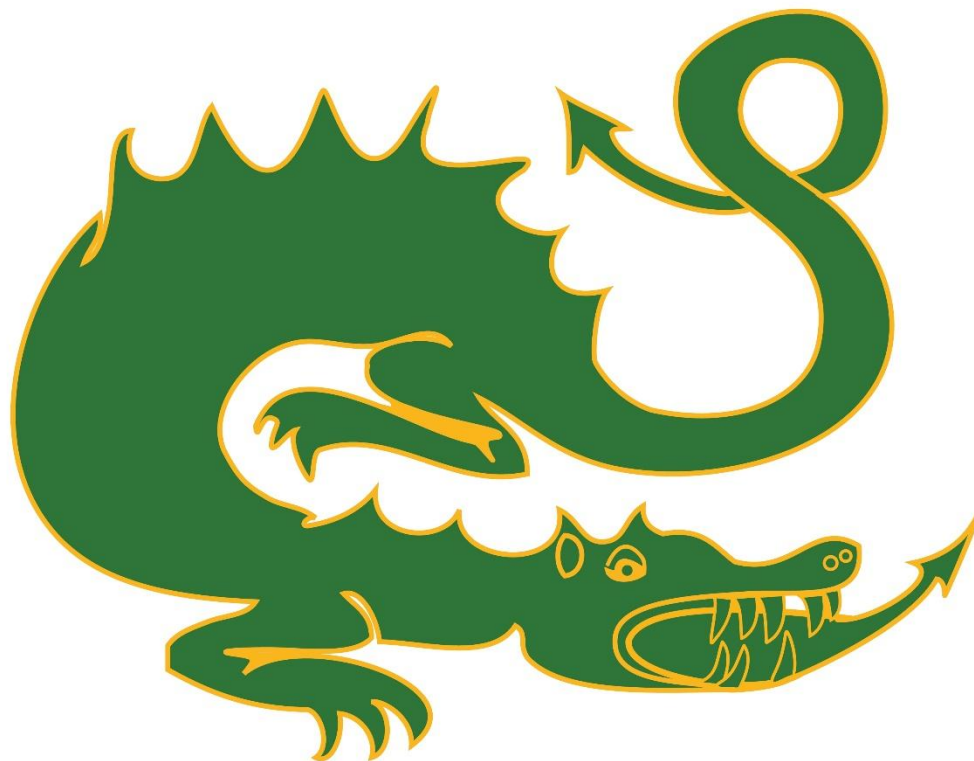


Leechpool Science Knowledge and Skills Progression



Science: AGE RELATED STATUTORY COVERAGE		
EYFS	KEY STAGE ONE LEARNING	KEY STAGE TWO LEARNING
<ul style="list-style-type: none"> Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts. Make comments about what they have heard and ask questions to clarify their understanding. 	<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions 	<ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 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 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.

Year 3/4

Leechpool Science Skills Progression

		Year 5/6	<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments •
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Skills Map - Science

Early Years – Science

Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> • Ask questions to find out more • Talk about what they see using a wide vocabulary • Ask Why questions • Choose the right resources to carry out their own plan 	<ul style="list-style-type: none"> • Use new vocabulary • Talk about what they see using a wide vocabulary • Compare quantities using language 'more than, fewer than' • Develop their small motor skills so that they can use a range of tools competently, safely and confidently • Make comparisons between objects relating to size, length, weight and capacity 	<ul style="list-style-type: none"> • Articulate their ideas and thoughts in well – formed sentences 	<ul style="list-style-type: none"> • Write short sentences with words with known sound letter correspondence • Begin to describe a sequence of events, real or fictional using words such as first • Draw information from a single map

Skills Map - Science			
Year 1			
Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> asking simple questions and recognising that they can be answered in different ways make comments about what they are going to explore/ investigate, in a context given to them 	<ul style="list-style-type: none"> observing closely, using simple equipment gathering and recording data to help in answering questions performing simple tests make comments about what they are going to explore/ investigate, in a context given to them begin to use first-hand observation using senses (e.g. qualitative comments, some measurements) make simple scientific comparisons (e.g. spot the difference between pictures) start to make simple recordings during the enquiry process (e.g. lists, tallies) 	<ul style="list-style-type: none"> identifying and classifying using their observations and ideas to suggest answers to questions 	<ul style="list-style-type: none"> make simple comments about their enquiry experience recount what they've seen or found, or draw a picture

Skills Map - Science			
Year 2			
Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • show curiosity, e.g. voluntarily ask questions about what they have heard, read or observed • give a brief overview of their plans, in a context given to them, using some science vocabulary 	<ul style="list-style-type: none"> • observing closely, using simple equipment • gathering and recording data to help in answering questions • performing simple tests • show understanding of 'fair testing' • use first-hand observations with some simple equipment (e.g. magnifying glass) • use everyday words but in a more precise way; occasionally use scientific vocabulary (see vocabulary section) • identify differences and similarities in what they observe (perhaps with a given focus) • measure to nearest cm (and equivalents) • make more sophisticated recordings during the enquiry process (e.g. frequency tables where the template is given) 	<ul style="list-style-type: none"> • identifying and classifying • using their observations and ideas to suggest answers to questions • answer questions about their predictions and results (e.g. were they right?) 	<ul style="list-style-type: none"> • make comments about the method (e.g. were there unforeseen variables?) • explain their findings verbally, through writing, and in age-appropriate graphic form (block diagrams, pictograms, simple tables)

Skills Map - Science			
Year 3			
Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests Start to frame predictions in scientific language & concepts Start to apply concepts of 'fair testing' Start choosing simple scientific vocabulary (see below) instead of everyday words Start to frame questions/answers in scientifically valid ways (e.g. about change, difference) Verbally explain their plans, in a context given to them, using technical vocabulary and starting to link to different types of scientific enquiry 	<ul style="list-style-type: none"> recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gather, record, classify and present data in a variety of ways to help in answering questions. Use a range of observation equipment, e.g. microscope, data logging start categorising (i.e. suggesting umbrella terms) Start to comment on scientific changes, including suggestions about cause and effect Start to take accurate measurements (e.g. nearest mm, gram, degree) Use simple data-logging equipment Take simple notes (i.e. abbreviations, simplified grammar) 	<ul style="list-style-type: none"> identifying differences, similarities or changes related to simple scientific ideas and processes reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using straightforward scientific evidence to answer questions or to support their findings. Start to link results to scientific language and subject knowledge Start to suggest further enquiry questions 	<ul style="list-style-type: none"> using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Using technical vocabulary, make basic evaluations about their prediction (e.g. was it reasonable?) and methodology (e.g. was it difficult to measure?) Explain observations, results and conclusions verbally and in writing, and in age-appropriate graphic form (e.g. bar charts instead of blocks) Use IT to create more complex graphs (e.g. line graph or pie chart)

Leechpool Science Skills Progression

	<p>but start to include scientific language.</p> <ul style="list-style-type: none"> • Use jotted tables and diagrams, subdivided lists etc. 		
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Skills Map - Science			
Year 4			
Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • Frame predictions in scientific language & concepts; start to select information to inform these predictions • Plan in a given context they explain their plans in detail, verbally and in writing, using technical vocabulary and linking to types of scientific enquiry • Start to link the planning and evaluation stages • Ask and answer scientifically valid questions (e.g. about contrast, cause and effect, reliability) 	<ul style="list-style-type: none"> • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gather, record, classify and present data in a variety of ways to help in answering questions. • Evaluate own observations and compare them with others' • Use scientific vocabulary (see vocabulary section), often appropriately • Categorise terms and observations • Relate contrasts, changes and trends to scientific content • Make estimations and (with help) take systematic and careful 	<ul style="list-style-type: none"> • identifying differences, similarities or changes related to simple scientific ideas and processes • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using straightforward scientific evidence to answer questions or to support their findings. • Include comments about causal relationships and link these to scientific content 	<ul style="list-style-type: none"> • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Suggest improvements to their methodology, linking this to scientific knowledge • Make selections to present relevant data, observations and conclusions in a variety of ways (e.g. slideshow, vlog, graphic formats) • Use age-appropriate graph skills (e.g. time graphs, discrete vs continuous data)

Leechpool Science Skills Progression

	<p>measurements (e.g. clear clutter that might affect measurements)</p> <ul style="list-style-type: none"> • Use data loggers • Take quantitative and qualitative notes that include scientific language • Start to make simple calculations during the enquiry process 		
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Skills Map - Science

Year 5

Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Draw on other evidence to inform their predictions (e.g. own experience, reading, media) • Start to refer to concepts like reliability, significance, replicability • Plans make links to previous investigations, and consider the relative merits of different types of scientific enquiry in a context that is given to them (e.g. explaining which might be useful) • Ask/answer valid questions (e.g. significance, confidence, replicability) 	<ul style="list-style-type: none"> • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Work collaboratively by building on others' observations • Use scientific vocabulary (see below), explaining how it differs from everyday usage, or from near-synonyms • Make more complex links between the differences and changes they see and the scientific content they have learnt • Start to make comments about levels of accuracy (e.g. not measuring a ball throw in mm) • Take repeat readings if appropriate 	<ul style="list-style-type: none"> • identifying scientific evidence that has been used to support or refute ideas or arguments • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • Justify their interpretations with evidence, from their own enquiry but also external sources (e.g. from famous experiments in the past, or from other curriculum areas) 	<ul style="list-style-type: none"> • using test results to make predictions to set up further comparative and fair tests • Start to organise evaluations (e.g. breaking it down into manageable steps) • Show some sensitivity/selection in their evaluations (e.g. when critiquing others, or by considering scientific ethics) • Include relevant background information and evaluation (e.g. evidence base, measurement accuracy, reliability, usefulness) • Use labelled diagrams, tables, classification keys, simple scatter graphs)

Leechpool Science Skills Progression

	<ul style="list-style-type: none"> • Make clear records of observations and other aspects of the enquiry process (e.g. sketched but labelled diagrams, on-the-cuff calculations) 		
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Skills Map - Science			
Year 6			
Asking Questions and Planning	Measuring and Recording	Concluding	Evaluating and Presenting
<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Predict, using evidence, and with reference to concepts like reliability, significance, replicability • Plans scientific enquiries to answer questions of their own, linking to what they have studied, and referring to previous and future investigations 	<ul style="list-style-type: none"> • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Start to apply vocabulary in sophisticated ways, for instance in different areas of science, or in other subjects • Ask/answer perceptive questions (e.g. hypothetical, extrapolatory) • Make links between what they see and a range of scientific content (e.g. including content from all years) 	<ul style="list-style-type: none"> • identifying scientific evidence that has been used to support or refute ideas or arguments • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • Make comments about reliability of results, replicability, methodology • Link their experience to a range of scientific content (i.e. from previous years) 	<ul style="list-style-type: none"> • using test results to make predictions to set up further comparative and fair tests • Organise evaluations carefully, selecting by relevance and linking to scientific knowledge • Show an awareness of scientific ethics, and display a sensitivity when critiquing others • Use a range of presentation forms to show discernment in selection, awareness of audience, and perceptive conclusions • Draw complex graphs by hand (e.g. pie charts, scatter/line graphs)

Leechpool Science Skills Progression

	<ul style="list-style-type: none">• Understand and explain why different levels of accuracy are appropriate• Explain their choices about where, when and how to record an enquiry. Group and redraft into useful formats like tables, diagrams, flow-charts etc		
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Science: WORKING SCIENTIFICALLY
VOCABULARY MAP

EYFS	Year 1	Year 2	Year 3	Year 4	5	
• Autumn	• up/down	• left	• corresponding equivalent	• increase/decrease factor	• percentage	• recurring
• Winter	• near	• right	• group	• negative numbers	• distribution	• proportion
• Spring	• close to	• beyond	• positive/negative	• base	• causal	• ratio
• Summer	• old(er)	• represents	• area (i.e. maths meaning)	• spherical, cylindrical etc -	• correlate	• radius
• Weather	• new(er)	• stands for	• parallel	• i.e. 3D shape terminology	• dependent	• diameter
• Hot	• far	• exact(ly)	• degrees	• for description	• variable	• circumference
• Cold	• further	• nearest	• acute	• concave	• control	• concentric
• Snowing	• high(er)	• distance	• obtuse	• convex	• cancel out	• arc
• Freezing	• above	• contains	• quantity	• translation	• imperial (units)	• intersecting
• Warm	• centre	• property	• round	• rotation	• maximum/minimu	• plane
• Wet	• low(er)	• appearance	• up/down	• origin	m million	• cross-section
• Cloudy	• underneath below	• similarity	• approximate(ly)	• statistic	• diagonal	• appropriate
• Harvest	• equal to	• difference	• remainder	• typical	• reflex angle	• accuracy
• Farming	• more/less than	• symmetrical	• data logger	• exception	• rotation	• degree of trust
• Leaves	• larger/smaller	• fractions	• obstacle	• unique	• sparse	• robust
• Light	• most/least	• amount	• outcome	• intricate	• abundant	• authentic
• Dark	• half	• scale	• impact	• trend	• capacity	• plausible
• Desert	• whole	• fair test	• cork stopper	• precise	• phenomenon	• controversy
• Polar	• area (i.e. non-maths	• document	• relationship	• accurate	• exceptional	• stance
• Plants	meaning)	• strategy	• petri dish	• comparative	• crucial	• bias
• Grow	• same/different	• gather	• necessary	• systematic	• complex	• tertiary source
• Soil	• point	• collect	• gauze	• convention	• sustain	• determine
• Sunlight	• group	• notice	• protractor	• reliability	• perspective	• attribute
• Fruit	• nearly	• link	• fact/opinion	• classify	• rigorous	• analyse
• Vegetable	• roughly	• describe	• compass	• categorise	• refute	• corroborate
• Tree	• position	• predict	• data	• hypothesise	• inform (as in:	• discern
• Flower	• direction	• result	• hypothesis	• critique	inform our	• epitomise
• Bush	• clockwise	• conclude	• theory	• summarise	thinking) generalise	• characterise
• Water	• distant	• contrast	• case study	• communicate	• verify	• extrapolate
• Life cycle	• pattern	• order	• primary/secondary source	• time graphs 'and other	• line graph	• pie charts
• Grow	• research	• value	• estimate	graphs'	• scatter graph	• mean
• Change	• non-fiction	• rank	• observe	quantitative/qualitative	• average	• four quadrants
• Tadpole	• event	• sort	• organise	• plot	• mode	
• Froglet	• question/answer	• record(ing)	• identify	• continuous/grouped and	• range	
		• pictogram	• assume	discrete data format	• sieve	
		• tally chart		• aquarium	• funnel	

Leechpool Science Skills Progression

<ul style="list-style-type: none"> • Frog • Larva • Caterpillar • Chrysalis • Cocoon • Material • Float • Sink • Plastic • Fabric • Wood • Strong • Waterproof • Bendy • Light • Pollution • Recycle • Rubbish • Environment • Community • Minibeast • Insect • Ant • Spider • Worm • Snail • Habitat 		<ul style="list-style-type: none"> • block diagram • Venn diagram • jottings plan • Equipment • equipment • stop-watch • pipette • beaker • syringe • weight • thermometer • measuring scales • tube • tweezer • net • set square • insect viewer • pooter 	<ul style="list-style-type: none"> • compare • interpret • disprove • infer • clarify • introduce • present findings • abbreviations • frequency table • bar charts • Carroll diagram flow chart • grid • database • row • column • subdivisions • apparatus • hand lens • hour-glass • microscope • measuring cylinder test-tube 	<ul style="list-style-type: none"> • Pasteur • pipette • forceps 	<ul style="list-style-type: none"> • filter • paper 	
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Science: KNOWLEDGE VOCABULARY MAP

EYFS	Year 1	Year 2	Year 3	Year 4		
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Leechpool Science Skills Progression

<ul style="list-style-type: none"> • Science • Experiment • Test • Fair • Find out Explain • Reason • Why • Record • Senses 	<ul style="list-style-type: none"> • Animals including humans Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each), Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak • Plants Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem • Everyday Materials Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth • Seasonal Changes Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark 	<ul style="list-style-type: none"> • Animals including humans Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene • Plants Seeds, Bulbs, Water, Light, Temperature, Growth • Living things and their habitats Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert • Everyday materials and their uses Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil 	<ul style="list-style-type: none"> • Animals including humans Movement, Muscles, Bones, Skull, Nutrition, Skeletons, • Plants Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower • Rocks Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent • Light Light, Shadows, Mirror, Reflective, Dark, Reflection • Forces and magnets Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull 	<ul style="list-style-type: none"> • Animals including humans Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar • Living things and their habitats Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats • States of Matter Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating • Sound Volume, Vibration, Wave, Pitch, Tone, Speaker • Electricity Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators 	<ul style="list-style-type: none"> • Animals including humans Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty • Living things and their habitats Mammal, Reproduction, Insect, Amphibian, Bird, Offspring • Properties and changes of materials Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing • Earth and Space Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation • Forces Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys 	<ul style="list-style-type: none"> • Animals including humans Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration • Living things and their habitats Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects • Evolution and Inheritance Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics • Light Refraction, Reflection, Light, Spectrum, Rainbow, Colour, • Electricity Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell
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