how sounds are made, associating some of them with something vibrating -Children will recognise that vibrations from sounds travel through a medium to the ear - Children will find patterns between the pitch of a sound and features of the object that produced it - Children will find patterns between the volume of a sound and the strength of the vibrations that produced it -Children will recognise that sounds get fainter as the distance from the sound source increases. Electricity - Children will identify common appliances that run on electricity -Children will construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers -Children will identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery -Children will recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit -Children will recognise some common conductors and insulators, and associate metals with being good conductors.	Earth and Space - Children will describe the movement of the Earth, and other planets, relative to the Sun in the solar system - Children will describe the movement of the Moon relative to the Earth -Children will describe the Sun, Earth and Moon as approximately spherical bodies - Children will use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Forces -Children will explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object -Children will identify the effects of air resistance, water resistance and friction, that act between moving surfaces -Children will recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Light - Children will recognise that light appears to travel in straight lines - Children will 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 - Children will 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 -Children will use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Electricity -Children will associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -Children will 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 -Children will use recognised symbols when representing a simple circuit in a diagram.
--	--	--	--	---	---	--	--

	All about me -Children will identify body parts -Children will identify the 5 senses and the corresponding body parts whilst observing changes. Animals -Children will identify and name a range of farm animals and their young -Children will understand the term life cycle - observing changes and growth over time and the process of life. Plants -Children will identify and name different fruits and vegetables and what they need to grow.	Plants -Children will identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. -Children will identify and describe the basic structure of a variety of common flowering plants, including trees. Animals including humans -Children will identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. -Children will identify and name a variety of common animals that are carnivores, herbivores and omnivores - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Plants -Children will observe and describe how seeds and bulbs grow into mature plants. -Children will find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Animals including humans -Children will notice that animals, including humans, have offspring which grow into adults. -Children will find out about and describe the basic needs of animals, including humans, for survival (water, food and air). -Children will describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Living things and their habitats -Children will explore and compare the differences between things that are living, dead, and things that have never been alive -Children will identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other -Children will identify and name a variety of plants and animals in their habitats, including micro-habitats -Children will describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	Plants -Children will identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers -Children will 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 -Children will investigate the way in which water is transported within plants -Children will explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Animals including humans -Children will 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. -Children will identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Animals including humans -Children will describe the simple functions of the basic parts of the digestive system in humans -Children will identify the different types of teeth in humans and their simple functions -Children will construct and interpret a variety of food chains, identifying producers, predators and prey. Living things and their habitats -Children will recognise that living things can be grouped in a variety of ways -Children will explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment -Children will recognise that environments can change and that this can sometimes pose dangers to living things.	Animals including humans -Children will describe the changes as humans develop to old age. Living things and their habitats -Children will describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird -Children will describe the life process of reproduction in some plants and animals.	Animals including humans -Children will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -Children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function -Children will describe the ways in which nutrients and water are transported within animals, including humans. Living things and their habitats -Children will describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. -Children will give reasons for classifying plants and animals based on specific characteristics. Evolution and Inheritance -Children will recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. -Children will recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents -Children will identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
--	--	--	--	--	--	--	---

Working Scientifically	- Children will ask simple questions and investigating practically to find the answer. - Children will make simple observations and discussing what they can see. - Children will sort and group, making simple predictions. - Children will record and collect information.	-Children will ask simple questions and recognise that they can be answered in different ways. - Children will observe closely, using simple equipment - Children will perform simple tests. - Children will identify and classify, using their observations and ideas to suggest answers to questions -Children will gather and record data to help in answering questions.	- Children will ask simple questions and recognise that they can be answered in different ways. - Children will observe closely, using simple equipment. -Children will perform simple tests. -Children will identify and classify, using their observations and ideas to suggest answers to questions by gathering and recording data to help in answering questions.	- Children will ask relevant questions and using different types of scientific enquiries to answer them -Children will set up simple practical enquiries, comparative and fair tests. -Children will make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. -Children will gather, record, classify and present data in a variety of ways to help in answering questions. - Children will record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -Children will report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -Children will use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. -Children will identify differences, similarities or changes related to simple scientific ideas and processes. -Children will use straightforward scientific evidence to answer questions or to support their findings.	-Children will ask relevant questions and using different types of scientific enquiries to answer them. -Children will set up simple practical enquiries, comparative and fair tests -Children will make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. -Children will gather, record, classify and present data in a variety of ways to help in answering questions. -Children will record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -Children will report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -Children will use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. -Children will identify differences, similarities or changes related to simple scientific ideas and processes. -Children will use straightforward scientific evidence to answer questions or to support their findings.	-Children will plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. -Children will take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -Children will record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -Children will use test results to make predictions to set up further comparative and fair tests -Children will report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. -Children will identify scientific evidence that has been used to support or refute ideas or arguments.	-Children will plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. -Children will take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Children will record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -Children will use test results to make predictions to set up further comparative and fair tests. -Children will report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. -Children will identify scientific evidence that has been used to support or refute ideas or arguments.
------------------------	---	--	---	--	---	--	--