Cross Gates Primary School

Science

Skills Progression

Working Scientifically	Early Years N1	Early Years N2	Early Years YR	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Plan	Make choices about where to play	Make choices about their play and the resources they want to use.	Begin to ask simple questions when prompted.	Ask simple questions when prompted. Suggest ways of answering a question.	Ask simple questions. Recognise that questions can be answered in different ways.	Ask relevant questions when prompted. Use different types of scientific enquiry to answer them. Set up simple and practical enquiries, comparative and fair tests with some support.	Ask relevant questions. Use different types of scientific enquiries to answer their questions. Set up simple and practical enquiries, comparative and fair tests.	Plan different types of scientific enquiries to answer questions. With prompting, recognise and control variables where necessary.	Plan different types of scientific enquiries to answer questions.. Recognise and control variables where necessary.
Do	Repeat actions that have an effect. Play with a variety of open-ended resources in areas of provision supported by a	Engage in independent play with a wide variety of open-ended resources across all areas of provision Experience the	Use all of their senses in hands-on exploration. Explore the natural world around them using observations and interactions.	Make relevant observations using simple equipment. Conduct simple tests, with support. Identify and classify with guidance.	Observe closely, using simple equipment. Perform simple tests Identify and classify.	Make systematic and careful observations, using simple equipment. Use standard units when taking measurements.	Make systematic and careful observations using a range of equipment, including thermometers and data loggers. Take accurate measurements	Select, with prompting, and use appropriate equipment to take readings. Take precise measurements using standard units. Begin to	Use a range of scientific equipment to take measurements. Take measurements with increasing accuracy and precision. Take repeat readings when

	familiar adult Experience the natural world around them with the support of a familiar adult	natural world around them					using standard units, where appropriate.	understand the need for repeat readings.	appropriate.
Record	Listen to adults talking about what they see, hear and feel Begin to talk about what they see, hear and feel	Talk about what they see, hear and feel using a wide vocabulary with adult support	Talk about what they see using a wide vocabulary Describe what they can see, hear and feel whilst outside. Explore the natural world around them; making observations and drawing pictures of animals and plants.	Gather and record data.	Record and communicate their findings in a range of ways and begin to use simple scientific language. Gather and record data to help answer questions.	With modelling and guidance, gather, record, classify and present data in a variety of ways to help to answer questions. With prompting, use various ways of recording, grouping and displaying evidence and suggest how findings may be tabulated.	Gather, record, classify and present data in a variety of ways to help to answer questions. Record findings using simple scientific language, drawings and labelled diagrams Record findings using keys, bar charts, and tables.	Take and process repeat readings. Record data and results. Record data using labelled diagrams, keys, tables and charts. Use line graphs to record data.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs.
Review	Listen to adults make links with their learning. Begin to make links in their learning.	Make links to learning from their experiences. Begin to use their observations to answer simple questions with adult support.	Begin to use their observations to answer simple questions.	Recognise findings. Use their observations and ideas to suggest answers to simple questions.	Use their observations and ideas to suggest answers to simple questions.	With prompting, suggest conclusions from enquiries. Suggest how findings could be reported. Suggest possible improvements or further questions to investigate.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations.	Report and present findings from enquiries, including conclusions and causal relationships. With support, present findings from enquiries	Report and present findings from enquiries, including conclusions and causal relationships. Report and present findings from enquiries in oral and written forms such as displays and other

							Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	orally and in writing. Suggest further comparative or fair tests.	presentations. Report and present findings from enquiries, including explanations of, and degree of, trust in results. Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to make predictions to set up further comparative and fair tests.
Area of study Biology	Early Years N1	N2	YR	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Animals including humans	Notice differences between people	Make healthy choices about food, drink, activity and tooth brushing.	Know and talk about the different factors that support their overall health and well-being: *regular physical activity *healthy eating *toothbrushing *sensible amounts of	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,	Understand that animals, including humans, have offspring which grow into adults. 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. Identify that humans and some	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,	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

			'screen time' *having a good sleep routine *being a safe pedestrian Name common animals. To know how animals grow and change over time.	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.	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	other animals have skeletons and muscles for support, protection and movement.	identifying producers, predators and prey.		function. Describe the ways in which nutrients and water are transported within animals, including humans. - (see also Evolution and inheritance)

Living things and their habitats	Explore and respond to natural phenomena	Understand the key features of the life cycle of a plant and an animal Begin to understand the need to respect and care for the natural environment and all living things.	Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things. To know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Name common minibeasts and describe their habitat.		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		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 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 microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. - (see also Evolution and inheritance)

					sources of food.				

Plants	Play with seeds, mud, flowers. Plant seeds and care for growing plants with adult support.	Plant seeds and care for growing plants Explore flowers through dissection in play – picking petals, finding seeds, cutting stems	Plant seeds and care for growing plants. Understand the key features of a plant's life cycle. Begin to understand the need to respect and care for the natural environment and all living things. Develop an understanding of growth, decay and changes over time. Name some common flowers and trees. To know what a plant needs to grow.	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.	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.			

Seasonal changes	Experience, explore and respond to different natural phenomena	Explore and talk about a wide range of natural phenomena Explore and talk about different forces they can feel	Understand the effect of changing seasons on the natural world around them. Understand some important processes and changes in the natural world around them - seasons. Describe what they see, hear and feel whilst outside	Observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies.					
Area of study Chemistry	Early Years N1	Early Years N2	Early Years YR	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Everyday materials (Y1) Uses of everyday materials (Y2) States of matter (Y4) Properties and changes of materials (Y5)	Play with resources that are made from different materials.	Explore natural materials indoors and outside Explore collections of a wide variety of materials Talk about what they see using a wide vocabulary	Use all of their senses in hands on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the similarities and differences between materials and changes they notice.	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.	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		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	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	

			Understand some important processes and changes in the natural world around them - changing states of matter. Name some common materials and basic properties.	Compare and group together a variety of everyday materials on the basis of their simple physical properties.	and stretching.		played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	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.	

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.			- (see Evolution and inheritance)
Area of study Physics	Early Years N1	N2	YR	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Light (Y3 and Y6) Sound (Y4)	Experience different natural phenomena Make rhythmical and repetitive	Begin to identify everyday sounds around them Explore a range	Listen with increased attention to sounds Identify a wide			Recognise that they need light in order to see things and that dark is the absence of light.	Identify how sounds are made, associating some of them with something vibrating.		Recognise that light appears to travel in straight lines. Use the idea that light travels in straight lines to

	sounds. Explore a range of soundmakers and instruments	of soundmakers and instruments and play them in different ways	range of sounds around them: environmental and within structured games using instruments, voice or spoken words. Play instruments with increasing control.			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.	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.		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.
Forces and magnets (Y3) Forces (Y5)	Play with resources that promote cause and effect	Explore and talk about different forces they can feel with adult support.	Explore how things work. Explore and talk about different forces they can feel.			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		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	

						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.		surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Electricity	Play with simple toys and resources that can be switched on/off.	Explore a variety of resources that can be switched on/off and have buttons to change effects, eg cd player, remote control car	Use technology independently to support their play eg, cameras, iPads Use programmable toys such as Beebots Recognise uses of electricity around the home				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		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.

							battery.		Use recognised symbols when representing a simple circuit in a diagram. 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.
Earth and Space	Know and identify the sun and moon	Discuss the sun, moon and stars and have a basic understanding that we live on a planet called Earth.	Talk about planets and the solar system in simple terms. Know that the sun is a star. Explain that we live on a planet called Earth and describe what earth is like.					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 the apparent movement of the sun across the sky.	

Evolution and heritance (note for Y6 - see animals including humans, living things and their habitats and rocks for how some of these aspects have been covered lower down school)									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.