Bathwick Progression of Scientific Skills

What does a Bathwick Year 6 leaver look like?

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A Bathwick scientist is an **inquisitive and resilient learner** that feels confident to **explore and embrace the unknown** in the world around them. By the end of their primary education, they will have the tools to develop their own ideas and ways of working that enable them to **make informed decisions about new technologies**, **their health and the scientific opportunities around them**. Their critical thinking skills will equip them to **design and carry out their own investigations** and they will feel confident in using their results to **make conclusions and knowledgeable predictions**. Our Year 6 leavers will be **curious**, **life-long learners** who continue to have an **active role in science** and take inspiration from famous scientists and their discoveries.

Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ouestioning	To demonstrate	To demonstrate	To raise my own	To explore my own	To ask/raise my	To recognise	To recognise
	curiosity about	curiosity by the	logical questions	ideas about 'What	own relevant	scientific questions	scientific questions
	the world	questions I ask.	based on or linked	if?' scenarios e.g.	questions with	that do not yet have	that
UKS2 - Asking their own	around me.		to things I have	humans did not have	increasing	definitive	do not yet have
questions about scientific		To ask simple	observed.	skeletons.	confidence and	Answers.	definitive answers.
phenomena.	To begin to ask	questions about what			independence that		
	questions to find	I notice about the	With	To ask questions	can be explored,	To refine a scientific	To refine a scientific
LKS2 - Asking relevant	out more.	world around me.	help/scaffolds, to	such as 'What if we	observed, tested or	question so that it	question to make it
questions.			begin to ask	tried?' or 'What if	investigated further.	can be tested e.g.	testable i.e. ask a
•			questions such as	we changed?'		ʻWhat	testable question
KS1 - Asking simple			'What will happen		To ask questions	would happen to if	which includes the
questions			if?'	To begin to	such as 'What will	we changed?'	change and
questions.				understand that	happen if?" or		measure
				some questions can	'What if we	To decide whether	Variables
				be tested in the	changed? (linked	my questions can be	- e.g. what would
				classroom and some	with Y4 PoS).	answered by	happen toif
				cannot.		researching or by	we changed?
					To choose/select a	testing.	- e.g. What effect
				Within a group, to	relevant question		would we have
				suggest questions	that can be	To independently ask	on if we?
				that can be	answered [by	my own scientific	- e.g. How would
				explored, observed,	research or	questions taking	exercise affect
				tested or	experiment /	some	the
				investigated further.	test].	ownership for finding	pulse rate?
						out the answers.	
				Within a group, to			To use observations
				suggest relevant			to suggest a further
				questions about			(testable or
				what I observe and			research)
				about the world			question.
				around me.			

							To independently ask a variety of scientific questions and decide the type of enquiry needed to answer them.
UKS2 - Developing a deeper understanding of a wide range of scientific ideas and encountering more abstract ideas. LKS2 - Developing their own ideas and their understanding of the world around them.	 ro use senses to explore the natural world. To explore natural processes such as melting floating and magnetism. To observe changes in plants over time 	simple scientific language to talk about or record what I have noticed. To use observations to make suggestions and/or ask questions. To look / observe closely and communicate changes over time.	scientific language to talk about / record what I have noticed. To use observations to make suggestions and/or ask questions. To observe and describe simple processes/cycles/	record relationships between structure and function. To observe and record changes /stages over time. To explore / observe things in the local environment / real contexts and record observations.	ideas on a concept and compare these with what I observe / find out. To use observations to suggest what to do next. To discuss ideas and develop descriptions from my observations using relevant	developing scientific knowledge and understanding and relevant scientific language and terminology to discuss, communicate and explain my observations (e.g. friction, air resistance, forces, Earth and space, reversible and	scientific knowledge and understanding and relevant scientific language to discuss my observations and explorations. To identify changes that have occurred over a very long period of time (evolution) and discuss
KS1 - Observing closely Using their observations and ideas to suggest answers to questions	and in their own life e.g. baby to adult. To observe the effect of the change in season on the world around them. To make close observations of a variety of wild and garden plants.	To look / observe closely and communicate the features or properties of things in the real world. To observe closely using my senses.	changes with several steps (e.g. growth cycle, simple food chain, saying how living things depend on one another). To observe closely and communicate with increasing accuracy the features or properties of things in the real world.		scientific language and Vocabulary. To observe and record relationships between structure and function or between different parts of a processes. To observe and record changes /stages over time.	irreversible changes). To evaluate my observations and suggest a further test, offer another question or make a prediction. To observe (including changes over time) and suggest a reason for what I notice.	how changes have impacted the world. To explore more abstract systems / functions /changes / behaviours and record my understanding of these (e.g. the relationship between diet, exercise, drugs, lifestyle and health; evolutionary changes; how light travels).
Grouping and classifying	To observe changes in plants over time and in their own	To name/identify common examples and some common features.	To name / identify common	To decide ways and give reasons for sorting, grouping, classifying,	To make a simple guide to local living things.	To suggest reasons for similarities and differences.	To recognise the importance of classification to the scientific

KS1 and KS2 - Compare	life eg baby to	With help, to decide	examples, some	identifying	To use guides or	To compare and	world and form a
and contrast a variety of	adult.	how to sort and group	common features	things/objects, living	simple keys to	contrast things	conclusion from
examples		objects, materials or	or different uses.	things, processes or	classify / identify	beyond my locality	my sorting and
examples.	To discuss the	living things.		events based on	[animals,	and use these	classifying.
	similarities and		To sort and group	specific	flowering plants and	similarities and	
	differences	To name basic	objects, materials	characteristics.	non-flowering	differences to help to	To compare and
	hetween	features of objects,	or living things by		plants].	classify (e.g. features	contrast more
	different	materials and living	observable and/or	To compare and		of animals, life cycles	complex processes,
	habitats and	things.	behavioural	contrast and begin	To use my	of different living	systems,
	habitats and		features.	to consider the	observations to	things, melting	functions (e.g.
	different	To say how things are		relationships	identify and classify.	compared with	sexual and asexual
	unerent	similar or	To compare and	between different		dissolving, etc).	reproduction).
	materials.	different.	contrast a variety	things (e.g.	To begin to give	- 1	—
	To be shown	To company and	of things lobjects,	structures of plants,	reasons for these	To use secondary	To construct a
	To begin to	To compare and	materials or	functions of plant	similarities and	sources of	classification key /
	identify uses for	observable features /	focusing on the	parts, diets,	differences.	information to	
	materials.	characteristics of	similarities as well	and other animals	To record	classify	than two items
		objects	as the differences	changes over time	similarities as well	ciassiry.	than two items.
		materials and living	as the unterences.	etc)	as differences	To decide which	To compare and
		things		ctc.j.	and/or changes	sources of	contrast things
				To record similarities	related to simple	information (and/or	beyond my locality
				as well as	scientific ideas or	equipment	and discuss
				differences (e.g.	processes or more	and/or test) to help	advantages/
				what do all skeletons	complex groups of	identify and	disadvantages,
				have? as well as the	objects/living	classify.	pros/cons of the
				differences between	things/events		similarities and
				skeletons).	(e.g. evaporation		differences.
					and condensation,		
					different food		To use research*to
					chains, different		identify and
					electrical		classify things.
					circuits).		
							To use classification
							systems, keys and
							other information
							records [databases]
							to help classify or
-	To use strends	Taladu ya suda	To tall, also at have	To final data in an and	To make destate as	To final and have	Identity things.
Research	To use simple	To ask people	To talk about now	To find things out	TO Make decisions	10 TING OUR NOW	To research now
	equipment to	questions (e.g. an	information source	using a range of	information to use	changed/developed	developed over
LIKS2 – Summarise	explore the	expert of not-	mormation source	secondary sources of	from a wide range	changed/developed	ueveloped over
GROZ GUITHUIDE	natural world	seating).	was anu		nom a wide fallge	over time.	

research from a wide eg. Magnifying express opinion information(e.g. of sources and	time and had an
variety of sources and glasses and To use simple primary about findings. books, photographs, make To articulate and	impact on our lives.
recognising that scientific visualiser. and videos and other decisions about explain findings	
ideas change and develop secondary sources To make technology). how to present my from my research	To use evidence
To listen and (such as objects, suggestions about research. using scientific	from a variety of
over time. It is and books and who to ask or knowledge and	sources to justify
photographs) where to look for To recognise when understanding.	my ideas.
LKS2 - Finding things out relevant to find things out. information. and how secondary	
using a wide range of comments and sources might help To make decisions	To recognise which
secondary sources of questions. To ask people me to answer about which	secondary
information. questions to help questions that information to use	sources will be most
To listen and ask me answer their cannot be answered from a wide	useful to
KS1 - Finding things out questions to questions. through practical range of sources.	research my ideas
using secondary sources clarify.	and begin to
To use simple and	separate opinion
appropriate	from fact.
secondary sources	
(such as books,	To interview people
photographs,	to find out
videos and other	Information.
technology) to find	
things out / find	
answers.	
Planning andTo use simpleWith help, to carryTo carry out simpleTo help to decideTo carry out simpleTo carry our fair test	5 To predict what a
equipment to out a simple comparative tests about how to set up fair tests with and other	graph might look
explore the test/comparative test. as part of a group, a simple fair test and increasing investigations with	like before
natural world following a method begin to recognise confidence increasing	collecting results.
UKS2 - Using different eg. Magnifying With help, to make a with some when a test is not investigating the independence.	
types of scientific enquiry glasses and simple prediction or independence. fair. effect of something	To make a
making decisions about visualiser.	nypotnesis where i
and explaining choices for what might happen. To make a simple to make a prediction than one possible	say now one thing
testing. To make simple To have to suggest which is	will affect another
predictions come ideas e.g. and trute give a	for my suggestion
LKS2 - Making decisions within a shoose which vague reason (aven With support/as a concentrate type of	for my suggestion
about and setting up discussion equipment to use though it might not group to set up science anguing. To justify their	understanding of
simple practical enquiries choose which be correct) simple practical they might use to conson with some	the scientific
simple plactical enquiries, close which be correctly. Simple plactical they might use to reason with some and fair they might use to reason with some and fair they might use to reason with some and fair they might use to reason with some and the some a	concent
comparative tests and fair questions lise fair	concept.
test.	To identify variables
To talk about ways of setting up a simple choice from a list of investigate their.	to change measure
KS1 - Performing simple setting up a test comparative test a things (variables) question?)	and keen the same
tosts setting up a test. comparative test. a timps (variables) question;) about which	

			To talk about a practical way to find answers to their questions.	 conducting a fair test. (e.g. choose which magnets to compare and which method to use to test their strength). As a group, to begin to make some decisions about the best way of answering their questions. To find/suggest a practical way to compare things e.g. rocks, magnets. 	To make a prediction based on the knowledge acquired from previous explorations /observations and apply it to a new situation. To explain my planning decisions and choices. To make some of the planning decisions about what to change and measure/observe.	measure and keep the same. To make most of the planning decisions for an investigation. To recognise when it is appropriate to carry out a fair test.	in order for a test to be fair. To independently plan investigations and explain planning decisions. To decide when it is appropriate to carry out a fair test investigation, comparative test or alternative.
					To begin to recognise when a fair test is necessary.		
Using equipment and measures (cross-curricular links: Maths) UKS2 - Increasing complexity and increasing accuracy and precision. Make their own decisions about the data to collect. LKS2 – Making accurate	To use simple equipment to explore the natural world eg. Magnifying glasses and visualiser.	To measure using non-standard units e.g. how many lolly sticks/cubes/handfuls, etc. To observe closely, using simple equipment(e.g. hand lenses, egg timers). To use senses to compare different textures, sounds and smells.	To measure using non-standard and simple standard measures (e.g. cm, time) with increasing accuracy. To begin to make decisions about which equipment to use. To correctly and safely use equipment provided to make	To collect data from their own observations and measurements using notes/ simple tables/standard units. To help to make some decisions about what observations to make, how long to make them for, the type of simple equipment that	To begin to identify where patterns might be found and use this to begin to identify what data to collect. To make more of the decisions about what observations to make, how long to make them for and the type of equipment that might be used.	To make my own decisions about what observations to make or measurements to use and how long to take them for (recognising the need for repeat readings on some occasions). To take measurements using a range of scientific equipment with	To decide whether to repeat any readings and justify the reason for doing so. To make my own decisions about what measurements to take (and begin to identify the ranges used). To make, and act on suggestions to
measurements and gathering data.			provided to make observations and/or take simple measurements.	equipment that might be used and how to work safely.	To recognise obvious risks and	equipment with increasing accuracy and using more	on, suggestions to control/ reduce risks to themselves and others.

KS1 - Using simple				To make simple	how to keep myself	complex scales /	
equipment and				accurate	and others safe.	units.	To use equipment
gathering data to help				measurements using			fit for purpose to
				whole number	To learn how to use	To identify possible	take measurements
in answering their				standard units, using	new equipment,	risks to myself and	which are
questions.				a range of	such as data loggers	others and suggest	Increasingly
				equipment.	temperature in	these	
				To gather data in a	degrees Celsius (°C)	these.	precise.
				variety of ways to	using a	To choose the most	To decide the most
				help in answering	thermometer.	appropriate	appropriate
				questions.		equipment and make	equipment to use to
					To collect data from	accurate	collect data.
				To use equipment	their own	measurements.	
				accurately to	observations and		
				improve the detail of	measurements,		
				my measurements/	using notes / simple		
				observations (e.g.	tables / standard		
				microscopes,	units.		
				measuring syringes,	To make a sumate		
				measuring cylinders,	To make accurate		
				nanu ienses).	using standard units		
					land more complex		
					units and parts of		
					units) using a range		
					of equipment and		
					scales.		
Communicating	To listen and	To communicate my	To record and	To record and	To record findings	To use their	To articulate
	make comments	ideas to a range of	communicate my	present findings	using relevant	developing scientific	understanding of
	about their	audiences in a variety	findings in a range	using simple	scientific language	knowledge and	the concept using
	observations in	of ways.	of ways to a variety	scientific language	and vocabulary,	understanding and	scientific language
Reporting findings,	a discussion.	To complete a pro	of audiences.	and vocabulary,	including	relevant scientific	and terminology
recording data,		ro complete a pre-	To uso simplo	discussions, and and	and written	torminology to	when describing
presenting findings.	To listen and	chart using picture	scientific language	written	explanations notes	communicate more	observations and
Read, spell and	respond with	records or simple	with increasing	explanations notes	drawings	abstract concents	findings
pronounce scientific	relevant	words.	accuracy.	annotated drawings	(annotated)	abourder concepts.	intonigo.
vocabulary correctly	comments and			pictorial	pictorial	To present and	To record data and
linked to the relevant	questions.	To contribute to a	To record simple	representations,	representations,	explain my findings	results of increasing
year group.		class display.	data with some	labelled diagrams,	labelled diagrams,	through talk, in	complexity using
			accuracy to help in	simple tables, bar	tables and bar	written forms or in	scientific diagrams

	To listen and ask	To add annotations to	answering	charts (using scales	charts [where	other ways (e.g.	and labels,
	questions to	drawings or	questions.	chosen for them),	intervals and ranges	using technology) for	recognised symbols,
	clarify.	photographs.		displays or	agreed through	a range of audiences	classification keys,
	, i		With support or	presentations.	discussion], displays	/ purposes.	tables, bar and line
	To speak about	To begin to use some	using frameworks,		or presentations.		graphs, and models.
	a range of	simple scientific	to make decisions	With scaffold /		To record data and	
	subjects using	language.	about how to	support, to record,	To begin to select	results of increasing	To make decisions
	vocabulary		complete a variety	and present data in	the most useful	complexity using	about how to
	learnt	To record simple	of tables/charts	a variety of ways to	ways to collect,	different formats e.g.	present and explain
	icum.	visual representations	(e.g. a 2 column	help in answering	record, classify and	tables, annotated	their findings
		of observations made.	table, tally charts,	questions.	present data from a	scientific diagrams,	through talk, in
			venn diagram,	To communicate	range of choices.	classification keys,	written forms or in
			graphs with 1:1	their findings in	To make decisions	graphs and models.	Utilet ways (e.g.
			Scale)	ways that are	on how best to	To make decisions	using technology).
			scarej.	appropriate for	communicate their	about the most	
			To present findings	different audiences.	findings in ways that	appropriate way of	
			in a class displays.		are appropriate for	recording data.	
			. ,		different audiences.	-	
			To sequence /				
			annotate				
			photographs of				
			change over time.				
			To produce				
			increasingly				
			detailed drawings				
			which are				
	To describe	To use as sold as to	labelled/annotated.		To notice / find	To doce the	To such up over other d
Describing	To describe	To use recordings to	With guidance, to	With	To notice / find	To describe	To spot unexpected
results/looking for	what call be	doscribo what	pegin to notice	describe and	patterns in their	straightiorward	fit the pattorn
natterns	smelt and	happened	data e g order	compare the effect	data (To describe	linking cause and	(anomalies)
patterns	tasted.	happenear	their findings.	of different factors	the effect of	effect e.g. using er or	(unomanes).
		To sequence	sequence best to	on something	something on	the word 'more'	To identify patterns
UKS2 - Looking for	To make	photographs of an	worst, say what	(e.g. we noticed that	something else).	(e.g. the longer,	in results collected
patterns analysing	comments	event/observation.	happened over	larger magnets are	(e.g. as I lengthen	thinner shapes move	and describe them
functions, relationships	about their		time, etc.	not always stronger).	the ruler I notice	through the water	using the change
and interactions more	observations in				that the pitch gets	more quickly OR the	and measure
systematically.	a discussion.		To recognise if	With help, to look	lower).	larger the wings, the	variables (causal
			results matched	for changes and		longer it takes the	relationships) (e.g.
LKS2 - Describing their			predictions (say if	simple patterns in	With some	spinner to fall).	as we increased the
findings/ results.					independence, to		number of batteries

KS1 - Talk about what happened / what they noticed.	To observe changes in plants over time.		results were what they expected). To use my recordings to talk about and describe what has happened.	my observations, data, chart or graph. To use my results to consider whether they met their predictions.	analyse results / observations by writing a sentence that matches the evidence i.e. deciding the important aspect of the result and summarising in a conclusion (e.g. metals tend to be good conductors of electricity).	To look for / notice relationships between things and begin to describe these. To comment on the results and whether they support the initial prediction.	the brightness the bulb increased.
Explaining results UKS2 - Draw conclusions based on / supported by evidence. LKS2 - Reporting on findings saying why something happened. KS1 - Talk about what they found out.	To make comments about their observations in a discussion.	To begin to use simple scientific language to talk about what I have found out or why something happened.	To begin to use simple scientific language to explain what I have found out. To give a simple, logical reason why something happened (e.g. I think because).	To use my experience and some evidence or results to draw a simple conclusion to answer my original question. To write a simple explanation of why things happened (using the word 'because') and using simple scientific language and vocabulary.	To begin to develop my ideas about relationships and interactions between things and explain them. To use relevant scientific language and vocabulary to begin to say / explain why something happened.	To use my scientific knowledge and understanding and appropriate scientific language and terminology to explain my findings and data and answer their initial question. To draw a valid conclusion (explain why it happened) based on my data and observations.	To identify evidence that refutes or supports my ideas. To independently form a conclusion which draws on the evidence from the test. To use scientific language and terminology to explain why something happened.
Trusting results UKS2 - Comment on how reliable the data is. LKS2 - Suggest improvements for further tests. KS1 – Beginning to spot when a method is not fair.	N/A in EYFS.	N/A in Y1.	Begin to discuss if the test was unfair.	To say whether what happened was what they expected and notice any results that seem odd. To begin to recognise when a test is not fair and suggest improvements.	To use results to suggest improvements, new questions and/or predictions for setting up further tests. To compare my results with others and give reasons why results might be different.	To begin to recognise how repeated readings improve the reliability of results. To compare results with others and comment on how reliable they are.	To be able to suggest reasons for unexpected results (anomalies). To describe how to improve planning to produce more reliable results. To say how confident I am that my results are

			reliable and give a
			reason.

Collaborating To organise a	nd To share ideas in a	The selection of the selection of the			_	
	nu no share lucus in a	To share ideas in a	To begin to make	To make some	To propose my own	To propose my own
cooperate w	th group and listen	group and listen	some decisions	decisions about an	ideas and make	ideas and make
other childre	to the ideas of others.	to the ideas of	about an idea within	idea within a group	decisions with	decisions with
Non-Statutory		others.	a group from a list of	(e.g. I think we	agreement in a	agreement in a
Non-Statutory Interacting effectively as part of a group. To play sustained cooperative games. To think abor the perspect of others.	To work with others on a science task.	others. To work cooperatively with others on a science task making some choices.	a group from a list of choices (e.g. let's put them all in a pile first OR I think we should try). With help; support, listen to and acknowledge others in the group (e.g. Yes. I prefer that one too). To build on / add to someone else's idea. (e.g. we could use x as well as y). To begin to understand that it is ok to disagree with my peers and offer a reason for my	 (e.g. I think we should find out by testing) Increasingly support, to listen to and acknowledge others in the group. To build on / add to someone else's idea to improve a plan. To understand that it is ok to disagree with my peers and offer reasons for my opinion. 	agreement in a group. To support, listen to and acknowledge others in the group e.g. Yes. I prefer that one too. To check the clarity of each other's suggestions e.g. are you saying you think this one is a herbivore? To build on / add to someone else's idea to improve a plan or suggestion. To understand that it is ok to disagree with my peers and	agreement in a group. To support, listen to and acknowledge others in the group. To check the clarity of each other's suggestions To build on / add to someone else's idea to improve a plan or suggestion. To understand that it is ok to disagree with my peers and offer reasons for my opinion.
			oninion		offer a reasons for	

Modelling	To use drawings	With help, to	To act out	To act out or make a	To make a visual	To perform / create	To make / perform
Non-Statutory	and construction to represent ideas.	follow movements (dance / drama) to act out my	something to represent something else about the world	model of something to represent something in the real	representation or a model of something to	simple models to exemplify scientific ideas using scientific terminology where	and use my own versions of simple models to describe and explain scientific
Using dance, drama or a visual aid to represent science in the real world.			around us (e.g. a life cycle).	appropriate scientific vocabulary verbally.	I have seen or a process that is difficult to see.	appropriate (e.g. spheres to represent movements of the	ideas (e.g. circulatory system drama, periscopes to explain

		To suggest my own	Sun and Earth, solar	how light travels,
		ideas on a concept	system models,	burglar alarm to
		and compare these	shadow clocks, a	explain components
		with models or	simple lever or	in a circuit).
		images.	mechanism).	