Elburton Primary School

Science Policy

February 2020	Policy Agreed
February 2022	Policy Review Date
June 2022	Policy Amended
September 2022	Policy Agreed
July 2024	Policy Review Date
Date	**Description**

Contents

1. Subject Statement

Intent

Elburton Primary School follows the 2014 national curriculum for science and aims to ensure that **all pupils**:

- Develop scientific knowledge and conceptual understanding through the science 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 and relevant scientific vocabulary to understand the uses and implications of science, today and for the future.

At Elburton Primary School, we believe that a high-quality science education provides children with the foundations for understanding and exploring the world and natural phenomena that occur around them.

As teachers of science, we aim to encourage a genuine passion for scientific knowledge and enquiry while harnessing children's natural excitement and curiosity. Science has changed our lives in ways that previously we could only have imagined and it is vital to the world's future prosperity that we inspire and cultivate the next generation of inquisitive and ambitious scientific learners. We want our pupils to be empowered to think creatively, rationally and critically and to be able to hypothesise, test, present and reflect on scientific ideas in light of their own findings or those gained from others.

At Elburton Primary School, we aim to nurture a love for the natural world and promote respect for everything in it, encompassing both the living and non-living elements. We aim to inspire and excite children for future possibilities in the scientific world; we encourage them to be active learners who take ownership of their own learning.

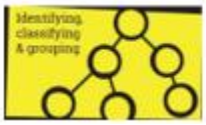
"Inspiring today's children for tomorrow's world"

Implementation

All teachers at Elburton Primary School aim to promote the children's science capital. We share positive attitudes to science learning and reinforce the idea that everyone is a scientist; all pupils are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science is as follows;

- All year groups follow the objectives specified in the 2014 science national curriculum. These aim to develop the children's scientific knowledge and conceptual understanding through the disciplines of biology, chemistry and physics.
- Science is taught on a weekly basis for a minimum of 1 hour and is planned, taught and arranged in topic blocks by the class teacher. Each lesson builds upon the last to ensure that children achieve a greater depth of understanding and knowledge is transmitted to their long term memory. Prior learning is regularly revisited through quizzes and games to ensure that knowledge is secure in order to secure good progression and to address any significant misconceptions.
- All scientific learning is recorded in a separate science book. Practical tasks are sometimes recorded through pictures which are then shared in a whole-class floor book or on Tapestry (Foundation and Year 1).
- The children have plenty of opportunities to work independently, as well as collaboratively in mixed ability groups. The children are encouraged to communicate with one another and share their findings while reasoning and explaining.

- At Elburton Primary School, all teachers have access to a knowledge progression map which shares the knowledge, vocabulary and skills that the children need to know or use in each year group (see Appendix 1). Each class teacher is familiar with this and uses it to develop the knowledge and skills that the children have acquired from the previous year. As the children's knowledge and understanding develops, they become more proficient in their use of scientific vocabulary and in use of scientific equipment. They also become more confident in recording and interpreting their own data and forming their own predictions and conclusions.
- Knowledge organisers are used at the beginning of each unit to expose children to new scientific vocabulary. Teachers refer back to these throughout the science topic and use them as a learning tool; they often are used in quizzes and in games. The children use these for support and when quizzing a peer on their understanding. They are expected to use the key scientific terminology and spell these words correctly in their work.
- The working scientifically objectives are embedded throughout our science teaching and are not taught discreetly. We use clear symbols which make this explicit to the children. These are also displayed in each classroom.




  All teachers continually seek ways to work scientifically and ensure that there are a range of activities that exercise each skill throughout each science topic. All children are encouraged to problem solve and apply their knowledge to find out the answer themselves.
  These working scientifically skills are developed throughout their time at Elburton Primary School and teachers explicitly model thought processes and the use of a greater range of scientific equipment as the children move through the key stages.
- The children are encouraged to ask questions and are given opportunities to use their scientific skills to research and discover the answer. Curiosity is regularly celebrated and promoted within the classroom.
- Wherever possible, the children are offered a wider range of extra-curricular activities, visits or trips to complement and broaden the curriculum. There is a clear purpose and link to the knowledge taught in class. E.g. In the past we have had local links to zoos and conservation parks, links to the National Marine Aquarium and with the Plymouth Marine Laboratory. As a school, we aim to make more use of local links and specialists to enrich the children's scientific experiences.
- We aim to enrich the children's science experiences through extra-curricular activities in the form of lunch time and after school clubs. As a school, we have had outside professionals in to teach this, along with our own staff who have worked with the children to gain their CREST science awards. Regular events such as British Science Week also allow the children a broader provision and the opportunity to apply their knowledge and skills.
- Teachers continually seek ways to enrich the children's scientific experiences and knowledge and science can be seen to be celebrated throughout the week through resources such as 'Reachout reporter' and 'Explorify'.

Impact

The children at Elburton Primary School receive a high quality science education that equips them with the scientific knowledge, vocabulary and skills that enable them understand the world that they live in. They are able to make links to the wider curriculum areas including Maths, Design and Technology and Computing and are able to recognise how scientific advances have helped shaped the world as we know it today. Our children are able to appreciate the importance of science and can speak positively about their learning experiences. They are genuinely excited to speak about topical issues in science and they demonstrate a hunger to explore scientific phenomena. Our children at Elburton Primary School are curious, motivated learners who all see themselves as scientists. They are proud of their learning and are eager to share and celebrate this with others.

2. Teaching & Learning

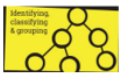
Throughout our science lessons at Elburton Primary School we:

- As teachers, aim to create engaging lessons which promote a love of science.
- Plan opportunities for the children to work collaboratively as well as independently.
- Aim to plan lessons that develop conceptual knowledge as well as working scientifically components.
- Use relevant and age-specific scientific vocabulary.
- Encourage and celebrate curiosity. The children are encouraged to ask questions and take ownership over their own research and learning.
- Continually assess the children's understanding of key scientific concepts and vocabulary using precise and targeted questioning.
- Encourage children to become confident in using a variety of scientific equipment to help them with their conceptual understanding of science.
- Try to incorporate outdoor learning into our lessons wherever possible so that children have an appreciation of their local environment.
- Aim to promote spoken language. Our science lessons provide subject-specific vocabulary. Teachers provide children with the opportunity to articulate scientific concepts clearly while using scientific vocabulary confidently and accurately.

Organisation

Science is taught for a minimum of an hour each week and is planned and arranged into key topic blocks. There are five topics (four for Year 1 and 2) that can be covered at any point during the year. The three different science disciplines are highlighted in different colours.

Chemistry Biology Physics

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
	     Working Scientifically						
Biology	Plants	Plants	Plants	Plants			
	Living things (Animals Including Humans)	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans
	The Environment (places)		Living Things and their Habitats		Living Things and their Habitats	Living Things and their Habitats	Living Things and their Habitats
							Evolution and Inheritance
Chemistry	Everyday Materials and their properties	Everyday Materials	Uses of Everyday Materials			Properties and Changes of Materials.	
				Rocks			
					States of Matter		
Physics	Basic scientific concepts e.g. gravity, floating and sinking	Seasonal Changes				Earth and Space	
				Light			Light
				Forces and Magnets		Forces	
					Sound		
					Electricity		Electricity

There are some topics that are repeated in each year group. The children's knowledge is built upon each year. For a more detailed breakdown of what is covered in each topic for each year group, please see the subject progression document in Appendix 1.

3. Working Scientifically

'Working scientifically' is described separately in the National Curriculum programme of study for science. However, these specific skills are not taught in insolation. At Elburton Primary School, 'working scientifically' is taught through and is clearly related to the teaching of substantive science. Our teachers continually look for ways in which these scientific skills and particular methods can be taught and embedded into our lessons.

EYFS

Our Foundation Stage deliver science learning through the 'Understanding of the World' strand of the EYFS curriculum and are exposed to high quality continuous provision. The children are guided to make sense of their physical world and their local community through exploring, observing and researching, people, places, technology and the environment.

Key Stage 1

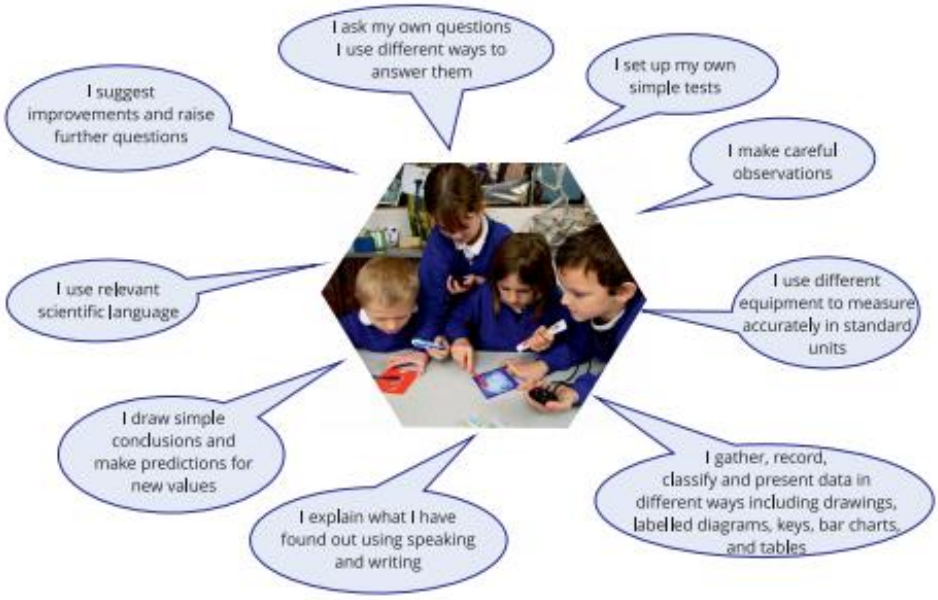
The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. Our learners are encouraged to be curious and ask questions about what they notice. They develop their understanding 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 begin to use simple scientific language to talk about what they have found out and they start to communicate their ideas, in a variety of ways. Lots of the children's learning occurs through first-hand practical experiences but appropriate secondary sources, such as books, photographs and videos are also used to support this.

Our children are able to read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge.

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. Our children do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments. They also develop their ideas about functions, relationships and interactions. They are able to 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 are able to draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Our children are able to read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.

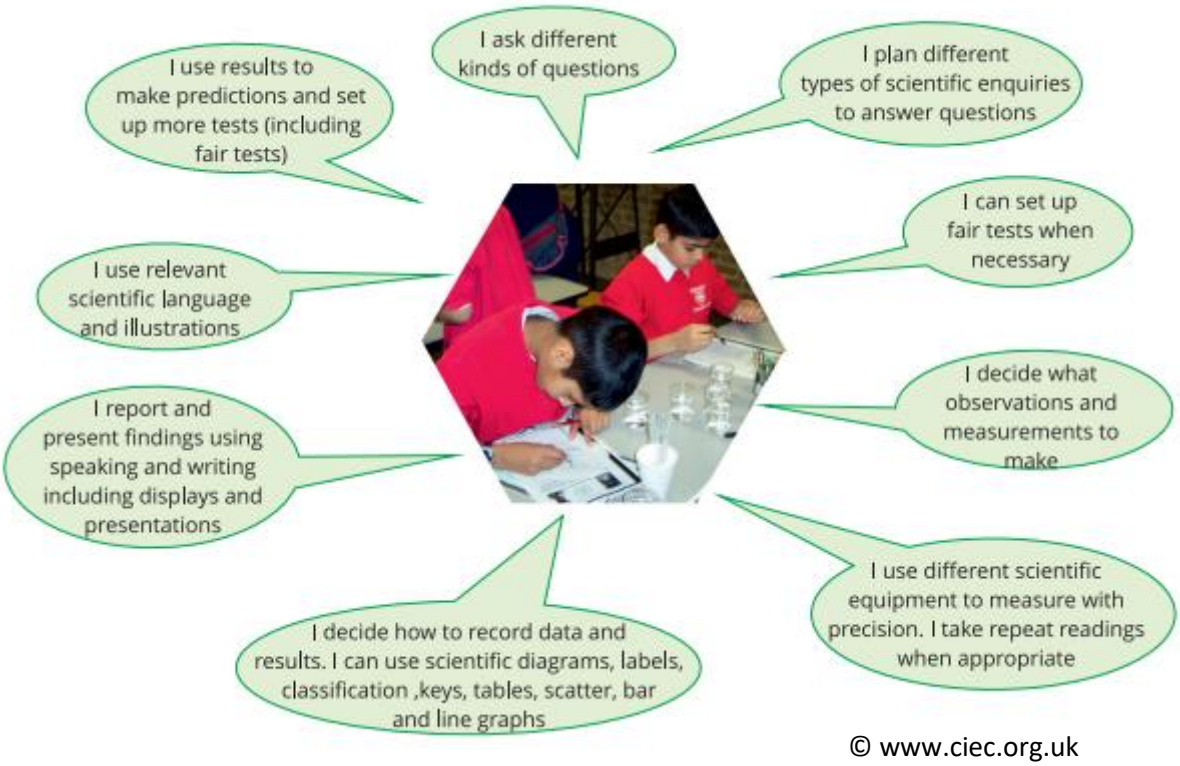


Upper Key Stage 2

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. Our children are able to explore and talk about their ideas; asking their own questions about scientific phenomena. They are also able to analyse functions, relationships and interactions more systematically. Our upper key stage 2 children encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates and they begin to recognise that scientific ideas change and develop over time.

Our children are able to 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. They 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.

Our upper key stage 2 children can read, spell and pronounce scientific vocabulary correctly.



For a more detailed breakdown of these key 'working scientifically' skills in each year group, please see the working scientifically progression document in Appendix 2.

4. Planning

Class teachers take ownership of their planning for their year group and use the National Curriculum science programme of study along with the children's ideas to inform their teaching. As a school, we do not follow a specific scheme although the key knowledge and skills of each science topic is informed by the Associate of Science Education's planning matrices. Our teachers use various resources to help them with their planning and they are able to access further support from 'Reach Out', 'Oden Trust' and the 'National Stem Centre' in line with national pedagogy.

Planning and teaching resources are monitored termly by the science subject coordinator and a member of the school leadership team in line with our school progression maps and the National Curriculum programme of study.

4. Resources

We have sufficient, high-quality science resources to aid and support the teaching of all science topics that are taught from EYFS to Year 6. These are labelled and assigned into different topic boxes that are kept in a central store area where they are easily accessible to all staff. Our EYFS team also have various resources that are kept in their area to promote exploration during continuous provision.

As a school, we also have links to the Plymouth Science Hub and the Phiz Lab at Mount Wise Primary School which have topic boxes that can be loaned. Each class also have access to LearnPads and/or Chromebooks to aid children with their independent research. These are used in conjunction with the ICT suite, along with the school and class library areas which contain a good supply of science topic books.

5. Assessment

At Elburton Primary School, we continually monitor the children's science understanding and this is used to inform future teaching and learning. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study as set out in the National Curriculum statutory guidance. We also draw on the non-statutory requirements to extend our children's thinking and to give a wider breadth of knowledge.

Our children receive frequent and effective feedback through teacher assessment, both orally and through written feedback in line with our school's marking policy. This is directly related to the learning objective that is shared with the children during the course of the lesson. Evidence can also be seen of 'deeper thinking questions' which require our children to think, apply their knowledge or skills and respond.

Assessment for learning is continuous throughout our planning, teaching and learning cycles. We also use the Primary STEM science quizzes at the end of a unit to assess their understanding and application of knowledge. This is used in conjunction with a variety of other methods which include:

- Observing children at work, individually, in pairs, in a group and in class.
- Questioning, listening and holding discussions with children
- Considering how children work scientifically using TAPS curriculum resources and assessing their understanding of the use of different equipment, materials and how they approach and investigate key questions.

As a school, we use a range of methods to elicit prior knowledge before a science unit is taught. One way that we do this is through concept cartoons. We assess the children's 'sticky knowledge' and identify potential misconceptions and ensure that these are explored and addressed. Our programme of study is responsive to the children's starting points, as well as their own scientific interests. Our knowledge organisers also specify key vocabulary and 'sticky knowledge' and the children are encouraged to continually self-assess against this.

At the end of a unit of work, the teachers use the Association of Science planning matrices, as well as our school progression maps and national exemplification documents to make a judgement on each child's understanding. Outcomes of the children's work are used to provide further evidence of their science learning and knowledge acquisition.

6. Equal Opportunities

At Elburton Primary School we are committed to ensuring that everyone in our school is treated with respect and dignity. All children are provided with a fair and equal entitlement to all scientific activities, experiences and opportunities regardless of their ethnicity, gender, cultural background, special educational needs or disability.

7. Inclusion

All teachers at Elburton Primary School aim to make our science lessons inclusive and accessible to all children. They set suitable learning challenges, respond to pupils' diverse learning needs and look for ways to overcome potential barriers to learning and assessment for particular individuals and groups of pupils. We stand by the statement 'every child is a scientist' and it is our duty to minimise and reduce barriers to learning wherever possible so that all pupils are engaged and able to achieve success in all areas of the curriculum.

We work hard to:

- Maintain an inclusive learning environment considering sound and light issues, seating arrangements, resources, displays and practical areas.
- Achieve a multi-sensory approach to learning considering pupils' preferred learning styles. When teaching, we consider visual, tactile, auditory and kinaesthetic approaches. For recording, alternatives to written methods are offered including: drawing, scribing, word processing, mind maps, pictures, video, voice recordings etc.
- Use ICT to support teaching and learning
- Achieve effective communication between adults and children ensuring that language is clear, unambiguous and accessible. Visual aids are also used to support this.

Children with special educational needs or disabilities are identified and are carefully monitored by the class teacher and senior leadership team in our termly pupil progress meetings. Teachers reflect on their specific learning needs and carefully consider these when planning their science lessons. Every child works to the same objective. In most cases, pupils with SEN and/or disabilities will be able to take part in the same activity as their peers. In others, some modifications or adjustments are made. For example, the way that they record their learning may look slightly different. Some children with identified needs, such as behaviour difficulties, may benefit from changes to activities, support from others or rest breaks. Class teachers work in line with our school SENCO and other support specialists to ensure that all children are appropriately supported. We work in line with the school's 'Special Educational Needs and Disabilities' policy.

8. The Role of the Subject Leader

The science subject leader is responsible for the following

Keeping up to date with developments in the subject

The science lead will attend regular, termly science hub meetings and conferences which provide guidance on new developments in the subject which impact teaching and learning. This is in addition to research online from recommended science associations. These developments along with relevant resources or new documentation will be shared with the staff as a whole during INSET training sessions throughout the year.

Support colleagues with their planning and teaching

The science lead will support teachers with their planning and teaching and offer time to any colleagues requiring any support in these areas. The science lead will also provide resources to help support colleagues with this. The science lead has ensured that all teachers have access to CPD courses to help ensure subject knowledge is strong across the school.

Science resources

The science lead will ensure that there are sufficient and appropriate resources to teach the different science topics throughout the school. The science resources are organised into labelled boxes so that they are easily accessible to other teachers. These resources are all stored centrally in the science cupboard in the KS2 area. The science lead will liaise with the staff to ensure that this area remains well equipped. If the school does not have access to a particular resource, we have links to the Plymouth Phiz Lab which can loan resources to us, along with links to the Ogden Trust. The science lead can arrange this for the staff to use.

Monitoring the standard of science throughout the school

The science lead strives to ensure that teachers are dedicated to improving the standards of science and it is being taught effectively throughout the school, in line with Elburton Primary School's progression maps and the 2014 National Curriculum. The science lead will implement new strategies and will provide teachers with a clear focus in line with school improvement plans and advances to the subject area.

The science lead will assess the impact of the aforementioned and INSET training in the following ways:

- Through termly science learning walks with a member of SLT
- Through termly planning / flipchart scrutiny
- Through detailed auditing and analysis of all aspects of children's work in both exercise books, floor books and displays
- Through interviews conducted with groups of children in the school or through pupil voice surveys.

Providing feedback to the head teacher/ governors

The science lead is responsible for feeding back to the head teacher about the how science is being taught across the school and the impact that this is having. When necessary, the science lead will also provide feedback to the school governors via a presentation or through a report.

Appendix 1: Elburton Primary School's topic map and progression of knowledge.

ELBURTON PRIMARY SCHOOL

Elburton Primary School Science Coverage Map

	EYFS	Y1	Y2	Y3	Y4	Y5	Y6
	    						
	Working Scientifically						
Biology	Plants	Plants	Plants	Plants			
	Living things (Animals Including Humans)	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans	Animals Including Humans
	The Environment (places)		Living Things and their Habitats		Living Things and their Habitats	Living Things and their Habitats	Living Things and their Habitats
							Evolution and Inheritance
Chemistry	Everyday Materials and their properties	Everyday Materials	Uses of Everyday Materials			Properties and Changes of Materials.	
				Rocks			
					States of Matter		
Physics	Basic scientific concepts e.g. gravity, floating and sinking	Seasonal Changes				Earth and Space	
				Light			Light
				Forces and Magnets		Forces	
					Sound		
					Electricity		Electricity

		KS1	
		Y1 Pupils should be taught to:	Y2 Pupils should be taught to:
Biology	Plants	• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees.	• observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
	Animals, including humans	• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • 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.	• notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.
	Living things and their habitats		• explore and compare the differences between things that are living, dead, and things that have never been alive. • 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 • identify and name a variety of plants and animals in their habitats, including micro-habitats • 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.
Chemistry	Everyday materials	• distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties	

	Uses of everyday materials		• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
Physics	Seasonal changes	• observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies	

		Lower KS2	
		Y3 Pupils should be taught to:	Y4 Pupils should be taught to:
Biology	Plants	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • 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 • investigate the way in which water is transported within plants. • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	
	Animals including humans	• 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions. • construct and interpret a variety of food chains, identifying producers, predators and prey
	Living things and their habitats		• recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things.
Chemistry	Rocks	• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter.	
	States of Matter		• compare and group materials together, according to whether they are solids, liquids or gases • 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) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
Physics	Light	• recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change.	

	Sound		• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases.
	Forces and Magnets	• compare how things move on different surfaces • notice that some forces need contact between two objects but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others. • 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 • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing.	
	Electricity		• identify common appliances that run on electricity • construct a simple series electrical circuit identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • 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 • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors

		Upper KS2	
		Y5	Y6
Biology	Animals including humans	• describe the changes as humans develop to old age	• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans
	Living things and their habitats	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	• 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 • give reasons for classifying plants and animals based on specific characteristics
	Evolution and inheritance		• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Chemistry	Properties and changes of materials	• 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 • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • 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.	
Physics	Light		• recognise that light appears to travel in straight lines • 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 • 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 • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	Electricity		• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

			• 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. • use recognised symbols when representing a simple circuit in a diagram.
	Forces	• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
	Earth and Space	• describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and that apparent movement of the sun across the sky.	

Appendix 2: Elburton Primary School's working scientifically progression map.

			EYFS	KS1		Lower KS2		Upper KS2	
				Y1	Y2	Y3	Y4	Y5	Y6
WORKING SCIENTIFICALLY	PLAN	Planning	• Ask simple questions about the world around them.	• asking simple questions and recognising that they can be answered in different ways		• asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests		• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
	DO	Observing / obtaining evidence	• Make simple observations using simple equipment. • Use the five senses to explore.	• observing closely, using simple equipment • performing simple tests • identifying and classifying		• making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers		• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate	
		Recording	• Create simple representations of people and objects.	• gathering and recording data to help in answering questions		• 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		• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	
	REVIEW	Concluding	• Note key similarities and differences.	• using their observations and ideas to suggest answers to questions		• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • identifying differences, similarities or changes related to simple scientific ideas and processes • Using straightforward scientific evidence to answer questions or to support their findings		• reporting and presenting 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.	
		Evaluating	•Start to think about why things happen.	• Using their findings, suggest simple follow up tests or things they could test differently next time.		•using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.		• using test results to make predictions to set up further comparative and fair tests. • identifying scientific evidence that has been used to support or refute ideas or arguments	