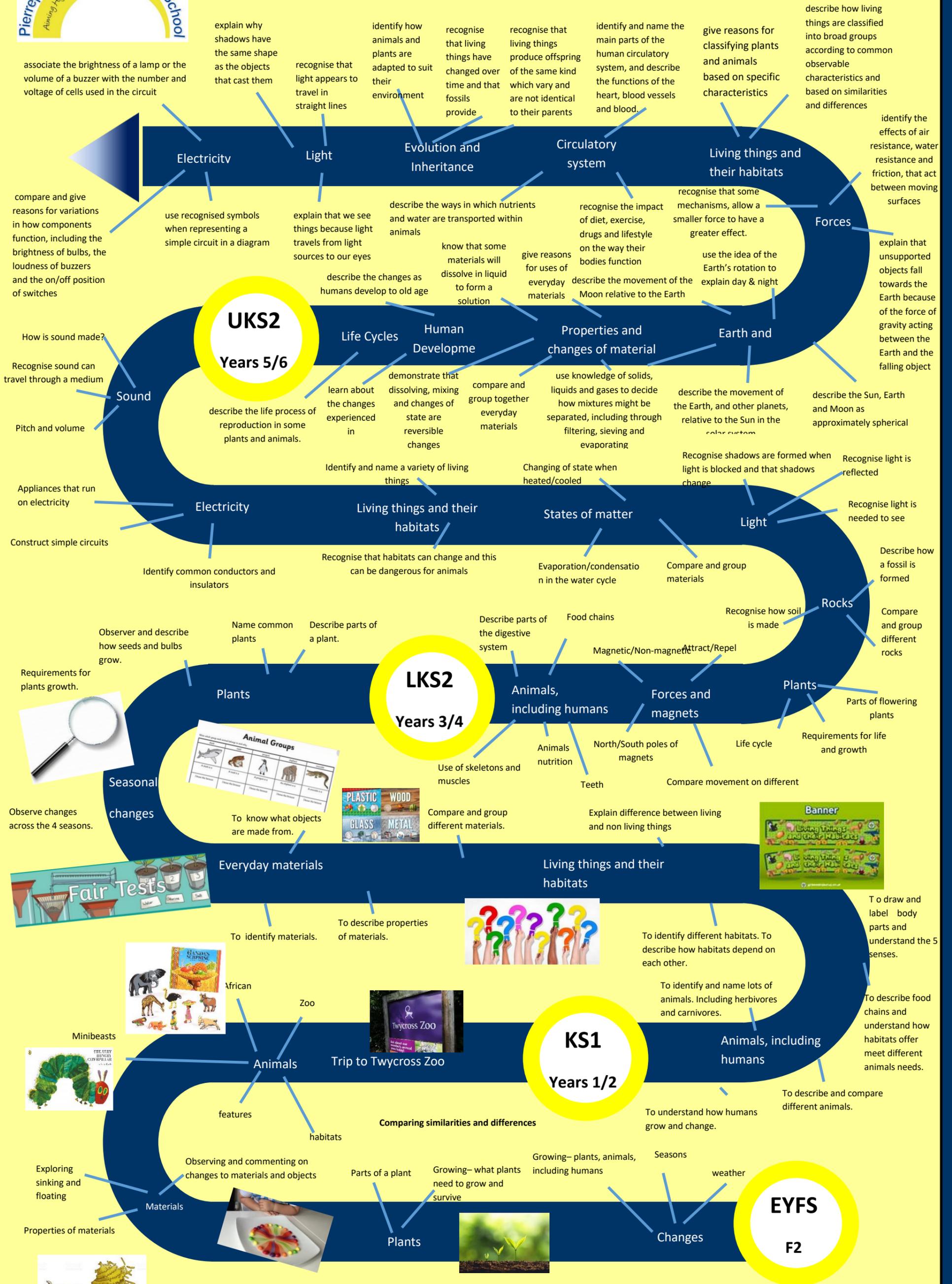


# PGPS - Science Learning





# Pierrepoint Gamston Primary School

## Science Policy

### Introduction (adapted from National Curriculum)

At Pierrepoint Gamston Primary School, science education provides the foundations for understanding through the specific objectives of working scientifically and the specific disciplines of biology, chemistry and physics. Children are taught essential aspects of the knowledge, methods, processes and uses of science and are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. Children develop understanding of the nature, processes and methods of science through different types of science enquiries. Children are encouraged to understand how science can be used to explain what is occurring, predict how things will behave and analyse causes. Furthermore, they are equipped with the scientific skills required to understand the uses and implications of science, today and for the future.

### Values

Our school curriculum is underpinned by the values that we hold dear. In our school, everyone is equally valued and treated with respect. We believe that everyone is made in the image of God, which means that everyone has an equal opportunity to achieve and will be challenged and supported to ensure that they continue to grow and learn within all areas of the curriculum.

### Intent

- Children develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Children develop an understanding of the nature, processes and methods of science through varied opportunities for working scientifically that help them to answer scientific questions about the world around them.
- Children are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Children will use topic specific vocabulary (appendix 2) to support their knowledge and understanding in science and opportunities to work scientifically.

### Implementation across the school

Across school, we use the 'Snap Science' scheme to plan and deliver our science lessons.

### Foundation Stage

- In the foundation stage, science skills are introduced through the specific area of 'Understanding the World'. Children are encouraged to notice and discuss changes within their own environment and make comparisons with other environments. This learning is delivered

through adult lead carpet sessions and also during continuous provision, where children develop their own lines of enquiry. Adults 'Look, Listen, Note' children's comments and then plan accordingly, using the Development Matters objectives, to further develop their knowledge and understanding.

### Key stage 1

- In key stage 1, children experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. Children use different approaches to working scientifically to develop their understanding of scientific ideas in order 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.

### Lower key stage 2

- In lower key stage 2, children broaden their scientific view of the world around them. Children explore, talk about, test and develop ideas about everyday phenomena and the relationships between living things and familiar environments and begin to develop their ideas about functions, relationships and interactions. Children are encouraged to ask their own questions about what they observe and make some decisions about which approach to working scientifically is likely to be the best way 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.

### Upper key stage 2

- In upper key stage 2, children develop a deeper understanding of a wide range of scientific ideas. Children explore and talk about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. Children encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.
- In year 5 and 6, children develop a greater range of skills associated with working scientifically. For example, taking measurements, using a range of scientific equipment with increasing accuracy and precision, recording data and results of increasing complexity using scientific diagrams and labels, using test results to make predictions and to set up further comparative and fair tests.
- There is a yearly overview, for each year group, which ensures that science skills are taught throughout each topic. For some year groups, this operates on a two year cycle.

Throughout the school, teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards in science. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. There is a yearly Science Week, to provide broader provision and greater acquisition and application of knowledge and skills within the science curriculum. Furthermore it is an opportunity to celebrate Science learning throughout our school.

### **Assessment**

Children's progress is continually monitored throughout science learning at Pierrepoint Gamston Primary School. Working scientifically objectives and 'I can statements' linked to the national curriculum are evident on Science planning and within pupils' books. At the end of each term, the outcome of these objectives are recorded on an assessment spreadsheet to monitor progress and attainment for each child. Throughout Science lessons, children receive effective feedback and formative assessment is used to inform future planning so the subject is responsive to the children's starting points and enables teachers to plan to the pupils' specific interests.

### **Children with Special Educational Needs and Disabilities**

We make appropriate provision to overcome all barriers to learning and ensure pupils with SEN have full access to the National Curriculum, as stated in our SEN policy. We adapt planning and always provide additional resources or support for children with special needs. This may be in the form of adaptations, differentiation by outcome, intervention, adult support or a personalised curriculum.

### **Subject leader role**

The role of a subject leader is to:

- Provide strategic lead and direction for a specific subject
- Support and offer advice to colleagues on issues related to the subject
- Monitor pupil progress in that subject area
- Provide efficient resources management for the subject

It is the role of each subject leader to keep up to date with developments in their subject, at both national and local level. They review the way the subject is taught in school and plan for improvement. This development planning links to whole school objectives. Each subject leader reviews the curriculum plans for their subject, ensures that there is full coverage of the National Curriculum and that progression is planned into programmes of study.

### **Monitoring and Review**

- Class teachers are responsible for the day to day planning, organisation and delivery of the curriculum subject.
- Subject leaders monitor the way their subject is taught throughout school and feedback to SLT and whole school where appropriate.
- The allocated Governor is responsible for liaising with subject leaders to closely monitor the way the school teaches each subject.

Date: February 2022

Review date: Autumn 2023

Appendix 1: Science Topics Overview

Appendix 2: Science vocabulary sheet

Appendix 1-

**Science Overview**

Term	Year 1/2 Cycle A	Year 1/2 Cycle B	Year 3/4 Cycle A	Year3/ 4 Cycle B	Year 5/6 Cycle A	Year 5/6 Cycle B
Autumn 1	Animals, including humans (Using our senses)  Seasonal Changes	Animals, including humans (Growing up and Take Care)  Seasonal Changes	States of Matter  (In a state)	Rocks (Rock detectives)	Animals including humans (Circle of life)	Evolution and Inheritance (Everything Changes)
Autumn 2	Everyday Materials  Seasonal Changes	Everyday Materials- (Good Choices Shaping Up)  Seasonal Changes	Electricity (Switched on)	Magnets and forces (The power of forces)	Forces (Feel the force)	Electricity (Danger! Low voltage)
Spring 1	Plants (Our Changing World: plants)  Seasonal Changes- (Our Changing World: sensing seasons)	Everyday Materials- (Good Choices, Shaping Up)  Seasonal Changes	Sound (Good vibrations)	Animals including humans (Amazing bodies)	Space (Earth and Beyond)	Animals including humans (Body Pump)
Spring 2	Plants (Plant detectives)  Seasonal Changes	Plants- (The apprentice gardener)  Seasonal Changes	Our Changing World	Animals including humans (Amazing bodies)	Space (Earth and Beyond)	Animals including humans (Body Health)
Summer 1	Animals, including humans (Our Changing World: Animal Antics)  Seasonal Changes	Living things and their habitats- (Our Changing World) Seasonal Changes	Human Impact	Plants (How does your garden grow)	Properties and changes of materials (All change and Marvellous Mixtures)	Living things in their habitats (The Nature Library)

Summer 2	Animals, including humans Looking at animals Seasonal Changes	Living things and their habitats- (What's in your habitat?) Seasonal Changes	Animals including humans (Where does our food go?)	Light (Can you see me?)	Living things and their habitats (Reproduction in plants and animals)	Living things in their habitats (Our Changing World)
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## Appendix 2-

## Science Vocabulary Progression

	Working Scientifically	Animals including humans	Plants Living things and their habitats	Materials forces and states of Matter	Electricity, Light and Sound	Unique topics: Rocks, Space, Evolution and Inheritance
R	Question, answer, sort, describe.	Fish, birds, pets, human, plants, meat, head, leg, eyes, neck, knees, hair, face, shoulders, elbow, teeth, mouth, face body	Tree, plant, seed, fruit, vegetable, leaf, trunk, flower.	Wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil.		
KS1	Observe, observing, equipment, identify, classify, compare.	Reptiles, amphibians, herbivore, omnivore, mammals, carnivore, senses, nose, smell, tongue, taste, eyes, vision, skin, touch, ears, hearing.	Wild plant, garden plant, deciduous, evergreen, root, bud, petal, blossom, stem, bulb	, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy,		
	Diagram, chart, map, data, contrast, biology, chemistry physics, group, record.	Offspring, hygiene, nutrition, reproduce, pupa, caterpillar, butterfly, spawn, tadpole, frog, baby, toddler, child, teenager, adult.	Temperature, germination, habitat, dead, alive, living, non-living, microhabitat, food, food chain, leaf litter.	waterproof, absorbent, material, properties, squashing, bending, twisting.		
LKS2	relevant questions, scientific enquiry, comparative and fair test, careful observation, accurate measurements. Thermometer, gather, present, predictions.	Nutrients, carbohydrates, protein, fats, fibre, minerals, vitamins, joints, endoskeleton, exoskeleton, skeleton, joints, vertebrate, invertebrate, hinge joint, socket joint, gliding joint, contract, retract, muscle.	Fertiliser, pollination, seed, formation, seed dispersal, pollen, nutrition, support.	Force, magnetic, magnet, attract, repel, poles, North, South.	Light, sunlight, artificial, natural, dark, reflect, shadow.	Rocks, soil, sedimentary, igneous, metamorphic, crystal, stone, gem, volcanic, fossil, grain.
	data logger, classify, construct, interpret, secondary sources, conclusions differences similarities changes,	Digestion, saliva, oesophagus, stomach, acid, enzymes, intestine colon, incisors, molars, producer, prey, consumer.	Environment, non-flowering, flowering, human impact, population, negative, positive, deforestation, ecologically, development.	Solid, solidify, evaporate, condense, changing state, condensation, evaporation, liquid, gas, water vapour.	Electricity, circuit, cell, wire, appliance, conductor, insulate, insulator, switch, bulb, buzzer, vibrate, vibration, volume, pitch.	
UKS2	Repeat readings, accuracy, measurements, classification keys, tables, scatter graphs, bar graph and line graphs, identify, classify and describe patterns	Puberty, life cycle, gestation, foetus, adolescence, fertilisation.	Sexual, asexual, life process, animal naturalist, animal behaviourist, similarity, difference, prehistoric.	Gravity, decelerate, accelerate, air resistance, mechanism, air resistance, friction, transparency, thermal, conductor, electrical, dissolve, solubility, solution, insulation, conductivity.		Earth and Space, geocentric, moons, solar system, rotate, axis, planets, stars, heliocentric, hemisphere, spherical, elliptical, crescent, orbit.
	Variables, precision, conclusions, causal relationships, explanations, systematic quantitative measurement, support, refute ideas or argument.	Internal organs, heart, lungs, liver, kidney, brain, circulatory system, blood vessels, digest, digestion, substance, drugs, alcohol.	Classify, classification, organism, compare, phylum, microorganism, species, characteristic.	Quantitative.	Series circuit, parallel circuit, voltage, motor, amp, watt, light source, opaque, translucent.	Evolution and Inheritance. Evolution, adaptation, inherited trait, adaptive trait, natural selection, DNA, genes, genetic, variation, fossil, fossilisation.