VALENCE PRIMARY SCHOOL
Subject Progression Grid

Science Progression Grid

At Valence Primary School, our science curriculum intends to provide every child with the tools and scientific knowledge needed to enable them to think and act scientifically. We aim to nurture and grow their natural curiosities and foster a sense of wonder and excitement about natural phenomena, whilst developing their understanding of how science effects and changes the world we live in.

P.R.A.I.S.E Pride Respect Achievement Independence Success Enjoyment

Nursery	Reception	Year 1	Year 2	Year3	Year4	Year 5	Year 6
Key Vocabulary							
animal	Stomach	season	habitat	pollination	vertebrate	reproduction	microorganism
material	chest	temperature	microhabitat	dispersal	invertebrate	anther	fungi
plastic	back	deciduous	food chain	stigma	species	fertilisation	circulatory
wood	wrist	evergreen	predator prey	style	digestion	gestation hormone	system
plant	shoulder	fruit	producer climate	stamen	oesophagus	nerves	oxygenated
seed	elbow	bulb trunk	minerals	pollen	colon	organ	artery
grow	ankle	amphibian	vitamin	nutrition	intestine	puberty	vein evolution
caterpillar	hip	reptile	germination	muscles	canines	soluble	inheritance
Lava	waist	fish	extinct	ligament	molars	insoluble	adaptation
egg	bone	mammal	life cycle	skull spine	incisors	solute	variation
butterfly	melting	bird	offspring	sternum	solid	solvent	artificial
float	freezing	carnivore	hygiene	pelvis	liquid	galaxy	selection
sink	sound	herbivore	exercise	tibia	gas	constellation	refraction
arm	hard	omnivore	disease suitability	fibula	molecule	solar	spectrum
leg	soft	waterproof	opaque	igneous	particle	system	atom
head	leaves	leaf	transparent	metamorphic	evaporation	planet	component
eye	stem	blossom	flexible	sedimentary	condensation	orbit	electron
nose	root	petal	absorbent	light source	precipitation	gravity	terminal
mouth	Flower	root	firm	opaque	vibration	element	series

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hand foot/feet	light shadow weather	seed branch stem rough smooth	force	transparent friction magnetic attract repel fossil permeable impermeable palaeontologist	sound wave pitch amplitude circuit cells conductor insulator	particle resistance mechanism Newton acceleration static friction force evaporate condensation conduct insulate	parallel circuit resistance voltage current gestation
Key Questions							
Understanding the World Can we name animals? What materials can we see? How do plants grow? What does a caterpillar turn into? What floats and what sinks?	**Understanding the World** What are the different parts of my body? How are animals different to each other? How can we make ice change into water? What sounds can we hear?	**Animals inc. Humans** How do humans use their senses? How can we identify different animals? **Plants** How can we identify different plants? **Everyday Materials** How can we group materials?	**Living Things/Habitats** How do animals survive in different habitats? **Animals inc. Humans** What essentials do animals and humans need to survive? Why is exercise and diet important? **Plants**	**Plants** What are the functions of the different parts of plants. **Rocks, Fossils and Soils** How can we compare and group different rocks and soils? **Animals inc. Humans** Why do animals and humans have skeletons and muscles?	**Animals inc. Humans** What is the digestive system and what part do teeth play? **Sound** What are vibrations, pitch and volume? **Electricity** What do you need to create a series circuit? **Living Things/Habitats**	**Materials and Properties** What are the reversible and irreversible changes of solids, liquids, and gases? How to properties of conductivity and insulation affect our choices e.g., in clothing, in the building trade? **Earth and Space/Forces**	**Living Things/Habitats** How do we classify animals based on specific characteristics? **Animals inc. Humans** What is the circulatory system? How are water and nutrients transported around the body? **Electricity**

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How do I keep my teeth clean?	How can we describe different materials? What do we notice about different plants? How can we create shadows?	How do we decide the best materials for a project e.g., building a home? **Seasons** Why do leaves fall from trees? How do plants know when to grow?	How do plants grow and survive? **Materials** Which materials are best to use for keeping dry, for a house, for clothes (and so on)?	**Light** Where does light come from? How are shadows formed? **Forces and Magnets** What is a magnet? Which materials are magnetic?	How do food chains work? How can you classify animals? **States of Matter** What are the changes in state for solids, liquids, and gases?	How do the bodies of the solar system move and what effect is created? **Living Things/Habitats** How do life cycles of different animal groups compare? **Forces** What are the effects of resistance and friction?	How do we create and compare circuits with a variety of components? **Light** How does light travel and reflect? How does my eye work? **Evolution and Inheritance** How have living things changed over many years.
Progression by Theme - Animals Including Humans							
Name basic body parts and facial features. Name a range of familiar animals. Know how to care for teeth. Understand the key features of the life cycle of a plant	Name body parts including joints and facial features. Name and sort animals based on observable features. Know the basics of keeping healthy i.e., food, exercise,	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,	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).	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.	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.	Can describe the changes as humans develop to old age. Living things and their habitats. I can describe the differences in the life cycles of a mammal, an amphibian, an insect, and a bird I	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

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and an animal.	and brushing teeth. Explore the natural world around them. Describe what they can see, hear and feel whilst outside and whilst exploring. Describe changes to own body e.g., from resting to exercising.	herbivores, and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals inc pets); Identify, name, draw and label the basic parts of the human body and say which part is associated with each sense.	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Identify that humans and some other animals have skeletons and muscles for support, protection, and movement.	Construct and interpret a variety of food chains, identifying producers, predators, and prey.	can describe the life process of reproduction in some plants and animals.	their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans. **Evolution & 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.

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							Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Progression by Theme - Seasons, Living Things and Their Habitats including Plants							
Plants seeds and cares for growing plants. Begins to understand the need to respect and care for the natural environment and all living things. Notices change in the season/weather.	Understands the effect of changing seasons on the natural world around them. Notice that some environments are different to the one in which we live. Explore the natural world by making observations and drawing pictures of animals and plants. Knows some similarities and differences between the natural world and	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 changes across the 4 seasons. Observe and describe weather associated with the	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. Explore and compare the differences between things that are living, dead, and things that have never been alive.	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.	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.		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.

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	contrasting environments, drawing on own experiences and what has been read in class. Understand some important processes and changes in the natural world, including the seasons.	seasons and how day length varies	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 microhabitats. 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.	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			

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Physical Science							
Explore how things work. Explore and talk about different forces they can feel i.e., a push or a pull. Listens with increased attention to sounds.	Describe movements and actions. Notice changes of direction. Notice links between action and effect – light/sound when a button is pressed. Explore magnetic toys. Know the simple sequence of a day in terms of what we do in the light and in the dark.			**Magnets and Force** Compare how things move on different surfaces. Notice that some forces need contact between 2 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 based on whether they are attracted to a magnet and identify some magnetic materials.	**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 a lamp lights.	**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 & Space** Describe the movement of the Earth and other planets relative to	**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. **Light** Recognise that light appears to travel in straight lines.

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				Describe magnets as having 2 poles. Predict whether 2 magnets will attract or repel each other, depending on which poles are facing. **Light** Recognise that we need light 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	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. Recognise some common conductors and insulators, and associate metals with being good conductors.	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 the apparent movement of the sun across the sky.	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.

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				light from a light source is blocked by an opaque 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		

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					from the sound source increases.		
Progression by Theme - Materials							
Uses all 5 senses in hands-on exploration of natural materials. Explores collections of materials with similar and/or different properties. Talks about the differences between materials and changes they notice. Explores different materials freely, to develop ideas about how to use them and what to make.	Name and describe simple materials in terms of how they feel. Understand some important processes and changes in the natural world, including the changing states of matter.	**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 based on	**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 uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching.	**Rocks** Compare and group together different kinds of rocks based on 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 rock. **Magnets** Identify some magnetic materials.	**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	**Properties and Changes of Materials** Compare and group together everyday materials based on 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.	

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		their simple physical properties.			rate of evaporation with temperature.	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 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,	

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						including changes associated with burning and the action of acid on bicarbonate of soda	