

Science Progression Map

Our vision at Green Gates is to, 'Strive, Believe and Achieve'. This theme runs throughout our whole curriculum. We encourage all children to strive to be the best they can be. We aim that all children will "believe" they can be fantastic and we support all children to "achieve" and thrive through our "SHAPE" Curriculum. We want to inspire children and give them ambition, instilling goals in children's lives, making it easier for children at an early age to know what they want to do when they are older and how they can achieve this to reach their goals. In order to do this for our children at Green Gates Academy we provide a range of vocational learning to allow them to experience and develop a range of skills through a variety of opportunities. In order to support the science curriculum, we have linked the vocational opportunities we offer the children to the objectives. This is in order for the pupils to apply their learning in the subject and develop their love for learning.

Throughout this progression document, you will see references to BK and FS. These refer to Bee-Keeping (BK) and Forest School (FS) and their links to our science curriculum.





EYFS	Characteristics of effective learning	Early Learning Goals
Enquiry Skills	Show curiosity about objects, events and people. Questions why things happen. Engage in open-ended activity. Take a risk, engage in new experiences and learn by trial and error. Find ways to solve problems / find new ways to do things / test their ideas. Develop ideas of grouping, sequences, cause and effect. Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. Use senses to explore the world around them. Make links and notice patterns in their experiences. Create simple representations of events, people and objects. Build up vocabulary that reflects the breadth of their experience.	Choose the resources they need for their chosen activities. Handle equipment and tools effectively. Answer how and why questions about their experiences. Make observations. Develop their own narratives and explanations by connecting ideas or events. Explain why some things occur and talk about changes.
Understanding of the world	Know about the similarities and differences in relation to places, objects, material. They talk about the features of their own immediate environment and how environment make observations of animals and plants and explain why some things occur	onments might vary from one another.



Working Scientifically	Year I	Year 2	Year 3	Year 4	Year 5	Year 6
, Plan	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	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 using standard units, where appropriate.	Select, with prompting, and use appropriate equipment to take readings. Take precise measurements using standard units. Begin to understand the need for repeat readings.	Use a range of scientific equipment to take measurements. Take measurements with increasing accuracy and precision. Take repeat readings when appropriate.
Record	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	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.



			suggest how findings may be tabulated.			
Review	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.	Report on findings from enquiries, including oral and written explanations, of results and conclusions.	Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships.	Report and present findings from enquiries, including conclusions and causal relationships.
Vocabulary	Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, beaker, pipette, syringe.	Previous vocab plus observe changes over time, notice patterns, secondary sources, hand lenses, egg timers, identify, classify, data	Previous vocab plus scientific enquiry changes over time, notice patterns, secondary sources, comparative tests, fair tests, careful, accurate, observations, equipment, gather, measure, record, data, evidence, results, keys, bar charts, table, results, conclusions, predictions, support, thermometers	Previous vocab plus enquiry types increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results, data loggers	Previous vocab plus, notice, patterns, relationships, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, causal relationships, support/refute, data loggers	Previous vocab plus opinion/fact, confidently name scientific enquiry types



Biology	Year I	Year 2	Year 3	Year 4	Year 5	Year 6
Plants (Healthy, Employability)	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees FS-Identify and name wild plants and trees in the FS environment. identify and describe the basic structure of a variety of common flowering plants, including trees. BK-Identify why bees will be attracted to certain types of flower.	What do living things need to survive? observe and describe how seeds and bulbs grow into mature plants FS-Planting of seeds and observation over time. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. FS-Explore and understand why plants are present in the FS environment.	identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers FS-Explore, identify and describe the trees that are in the FS environment 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 FS-Explore and compare the different size of plants and their root length 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. BK-Explore the part bees play in the pollination of flowers.			
Vocabulary	Names of: wild plants, garden pants, flowering plants, trees, leaf, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable, deciduous, evergreen	seeds, bulbs, water, light, growth, healthy, shoot, seedling,	leaf, flower, blossom, petal, fruit, root, bulb, seed trunk, branch, stem, water, light, air, nutrients, soil, fertiliser, grow, healthy, transported, life cycle, pollination, seed formation, seed dispersal			
Animals Including Humans (Safety, Healthy, Employability)	What are bodies and what can they do? identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals BK-Identify types of bee FS-Identify common animals during woodland and pond looks. identify and name a variety of common animals that are carnivores, herbivores and omnivores BK-Identify a bee. Show some understanding of its diet.	How can living things stay healthy? notice that animals, including humans, have offspring which grow into adults BK-Investigate a simple life cycle of a bee find out about and describe the basic needs of animals, including humans, for survival (water, food and air) BK-Describe the links between a bees needs and that of a human, understanding that all living things need MRSGREN	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 BK- Describe how bees make their own food. identify that humans and some other animals have skeletons and muscles for support, protection and movement	What do our bodies do with food we 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 construct and interpret a variety of food chains, identifying producers, predators and prey. FS-Create a food chain of the animals in the forest. BK-Describe the food chain of the honey bee	How do our bodies change as they get older? describe the changes as humans develop to old age. BK- Compare the changes in humans as they develop into old age with that of bees,	How do our choices affect how our bodies work? 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. FS-Explore the nutrients from food



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	FS- Describe the diet of	FS-Describe the needs		and compare to that of	they can grow
	animals they may	of the animals present		the Asian Hornet.	themselves.
	encounter in the	in the FS environment			BK-Investigation of how
	woodland.				nutrients and water are
		describe the importance			transported in a bee
	describe and compare	for humans of exercise,			through dissection.
	the structure of a	eating the right amounts			
	variety of common	of different types of			
	animals (fish,	food, and hygiene.			
	amphibians, reptiles,				
	birds and mammals,				
	including pets)				
	BK-Describe the basic				
	structure of the bee				
	FS-Investigate the best				
	den for an animal, giving				
	consideration to the				
	structure of the animal				
	structure of the ammar				
	identify, name, draw and				
	label the basic parts of				
	the human body and say				
	which part of the body				
	is associated with each				
	sense.				
	FS-Identify which senses				
	they are using when				
	completing nature				
	walks. Understanding of				
	how this can help				
	understand the animals				
	in the environment and				
	how to keep them safe.				
Vocabulary	Body, head, neck, arms,	offspring, life cycles,	Nutrition, food types,	Digestive system,	Circulatory system,
- Vocabulary	elbows, legs, knees,	grow, change, adults,	carbohydrates, protein,	nutrition,	heart, blood, blood
	face, ears, eyes,	basic needs, water,	vitamins and minerals,	mouth, teeth, canine,	vessels, pumps, oxygen,
	eyebrows, eyelashes,	food, air survival,	fat, sugar, fruits and	incisor, molar, pre-	carbon dioxide, lungs,
	nose, hair, mouth,	exercise, food types	veg, dietary fibre,	molar, saliva, tongue,	nutrients, water, diet,
	teeth, tongue, feet,	(fruit and veg, bread,	water, balanced diet,	rip, tear, chew, grind,	exercise, drugs, lifestyle,
	teetii, toligue, leet,	(ii dit alid veg, bread,	water, baranced diet,	rip, tear, triew, grind,	exercise, drugs, illestyle,



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	toes, fingers, nails, ankle, calf, thigh, hips, waist, trunk, chest, shoulders, back, hands, wrist, tail, wing, claw, fin, scales, feathers, fur, beak, senses, hearing, seeing, touching, smelling, tasting, smooth, bright, dim, loud, quiet, high, low	rice, pasta, milk, dairy, foods high in fat and sugar, meat, fish, eggs, beans), hygiene	skeleton, muscles, support, protection, movement, names of bones, vertebrate, invertebrate	cut, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain		
Living things and their habitats (Safety, Health, Employability)		what is alive, dead or was never alive? explore and compare the differences between things that are living, dead, and things that have never been alive FS-Identify alive, dead and things that have never been alive during nature walks. Compare the differences. Investigate the changes in an environment over time, for example if a tree falls down. Can living things live forever? 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		Living things: What's the same and what's 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 Are living things in danger? recognise that environments can change and that this can sometimes pose dangers to living things. BK-Investigate the effects of humans on bees and the use of pesticides and parasite from other countries.	describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird BK-Describe in detail the bee life cycle FS-Investigate and describe the life cycle of a British animal or bird. describe the life process of reproduction in some plants and animals. BK-Describe the bee life cycle compared to that of a human.	Living things: What's the same and what's different? 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 BK-investigation into a wide type of bees and identifying their common observable characteristics. give reasons for classifying plants and animals based on specific characteristics BK- Investigate the difference between the Queen and the worker bee and give reasons why it is important to



of animals and plants,	FS-Create a journey	distinguish between the
and how they depend on each other	stick of pupils' own	two.
BK- Identify the habitat	individual stories, linking environmental change	
suited to bees and	to their own	
other pollinators. Food	experience.	
chain of the bee.	57-67-57-57	
Different types of plants		
bees need.		
FS-Identify the		
appropriate habitats for		
different animals.		
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identify and name a variety of plants and		
animals in their habitats,		
including microhabitats		
BK-Identify the plants		
bees are attracted to		
and give simple reasons		
as to why.		
BS-Identify simple		
British fauna with the		
use of a checklist		
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. BK-Describe a simple		
food chains of the bees.		
Show understanding of		
the nutritional value of		
the food bees produce		



Vocabulary	Living, dead, never been alive, names of local habitats, pond, woodland, meadow, name microhabitats, under log, stony path, under bushes, suited, basic needs, depend, food, food chain, shelter	Classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, names of them, human impact, positive, negative (impact).	Life cycle, reproduction, sexual, asexual, germination, pollination, seed formation, seed dispersal, pollen, stamen, stigma, plantlets, runners, mammal, amphibian, insect, bird, fish, reptile, eggs, live young	Organism, microorganism, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds mammals, vertebrates ,invertebrates, name some of these, arachnid, mollusc, insect, crustacean
Evolution and inheritance (Healthy, Employability)				How do living things change over time and place? recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago BK-Investigate the history of bee-keeping and the evolution of bees. 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. BK-Investigate the evolution of bees and honey bees in manmade hives.
Vocabulary			Fossils, adaptation, endangered, environment, evolution, extinct, organism, inheritance, genes, living things, characteristics, variation, conditions, offspring



Chemistry Year I	Year 2	Year 3	Year 4	Year 5	Year 6
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 FS- Identify the types material found in the environment Materials (Employability) Materials (Employability) Materials Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Materials How do we choose 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 Can we change materials? find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. FS-Explore how objects can be changed to		states of Matter Is water always wet? 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.	Properties and changes of materials What are things made from and why? Can we change 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 Can we change materials? 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	



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				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.	
Vocabulary	Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, waterproof, absorbent, tear, rough, smooth, shiny, dull, see through, not see through	Suitable/unsuitable, use, object, material, property, wood, plastic, glass, metal water, rock, fabrics, hard, soft, stretchy, flexible, waterproof, absorbent, transparent, translucent, opaque, shape, change, twist, squash, bend, stretch, roll, squeeze	States of matter, solid, liquid, gas, air, oxygen, powder, granular/grain, crystals, change state, ice/water/steam, water vapour, heating, cooling, temperature, degrees Celsius, melt, freeze, solidify, melting point, boil, boiling point, evaporation, condensation, water cycle, precipitation, transpiration	Y4 plus rigid, hard, soft, stretchy, flexible, waterproof, absorbent, electrical/thermal conductivity, melting, dissolve, solution, insoluble, solute, solvent, particle, mixture, filtering, sieving, residue, reversible/non reversible changes, new material, burning, rusting,	



	Are all rocks the same?		
Rocks (Employability)	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. FS-Investigate and recognise the use of soil		
	when planting seeds and		
	bulbs		
Vocabulary	Rock, stone, pebble, boulder, soil, fossils, grains, crystals, texture,		
	absorb water, let water through, marble, chalk,		
	granite, sandstone,		
	slate, sandy soil, clay soil, chalky soil, peat,		



Physics	Year I	Year 2	Year 3	Year 4	Year 5	Year 6
Light (Safety, Employability)			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 an opaque object find patterns in the way that the size of shadows change.			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.
Forces (Safety, Employability)			Light, light source, darkness, reflect, reflective, mirror, shadow, block, direction, transparent, opaque, translucent What can magnets do?		How do things move? explain that	Light, light source, darkness, reflect, reflective, shadow, block, absorb, direction, transparent, opaque, translucent



Horizons Specialist Academy Trust				
Horizons Specialist Academy Trust		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	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.	
	r r c	magnets will attract or repel each other, depending on which poles are facing.		
Vocabulary	r r s t	Force, contact force, noncontact force, magnetic force, magnet, strength, bar/ring/button/horses hoe magnets, attract,	Fall, Earth, gravity, weight, mass, air resistance, water resistance, friction, moving surfaces, mechanisms, levers,	



		repel, magnetic material, metal, iron, steel, non-magnetic, poles, north/south pole		pulleys, gears, force, transfers	
Sound (Safety, Healthy, Employability			How do we hear different sounds? 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.		
			Sound, sound source, noise, vibration, travel, solid, liquid, gas, pitch, tune, high, low, volume, loud, quiet, fainter, muffle, strength of vibrations, insulation,		



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			instrument, percussion,	
			strings, bass, woodwind,	
			tuned instrument	
			Can we control electricity?	Can we vary the effects of
			· ·	electricity?
			identify common	,
			appliances that run on	associate the brightness
			electricity	of a lamp or the volume
			ŕ	of a buzzer with the
			construct a simple	number and voltage of
			series electrical circuit,	cells used in the circuit
			identifying and naming	
			its basic parts, including	compare and give
			cells, wires, bulbs,	reasons for variations in
			switches and buzzers	how components
				function, including the
			identify whether or not	brightness of bulbs, the
			a lamp will light in a	loudness of buzzers and
Electricity			simple series circuit,	the on/off position of
(Safety, Healthy,			based on whether or	switches
Employability)			not the lamp is part of a	
			complete loop with a	use recognised symbols
			battery	when representing a
				simple circuit in a
			recognise that a switch	diagram.
			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.	
Vocabulary			Electricity, appliance,	Electricity, appliance,
Vocabulary			device, mains, plug,	device, electrical circuit,
			electrical circuit,	device, electrical circuit,
			electrical til tult,	



		complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, connect, connection,		complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive, negative, terminal, connection, short circuit, wire, crocodile
Earth and Space (Employability)			Sun, Earth and Moon: what is moving? 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.	
			Earth, planets, sun, solar system, moon, celestial body, spherical, rotation, spin, night and day, names of planets, dwarf planet, orbit, geocentric model, heliocentric model,	



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			shadow clocks, sundials, astronomical clocks	
	Do living things change or stay the same?			
	observe changes across the four seasons			
Seasonal Changes (Safety, Healthy, Employability)	observe and describe weather associated with the seasons and how day length varies. FS- Observe the changes in the four seasons and the impact this has on the FS environment BK-Describe how seasonal changes impact the behaviour of the			
	bee.			
	Season, spring, summer, autumn,			
	winter, weather, hot, warm, cool cold, sunny,			
Vocabulary	cloudy, windy, rainy,			
	snowing, hailing, sleet, frost, fog, mist, icy,			
	rainbow, thunder,			
	lightning, storm, light, dark, day, night			