

Wallsend Jubilee Primary School Skills Progression: Computing & ICT

Strands	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Can listen to a	Understands what	Understands what an	Understands what an	Understands that	Designs solutions	Designs solutions	Designs solutions
	small sequence	happens when	algorithm is and is	algorithm is and is	algorithms are	(algorithms) that use	(algorithms) that use	(algorithms) that use
	of instructions	buttons are	able	able	implemented on digital	repetition and two-	repetition and two-way	repetition and two-way
	and follow them.	pressed on a	to express simple	to express simple	devices as programs.	way selection i.e. if,	selection i.e. if, then,	selection i.e. if, then
		familiar toy or	linear (non-branching)	linear (non-branching)	Designs simple	then, and else.	and else.	and else.
	Can verbally	device and uses	Algorithms	Algorithms	algorithms using	(Scratch –	(Programming	(Raspberry Pi)
	give instructions	with purpose. E.g	symbolically.	symbolically.	loops, and selection.	programming	Robots)	(Sonic Pi)
	and watch what	taking a photo of	Understands that	Understands that	i.e if statements. Uses	animation)	(Raspberry Pi)	
	happens next.	their work.	computers need	computers need	logical reasoning to			Uses diagrams to
			precise instructions.	precise instructions.	predict outcomes.	Uses logical	Uses diagrams to	express solutions.
	Can experiment	Selects and uses	Demonstrates care	Demonstrates care	Detects and corrects	reasoning to predict	express solutions.	(Raspberry Pi)
	with buttons on	technology to	and precision to avoid	and precision to avoid	errors. I.e. debugging	ouputs, showing an	(Raspberry Pi)	
	a toy or device,	support their	errors.	errors.	in algorithms.	awareness of inputs.		Uses logical reasoning
	understanding	learning such as a	(Action algorithms)	(Programming with	(Programming Scratch	(Scratch –	Designs solutions by	to predict outputs,
	that this makes	timing activity or	(Programming	ScratchJnr)	Maze Games)	programming programming	decomposing a	showing an
	it do something.	taking a range of	Direction)	(Programming with	(Getting started with	animation)	problem and creates a	awareness of inputs.
		photos to support		Logo)	Kodu)	(Lego WeDo – Give it	sub-solution for each	(Raspberry Pi)
	Can play games	learning.			(Lego WeDo)	a scratch)	of these parts	(Sonic Pi)
	and know that		Knows that users can	Understands that		(Kodu Sport)	(decomposition).	
	there is a time	Experiments with a	develop their own	algorithms are	Designs solutions		(Raspberry Pi)	Creates programs that
	limit such as	range of materials	programmes, and can	implemented on	(algorithms) that use	Creates programs		implement algorithms
	Buckaroo or	and objects that	demonstrate this by	digital devices as	repetition and two-way	that implement	Recognises that	to achieve given
	Pop up Pirate.	work in different	creating a simple	programs. Designs	selection i.e. if, then,	algorithms to achieve	different solutions	goals.
		ways, for different	programme in an	simple algorithms	and else.	given goals.	exist for the same	(Sonic Pi)
COMPUTER	Experiments	purposes, such as	environment that does	using loops, and	(Real life Algorithms)	(Lego WeDo – Give it	problem.	
SCIENCE	with using	egg whisk, torch	not rely on text e.g.	selection. i.e if		a scratch)	(Kodu – 3D Pac Man)	Declares and assigns
	machines like a	and tape recorder	Programmable robots	statements. Uses	Uses arithmetic	(Kodu Sport)	(Programming	variables
	photocopier to		etc. Executes,	logical reasoning to	operators, if	Bulling	Robots)	(Raspberry Pi)
	copy their own	Can programme a	checks and changes	predict outcomes.	statements, and	Declares and assigns	(Raspberry Pi)	(Sonic Pi)
	pictures, under	toy to move	programmes.	Detects and corrects	loops, within	variables.		
	adult	accurately and if it	Understands that	errors. I.e. debugging	programmes. Uses		Uses logical reasoning	
	supervision.	doesn't work,	programmes execute	in algorithms.	logical reasoning to	a scratch)	to predict outputs,	e.g. 'until', and a
	Can take a	explain what to do	by following precise	(Programming with	predict the behaviour	(Kodu Sport)	showing an	sequence of selection
	Can take a	next	instructions.	Logo)	of programmes. Detects and corrects		awareness of inputs (Kodu – 3D Pac Man)	statements in
	photograph	Understand some	(Exploring Machines we Control.)		simple semantic	Lisas past tasted loop	(Programming	programs, including an if, then and else
	using an iPad or camera.	actions are	(Action algorithms)	Knows that users can	errors. I.e. debugging	Uses post-tested loop e.g. 'until' and a	Robots)	statement
	Calliela.	programmed and	(Programming	develop their own	in programs.	sequence of selection	(Raspberry Pi)	(Sonic Pi)
		will always stay the		programmes, and can	(Lego WeDo)	statements in	(Naspberry 11)	(Soffic 1 1)
		same, whilst other	(Exploring Digital	demonstrate this by	(Programming Scratch	programs, including	Creates programs that	Understands the
		actions are random		creating a simple	Maze Games)	an if, then and else	implement algorithms	difference between
		A game with a	Courta	programme in an	(Getting started with	statement.	to achieve given	the internet and
		sand timer as		environment that	Kodu)	(Kodu Sport)	goals.	internet service e.g.
		opposed to	Understands that	does not rely on text	(Noda)	(Rodd Oport)	(Kodu – 3D Pac Man)	world wide web.
		Buckaroo which is	computers have no	e.g. Programmable	Uses logical		(Programming	(Inside the internet)
		about the load	intelligence and that	robots etc. Executes,	reasoning to predict	Knows that	Robots)	(o.ao alo ilitorriot)
			computers can do	checks and changes	ouputs, showing an	computers collect	(Raspberry Pi)	Designs solutions by
			nothing unless a	programmes.	awareness of inputs.	data from various	(taopaony i i)	decomposing a
			programme is	Understands that	(Lego WeDo)	input devices,	Declares and assigns	problem and creates a
			executed.	programmes execute	(_090 .7000)	including sensors and	variables	sub-solution for each
			(Exploring Machines	by following precise		application software.	(Kodu – 3D Pac Man)	of these parts
			(Exploring Machines	by following precise	I	application software.	(Noda OD Fac Mail)	or those parts

we Control) (Action algorithms) (Programming Direction) (Exploring Digital Sound)

Recognises that all software executed on digital devices is programmed. (Exploring Machines we Control.) (Action algorithms) (Programming Direction) (Exploring Digital Sound)

instructions. (Programming with ScratchJnr)

Understands that computers have no intelligence and that computers can do nothing unless a programme is executed (Programming with ScratchJnr) (Programming with Logo)

Recognises that all software executed on digital devices is programmed. (Programming with ScratchJnr) (Programming with Logo)

Recognises that a range of digital devices can be considered a computer.

(Lego WeDo)

Recognises and can use a range of input and output devices. Understands how programs specify the function of a general purpose computer. (Lego WeDo) (Programming Scratch Maze Games) (Getting started with Kodu)

Creates programs that implement algorithms to achieve given goals.

(Lego WeDo)

Uses diagrams to express solutions. (real life algorithms)

Declares and assigns variables.

(Lego WeDo)

Knows that computers collect data from various input devices, including sensors and application software. (Lego WeDo)

(Lego WeDo - Give it a scratch)

Shows an awareness

of tasks best completed by humans or computers. Knows that computers collect data from various input devices. including sensors and application software. (Lego WeDo - Give it a scratch) (Kodu Sports)

Recognises that different solutions exist for the same problem.

(Lego WeDo - Give it a scratch) (Kodu Sports)

Understands the difference between. and appropriately uses if and if, then and else statements.

(Kodu Sports)

Uses a variable and relational operators within a loop to govern termination. (Lego WeDo - Give it

a scratch) (Kodu Sports) (Programming Robots) (Raspberry Pi)

Uses post-tested loop e.g. 'until' and a sequence of selection statements in programs, including an if, then and else statement.

(Kodu - 3D Pac Man)

Understands the difference between, and appropriately uses if and if, then and else statements.

(Kodu - 3D Pac Man)

Uses a variable and relational operators within a loop to govern termination

(Kodu - 3D Pac Man) (Programming Robots)

Knows that computers collect data from various input devices, including sensors and application software. (What is a computer?)

Understands the difference between hardware and application software, and their roles within a computer system

(What is a computer?)

Understands the difference between hardware and application software, and their roles within a computer system (Raspberry Pi) (Kodu – 3D Pacman)

Understands why and when computers are

Understands the difference between, and appropriately uses if and if, then and else statements. (Sonic Pi)

(decomposition).

(Raspberry Pi)

Uses a variable and relational operators within a loop to govern termination (Sonic Pi)

Designs, writes and debugs modular programs using procedures. (Sonic Pi)

Understands why and when computers are used.

(Inside the Internet)

Understands that iteration is the repetition of a process such as a loop (Raspberry Pi) (Sonic Pi)

Represents solutions using a structured notation (Sonic Pi)

Has practical experience of a highlevel textual language. including using standard libraries when programming. (Sonic Pi)

Uses a range of operators and expressions e.g. Boolean, and applies them in the context of program control. (Raspberry Pi)

		,	,	,			,	<u>, </u>
							used. (What is a computer?)	
							Understands the main functions of the operating system (What is a computer?)	Defines data types: real numbers and Boolean. (Raspberry Pi)
								Knows that digital computers use binary to represent all data. (Raspberry Pi)
								Understands how bit patterns represent numbers and images (Raspberry Pi)
								Knows that computers transfer data in binary. (Raspberry Pi)
								Understands the relationship between binary and file size (uncompressed) (Raspberry Pi)
								Recognises and understands the function of the main internal parts of basic computer architecture. (Raspberry Pi)
								Understands how to construct static web pages using HTML and CSS. (Inside the Internet)
								Understands data transmission between digital computers over networks, including the internet i.e. IP addresses and packet switching. (Inside the Internet)
IT	Develop fine motor control through activities such as drawing with	Uses known buttons on a keyboard to type for purpose. E.g own name, simple	Recognises that digital content can be represented in many forms. (An intro to digital art)	Recognises that digital content can be represented in many forms. (Intro to Animation)	Recognises different types of data: text, number. (Databases)	Shows an awareness of, and can use a range of internet services, e.g. VOIP. Collects, organises	Understands the difference between data and information. (What is a computer?)	Uses a variety of software to manipulate and present digital content: data and information.

a tennis ball and paint to represent a mouse, and finger painting to develop controlled double clicks

Explores the keyboard and mouse and what happens when buttons are pressed.

With adult support is able to use and interact with simple software on the IWB or computer. words and sentences.

Write and draw using simple software with control using a mouse and on an IWB using the pen.

Uses simple software with adult support to close a window or open a clean page.

Knows that work can be saved or retrieved and works with an adult to do this

Understands that information can be recorded through photographs, videos and writing using technology

Chooses technology for a purpose and can explain choices. (Making multimedia stories) (Exploring Digital Sound)

Distinguishes between some of these forms and can explain the different ways that they communicate information.

(An intro to digital art)
(Making multimedia stories)

Uses software under the control of the teacher to create, store and edit digital content using appropriate file and folder names.

(An intro to digital art)
(Making multimedia stories)
(Exploring Digital Sound)

Understands that people interact with computers. Talks about their work and makes changes to improve it.

(An intro to digital art)
(Making multimedia stories)
(Exploring Digital Sound)

(Finding & Presenting Information)
(Writing in Different Styles)
(Beginning to Present)

Recognises different types of data: text, number.

(Finding & Presenting Information)

Appreciates that programmes can work with different types of data.

(Finding & Presenting Information)

Recognises that data can be structured in tables to make it useful.

(Finding & Presenting Information)

Distinguishes
between some of
these forms and can
explain the different
ways that they
communicate
information.

information.
(Intro to Animation)
(Finding & Presenting
Information)
(Writing in Different
Styles)
(Beginning to
Present)

Obtains content from the world wide web using a web browser. (Finding & Presenting Information)

Recognises and can use a range of input and output devices. Navigates the web and can carry out Understands the difference between data and information. (Databases)

Appreciates that programmes can work with different types of data.

(Databases)

Recognises that data can be structured in tables to make it useful.

(Databases)

Knows why sorting data in a flat file can improve searching for information.
(Databases)

Uses filters or can perform single criteria searches for information.
(Databases)

Uses a variety of software to manipulate and present digital content; data and information.

(Databases)

(Communication & Collaboration)

Shares their experiences of technology in school and beyond the classroom.

(Communication & Collaboration)

Shows an awareness of, and can use a range of internet services, e.g. VOIP. Collects, organises and presents data and information in digital

and presents data and information in digital content.

(Searching the Wel

(Searching the Web)
(Collaborative
Websites)

Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience. E.g. Blogging.

(Searching the Web)
(Collaborative

Makes appropriate improvements to solutions based on feedback received, and can comment on

(3D Design - Sketch

Websites)

solution.
(Collaborative
Websites)
(3D Design – Sketch
Up)

the success of the

Recognises the audience when designing and creating digital content.

(Searching the Web) (Collaborative Websites)

Uses criteria to evaluate the quality of solutions, can identify improvements making some refinements to the solution, and future solutions.

(Lego WeDo - Give it a scratch)
(Kodu Sports)

Knows why sorting data in a flat file can improve searching for information.

(Collecting, testing and presenting data)

Uses filters or can perform single criteria searches for information.

(Collecting, testing and presenting data)

Shows an awareness of, and can use a range of internet services e.g. VOIP. Collects, organises and presents data and information in digital content.

(Collecting, testing and presenting data)

Creates digital content to achieve a given goal through combining software packages and internet services to communicate with a wider audience e.g. blogging.

(Collecting, testing and presenting data)

Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.

(Manipulating Sound)

Analyses and evaluates data and information, and recognises that poor quality data leads to unreliable results, and inaccurate conclusions.

(Collecting, testing)

(Manipulating Images) (Video Editing)

Shares their experiences of technology in school and beyond the classroom.

(Manipulating Images)

Talks about their work and makes improvements to solutions based on feedback received. (Manipulating Images) (Video Editing)

Makes appropriate improvements to solutions based on feedback received, and can comment on the success of the solution.

(Manipulating Images) (Video Editing)

Knows the difference between physical, wireless and mobile networks.

(Inside the Internet)

Recognises the audience when designing and creating digital content.
(Inside the Internet)

	T	T	T			T		
				simple web searches	content.		and presenting data.)	
				to collect digital	(Databases)			
				content.	(Communication &		Knows the difference	
				(Finding & Presenting	Collaboration)		between physical,	
				Information)			wireless and mobile	
					Creates digital content		networks.	
					to achieve a given		(What is a computer?)	
				Uses software under	goal through			
				the control of the	combining software		Uses criteria to	
				teacher to create,	packages and internet		evaluate the quality of	
				store and edit digital	services to		solutions, can identify	
				content using	communicate with a		improvements making	
				appropriate file and	wider audience. E.g.		some refinements to	
				folder names.	Blogging.		the solution, and	
				(Intro to Animation)	(Databases)		future solutions.	
				(Finding & Presenting	(Communication &		(Kodu – 3D Pac Man)	
							,	
				Information)	Collaboration)		(Programming	
				(Writing in Different	Tallia ali i del 1		Robots)	
				Styles)	Talks about their work			
				(Beginning to	and makes		Knows that there is a	
				Present)	improvements to		range of operating	
					solutions based on		systems and	
				Uses a variety of	feedback received.		application software	
				software to	(Communication &		for the same	
				manipulate and	Collaboration)		hardware.	
				present digital			(What is a computer?)	
				content; data and	Makes appropriate			
				information.	improvements to			
				(Finding & Presenting	solutions based on			
				Information)	feedback received,			
					and can comment on			
					the success of the			
				l la de rete a de the et				
				Understands that	solution.			
				people interact with	(Communication &			
				computers. Talks	Collaboration)			
				about their work and				
				makes changes to				
				improve it.				
				(Intro to Animation)				
				(Finding & Presenting				
				Information)				
				(Writing in Different				
				Styles)				
				(Beginning to				
				Present)				
	Knows that you	Can make	Knows common uses	Understands the	Demonstrates use of	Demonstrates use of	Recognises what is	Makes judgements
	can find	suggestions for	of information	importance of	computers safely and	computers safely and	acceptable and	about digital content
	information on	00						
		what to search for	technology beyond	communicating safely	responsibly, knowing	responsibly, knowing	unacceptable	when evaluating and
DIGITAL LITEDACY	the internet.	online	the classroom.	and respectfully	a range of ways to	a range of ways to	behaviour when using	repurposing it for a
DIGITAL LITERACY	One tale of	0	(Exploring Machines	online, and the need	report unacceptable	report unacceptable	technologies and	given audience.
	Can identify	Can explain how	we Control.)	for keeping personal	content and contact	content and contact	online services	(Inside the Internet)
	things in their	they think		information private.	when online.	when online.	(Collecting, testing	
	house that use	something	Shares their use of	(Finding & Presenting	(Communication &	(Searching the Web)	and presenting data.)	Demonstrates
	technology to	technological	technology in school.	Information)	Collaboration)			responsible use of

	work	works	(Exploring Machines	(Beginning to		Shows and		technologies and
	Uses items of technology in role play. Knows which electrical items are safe to touch and those which are not safe. Can use technology when out in the local area such as the button on the pelican crossing or scanning shopping at self service area. Know that they can say no to another child taking their photograph.	Can explain how they use technology in their house. Can describe how to operate a familiar device such as the washing machine or microwave. Asks permission before taking another person's photograph Know that they can say no to another child taking their photograph. Can ask for help to close pop ups or something they're not sure about.	We Control.) Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. (Covered at the beginning of every topic – Safer Internet Day)	Present) Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online. (Finding & Presenting Information) Knows what to do when concerned about content or being contacted. (Finding & Presenting Information) (Programming with ScratchJnr) Shares their use of technology in school. (Programming with ScratchJnr) Shows and awareness for the quality of digital content collected. (Finding & Presenting Information)	Shows and awareness for the quality of digital content collected. (Communication & Collaboration) Recognises what is acceptable and unacceptable behaviour when using technologies and online services. (Communication & Collaboration)	awareness for the quality of digital content collected. (Searching the Web) Recognises what is acceptable and unacceptable behaviour when using technologies and online services. (Searching the Web) (Collaborative Websites) Makes judgements about digital content when evaluating and repurposing it for a given audience. Demonstrates responsible use of technologies and online services, and knows a range of ways to report concerns. Selects, combines and uses internet services. Understands the potential of information technology for collaboration when computers are networked. (Searching the Web) (Collaborative Websites)		online services, and knows a range of ways to report concerns. Selects, combines and uses internet services. (Inside the Internet) Understands the potential of information technology for collaboration when computers are networked (Inside the Internet)
Teaching Online Safety Autumn – E-Safety Spring – Computing Summer – Wellbeing			Aut – Unsafe Communication. Spr – Personal Data Sum – Online vs Offline behaviour	Aut – Challenges Spr – Password Phishing Sum – Impact on quality of life, physical and mental health and relationships.	Aut – Fake profiles Spr – Age Restrictions Fake websites and scam emails Sum – Online vs. offline behaviour	Aut – Content which incites Spr – Disformation, misformation and hoaxes. Privacy settings Sum – Impact on quality of life, physical and mental	Aut – Live streaming. Spr – Content – how can it be used and shared? Targeting of online content – including social media and search engines Sum – Online vs.	Aut – Abuse (online) Grooming Spr – Fraud (online) Persuasive design Sum – Impact on confidence – including body confidence

						health and relationships.	offline behaviours	
Organisation and Communication			Aut 1 – Action Algorithms	Aut 1 – Programming with Logo	Aut 1 – Real life algorithms	Aut 1 – Scratch – programming	Aut 1 – Programming Robots	Aut 1 – Sonic Pi
			Aut 2 – An intro to digital art.	Aut 2 – Intro to Animation	Aut 2 – Lego WeDo	animation Aut 2 – Lego WeDo – Give it a scratch	Aut 2 – Manipulating Sound	Aut 2 – Manipulating Images
			Spr 1 – Exploring Machines we control.	Spr 1 – Finding & Presenting Information	Spr 1 – Databases	Spr 1 – Searching the Web	Spr 1 – Collecting, testing, presenting data.	Spr 1 – Video Editing
			Spr 2 – Programming Direction	Spr 2 – Programming with Scratch Jnr	Spr 2 - Programming with Scratch - Maze Games	Spr 2 – 3D Design – Sketch up	Spr 2 – Raspberry Pi	Spr 2 – SATS
			Sum 1 – Making multimedia stories	Sum 1 – Writing in different styles	Sum 1 – Getting started with Kodu	Sum 1 – Kodu Sports	Sum 1 – Kodu 3D Pac Man	Sum 1 – Raspberry
			Sum 2 – Exploring digital sound.	Sum 2 – Beginning to present	Sum 2 – Communication & Collaboration	Sum 2 – Collaborative Websites	Sum 2 – What is a computer?	Sum 2 – Inside the internet
Overarching		ontrol	Algorithm	Browser	Abstraction		Abstraction	
vocabulary	Information Internet Program Technology		Data Debug	Computer networks Execute		ock Palette		ray PU
			Online	Input	Blocks Palette Browser Command Condition			SS
			Repeat	Loop			GPU	
			Search	Output			Hard drive	
			Selection	Software	Control Block			dware
			Sequence	World Wide Web	Costume			TML
				Web browser	Decomposition Digital content		Iteration List	
					Evaluation		Operating system	
						gic		AM
					Logical reasoning PageRank Patterns		ROM	
						ems essor		
						edure		
					Repetition (sometimes	referred to as 'iteration'		
					in upper KS2)			
						ript		
					Sei	s area ver		
						vices		
						lation		
						ware		
						rite age		
						ables		