

STRATA – Progression in *Working Scientifically*

Skills	P1		P2		P3		P4	P5	P6
	(i)	(ii)	(i)	(ii)	(i)	(ii)			
Experimental skills and investigations	Encounters a range of sensory evidence during activities (i) <i>e.g. experiences roughness of sandpaper</i>	May react during sensory based activities (ii) <i>e.g. smiling as they stroke a pet or reacts momentarily to light changes</i>	Changes body language in a more sustained way (i) <i>e.g. smiles when ball rolls down slope and knocks skittles over</i>	Gathers further sensory evidence by observing for a short but sustained period when there is a change or simple cause/effect relationship (ii) <i>e.g. touches hair as static makes it stand up</i>	Positively or negatively anticipates event (i) <i>e.g. shows excitement at getting out equipment or associates particular sound with something unpleasant and covers ears</i>	Chooses what equipment to use, who to work with or activity they want to do (ii) <i>e.g. chose food to test or material to squash</i>	Communicates awareness of some obvious changes <i>e.g. motor going round or light going off in a circuit</i>	Responds to simple scientific questions <i>e.g. is this wet? Can you show me a flower</i>	Responds to simple scientific questions that require a more detailed response than P5 <i>e.g. can you find some things that use electricity? Where are the sources of light in school?</i>
		May give intermittent reactions(ii) <i>e.g. sometimes withdrawing hands form change in temperature</i>							
							Follows a simple procedure with step-by-step support to gather evidence <i>e.g. planting a seed or adding bicarb to vinegar</i>	Completes a simple task with guidance <i>e.g. when walking round school grounds looking for minibeasts they are reminded to take pictures with a camera</i>	Engages in experimentation using familiar equipment <i>e.g. using magnets to see what materials stick to it and then moving objects through different surfaces</i>

<p>Analysis and evaluation</p>			<p>Accepts and engages in coactive or shared exploration (i) <i>e.g. feeling materials with a member of staff</i></p>	<p>Recognises familiar events and objects (ii) <i>e.g. reaching out to touch playdough</i></p> <p>Communicates consistent preferences (ii) <i>e.g. consistent dislike of certain textures</i></p>	<p>Requests events or activities (i) <i>e.g. reach for object making a sound</i></p> <p>Engage in an activity and observe a change (i) <i>e.g. follows bubbles rising in a beaker</i></p>	<p>Chooses a favourite or best result (ii) <i>e.g. which plant to take home</i></p> <p>Selects or chooses the form of evidence or object to record (ii) <i>e.g. picking photo from selection or which material to stick on a chart</i></p>	<p>Imitates actions <i>e.g. when an adult moves like different animals</i></p> <p>Uses resources, following step-by-step instructions, to gain information <i>e.g. from books or a website</i></p>	<p>Groups and/or matches objects in terms of single obvious feature <i>e.g. colour, temperature</i></p> <p>Completes a set of steps to locate information within a book, display or computer programme <i>e.g. finding out about dinosaurs</i></p> <p>Identifies where changes have taken place <i>e.g. which plants have grown or materials changed shape</i></p> <p>Indicates where similar changes have happened <i>e.g. pointing out all the wet or dry materials</i></p>	<p>Uses familiar resources to gather evidence using skills involving a small number of simple steps <i>e.g. use mouse to navigate through familiar computer programme</i></p> <p>Detects and indicates where sensory information differs <i>e.g. where colours are different or objects are heavier/ lighter</i></p> <p>Begins to make generalisations, predictions or connections <i>e.g. expecting that ice will melt: making wheeled objects move faster by pushing or putting onto a smooth surface</i></p> <p>Recognises distinctive features of objects and where they belong <i>e.g. feathers on a bird or leaves on a tree</i></p>
---------------------------------------	--	--	---	---	---	--	--	---	--

									Sorts materials according to a single criterion when the contrast is obvious <i>e.g. rough or not rough</i>
Scientific attitudes	Participation is fully prompted(i) Allows themselves to be involved in activity (i) <i>e.g. tolerates flower near face or let hand be used to touch corrugated paper</i>	Shows emerging awareness of activities and experiences (ii) <i>e.g. touching melting ice or seeing different colours</i> May have periods of alertness (ii) <i>e.g. turning to sounds</i>	Begins to show interest in events and objects (i) <i>e.g. listens to a buzzer in an electrical circuit</i> Responds with increasing consistency to sensory based activities (i) <i>e.g. showing consistent preference for some foods</i>	Begins to be proactive in interactions (ii) <i>e.g. turns to look at objects or moves away from bright light</i>	Becomes aware of the sources of sensory evidence (i) <i>e.g. places hand under running water from watering can</i> Observes results of own actions with interest (i) <i>e.g. pressing hard objects into soft textures</i>	Requests stimulus through gesture (ii) <i>e.g. pointing at switch and then looking at person to communicate that they want it pressing</i> Actively explores objects and events for more extended periods (ii) <i>e.g. feeling textures of different materials</i>	Shows interest objects and activities <i>e.g. when mixing corn flour and water</i> Responds to prompts to observe sensory based outcomes of an experiment <i>e.g. looks for a colour change or loss of colour</i>	Takes part in activities focused on anticipation of something in a particular environment <i>e.g. finding a hamster under hay</i> Uses resources with increasing independence <i>e.g. initiates the activation of a range of light sources</i>	Explores objects and materials provided appropriately <i>e.g. feels materials and doesn't put in mouth</i> Recognises a safety warning <i>e.g. on a cigarette packet or cleaning product</i>
Measurement							Observes outcomes of simple physical change <i>e.g. mixing flour and water</i>	Indicates the before and after of material changes <i>e.g. solid and melted chocolate</i>	Matches object to a similar one Observes change closely <i>e.g. colour change on forehead thermometer</i>

Skills	P7	P8	L1	L2	L3
Experimental skills and investigations	<p>Responds to questions requiring an informed decision <i>e.g. How much do you think we should use? Should we add more or less?</i></p> <p>Makes simple suggestions of what to do to find the answer <i>e.g. pulling a car over different floors</i></p> <p>Shows an awareness of treating things in the same way <i>e.g. when growing seeds says 'I'll put them all in soil'</i></p> <p>Uses skills learnt and uses in different context <i>e.g. testing the hardness of new materials using a nail to scratch</i></p> <p>Makes more detailed observations <i>e.g. uses simple vocabulary such as hard, soft, hot, warm to describe what they saw</i></p> <p>Makes simple records of their findings <i>e.g. using audio recording or photos or pictorial representation. Or sequence pictures showing an activity</i></p> <p>Begins to respond to encouragement to repeat or modify tasks <i>e.g. use less soil or water when looking after plants or trying different equipment to see which works best</i></p>	<p>Begins to ask some of their own questions <i>e.g. Why does the mealworm do that?</i></p> <p>Contributes to planning an investigation <i>e.g. suggests something to change ('let's try more water') or to use ('let's use these washing up liquids')</i></p> <p>Shows an awareness of amounts to use <i>e.g. how much soil to use when growing plants</i></p> <p>Locates the right equipment to use for simple investigations <i>e.g. seed trays, compost/soil, seeds and watering can</i></p> <p>Makes simple predictions based on something already encountered <i>e.g. suggesting woodlice will be found under stones or logs because they have found some there in their garden</i></p> <p>Records results simply <i>e.g. on charts drawn by adult or by making own collections</i></p> <p>Notices when something has not worked and tries a different approach or suggests a way to improve it <i>e.g. putting seeds in warmer place to help them grow or deciding the elastic band they picked wasn't strong enough</i></p>	<p>Asks simple questions stimulated by their exploration of the world <i>e.g. How can I make it go faster?</i></p> <p>Experiences some different ways to answer questions <i>e.g. observing tadpoles developing over or grouping and sorting objects</i></p> <p>Draws on everyday experience to help answer questions <i>e.g. What is the same about places where there are shadows?</i></p> <p>Responds to prompts by making simple suggestions on how to find an answer or make observations <i>e.g. Suggests comparing how long it takes different coloured ice pops to melt</i></p> <p>Shows an understanding of comparative language <i>e.g. more, same</i></p> <p>Uses senses or simple equipment to make observations <i>e.g. touching different surfaces in work on friction</i></p> <p>Observes increases and decreases <i>e.g. in light, sound, heat when appliances are used</i></p>	<p>Draws on their observations and ideas to offer answers to questions <i>e.g. after filtering sandy water say that they could filter a different solid from water</i></p> <p>Makes suggestions about how to find things out or how to collect data to answer a question or idea they are investigating <i>e.g. when finding out if a shadow is the same all day suggest putting object in sun and taking photos of shadow during the day</i></p> <p>Identifies things to measure or observe that are relevant to the question or idea they are investigating <i>e.g. says they will look at brightness of bulb when finding out if all circuits are the same</i></p> <p>Spots when a simple test is unfair <i>e.g. not using the same amount of water each time</i></p> <p>Use equipment correctly to make observations or measurements <i>e.g. keeps the probe of datalogger in the water whilst reading temperature</i></p> <p>Presents evidence in an ordered way <i>e.g. When recording the strength of different materials, put results into a table that has been developed with help</i></p>	<p>Responds to ideas given to them to answer questions or suggest solutions to problems <i>e.g. when asked why there are fewer daisies near a wall suggest that maybe if could be too dark or chemicals might be leaking out of the stones</i></p> <p>Considers different ways to find the answer to a question <i>e.g. using a fair test, survey, open exploration, research</i></p> <p>Identifies one or more control variables in investigations from those provided <i>e.g. when investigating parachutes lists type of material and height dropped from as things they need to keep the same when changing area</i></p> <p>Says what they are keeping the same or changing to make a fair test (but need help to carry out in practice) <i>e.g. when finding out what affects the growth of yeast</i></p> <p>Selects equipment or information sources from those provided to address a question or idea under investigation <i>e.g. picks three different 'soils' from 5 on offer to see if they affect how fast seeds germinate</i></p>

			<p>Presents evidence in simple templates provided for them <i>e.g. using non standard units such as signs, symbols or pictures</i></p>	<p>Says what happened in their experiment <i>e.g. state what happened when using a ruler to measure reaction times</i></p> <p>Says whether what happened was what they expected to happen and identifies any unexpected outcomes <i>e.g. state what went well and what didn't go well when using a ruler to measure reaction times</i></p> <p>Works together on an investigation and recognises the contributions made by others <i>e.g. When surveying a habitat, work individually and then collaboratively and compare the number of observations collected</i></p> <p>Responds to prompts to suggest different ways they could have done things <i>e.g. When investigating which size of paper cone allows sand to fall fastest, suggest ways of collecting data differently</i></p>	<p>Makes some systematic, accurate observations or whole number measurements relevant to questions or ideas under investigation <i>e.g. measures height of plants growing in different conditions</i></p> <p>Records results sequentially and with enough readings to show any patterns <i>e.g. gradually raises the height of a ramp by one book each time and records how far tin of peaches rolls</i></p> <p>Constructs tables that have quantitative units and appropriate headings <i>e.g. the number of coils and number of paperclips picked up when investigating electromagnets</i></p> <p>Identifies simple advantages of working together on experiments or investigations <i>discussing the best way to make a fruit battery and identifying different variables to try</i></p> <p>Suggests improvements to their working methods. E.g. <i>When comparing the energy content of different foods, discuss problems with the investigation:</i></p>

<p>Analysis and evaluation</p>	<p>Uses basic mouse skills or other switch devices to look information from a computer <i>e.g. finding the name of an extinct animal</i></p> <p>Looks through a book or other media to locate information <i>e.g. finding out about a planet</i></p> <p>Communicates related ideas and observations using simple phrases/ signs <i>e.g. which food to give which animal</i></p> <p>Sorts materials with help and obvious given criterion <i>e.g. sorts brown bottles from other coloured ones</i></p> <p>Makes a connection between the start and end of a test <i>e.g. cars when they were at the top of a slope and where they finished up</i></p> <p>Indicates the 'best' results <i>e.g. which seeds have grown the most or which mixture had the most bubbles</i></p>	<p>Recognises that information can be found within a book or familiar computer programme <i>e.g. suggests searching on line for warning sounds or colours</i></p> <p>Starts to seek information or evidence from a secondary source <i>e.g. indicates evidence in displays or outdoor areas</i></p> <p>Repeats or follows up previous activities to investigate further <i>e.g. digs up previously planted seeds to see if they have grown or tries to squash new materials</i></p> <p>Identifies changed or unusual items and brings to the attention of others <i>e.g. points out to a friend that the yeast has gone all frothy</i></p> <p>Brings basic order to results/ observations <i>e.g. puts similar things together</i></p> <p>Sorts materials using simple criteria <i>e.g. pictures of space objects by whether they have craters or are man-made</i></p> <p>Begins to arrange results in size order <i>e.g. from largest to smallest</i></p>	<p>Recognises the basic features of objects, living things or events <i>e.g. the features plants have in common</i></p> <p>Responds to suggestions to identify some evidence that has been used to answer a question <i>e.g. information, observations or measurements</i></p> <p>Uses everyday terms to describe simple features or actions of objects, living things or events they observe <i>e.g. the ice cream went runny and leaked through my fingers</i></p> <p>Responds to prompts to say what happened and whether it was what they expected <i>e.g. says the raisins bumped up and down in the lemonade and that was very odd</i></p> <p>Identifies what has changed when observing objects, living things or events <i>e.g. notices the plant droops when it hasn't had water</i></p> <p>Communicates any simple observations, differences or regular changes in materials <i>e.g. during cooking or when removing stains using different washing powders</i></p>	<p>Uses simple scientific vocabulary to describe ideas and observations <i>e.g. describes materials as rough, smooth, waterproof etc</i></p> <p>Makes comparisons between the basic features or components of objects, living things or events <i>e.g. plants and animals in different habitats</i></p> <p>Sorts and groups objects, living things or events on the basis of what they have observed <i>e.g. which people can roll their tongues or have attached ear lobes</i></p> <p>Ranks results in order <i>e.g., best to worst or worst to best</i></p> <p>Responds to suggestions to identify some evidence needed to answer a question <i>e.g. says they need to count how many seeds grow to decide which is the best soil</i></p> <p>Presents their ideas and evidence in appropriate ways <i>e.g. pictograms or bar charts with help</i></p> <p>Responds to prompts by using simple texts and electronic media to find information <i>e.g. where magnets are used in everyday life</i></p>	<p>Uses scientific forms of language when reporting on findings <i>e.g. uses cell, battery, circuit etc when talking about work on electricity</i></p> <p>Presents simple scientific data in more than one way, including tables and bar charts <i>e.g. draws a table of results showing number of woodlice in different places and turns this into a bar chart</i></p> <p>Identifies straightforward patterns in observations or data presented in various formats <i>e.g. as more salt is added it takes more time to dissolve</i></p> <p>Describes what they have found out in experiments or investigations linking cause and effect <i>e.g. link the time taken to dissolve to size of particles of indigestion tablets</i></p> <p>Represents things in the real world using physical models <i>e.g. globe and light to show day and night</i></p> <p>Uses straightforward scientific evidence to answer questions or to support their findings <i>e.g. temperature readings to show that things dissolve faster if solvent is hotter</i></p>
---------------------------------------	--	--	---	---	--

			Makes suggestions in response to evaluation questions <i>e.g. Which part worked best? Could we do it a different way?</i>		Identifies differences, similarities or changes related to simple scientific ideas, phenomena or processes <i>e.g. identify changes before and after filtering</i> Suggests improvements to their working methods <i>e.g. using a datalogger in place of a thermometer to continuous temperature readings</i>
Scientific attitudes	Actively joins in scientific investigations Identifies some obvious hazards <i>e.g. broken glass or water on the floor</i> Shows understanding of some simple scientific vocabulary <i>e.g. before, after, grow, eat</i>	Explores and observes similarities, differences and changes Identifies obvious risks and reduces risk <i>e.g. mopping up spills or wearing protective clothes</i>	Identifies a link to science in familiar objects or contexts <i>e.g. swimming pool attendant using chemicals to kill germs in the pool</i> Recognises scientific and technological developments that help us <i>e.g. antibiotics, development of batteries or electric motor</i> Shares own ideas and listens to ideas of others <i>e.g. when talking about how to test insulation or finding best antacid tablet</i> Suggests solutions to some obvious hazards <i>e.g. wearing gloves or safety glasses</i>	Expresses personal feelings or opinions about scientific or technological developments <i>e.g. says whether they think wind farms are helpful</i> Describes, in familiar contexts, how science helps people do things <i>e.g. undo a jar lid by running it under the hot tap</i> Identifies people who use science to help others <i>e.g. particular scientists like Louis Pasteur or wearing ear defenders helps people in loud environment</i> Identifies scientific or technological developments and say whether or not they are helpful <i>e.g. mobile phones, super thin materials</i>	Explains the purposes of a variety of scientific or technological developments <i>e.g. links simple cause and effect - saying that MMR is good because measles can cause deafness</i> Links applications to specific characteristics or properties <i>e.g. say that silver is better conductor than copper but too expensive to use in wires</i> Identifies aspects of our lives, or the work that people do, which are based on scientific ideas <i>e.g. gritting roads in winter or radiography</i>
Measurement	Distinguishes between different results <i>e.g. points out which magnet was strongest and which was weakest</i>	Begins to use non standard measures with help to record results <i>e.g. height of foam from different washing up liquids</i>	Uses digital meters to take measurements with help <i>e.g. temperature or sound levels</i>	Makes measurements using standard and non-standard units as appropriate <i>e.g. counts the number of paperclips a magnet will pick up or uses a</i>	Takes quantitative measurements using standard units <i>e.g. for time, mass, temperature, length</i>

				<i>newton meter to measure the amount of force needed to pull a door open</i>	
--	--	--	--	---	--