# **Reffley Computing Curriculum**

#### Contents

Order	Details	Page
1	Introduction	1
2	Intent, Implementation and Impact	2
3	Overview of unit titles	3-4
4	Progression of Skills	5-16
5	Vocabulary progression	17-18

### Overview

### Reffley Academy Computing Curriculum

At Reffley Academy children:

- Have a varied prior experience of computing.
- Some pupils struggle with basic computer skills such as using a mouse and keyboard.
- Generally, pupils have access to gaming technology including a range of handheld and console devices.
- Typically, pupils are used to using touch screen devices.

Therefore, the Computing curriculum at Reffley Academy has been planned as follows:

- Builds skills and knowledge over time for the key computing strands.
- Unit plans have been created to ensure coverage of the national curriculum. Skills and knowledge are taught progressively across the school.
- Technical vocabulary is explicitly taught and modelled by teachers. Knowledge organisers have been created with vocabulary

# sections for children to refer to.

## Intent, Implementation and Impact

Intent	Implementation	Impact
<ul> <li>The intention of the computing curriculum is to ensure all children:</li> <li>Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.</li> <li>Are able to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.</li> <li>Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems</li> <li>Are responsible, competent, confident and creative users of information and communication technology.</li> <li>Digitally literate for future</li> <li>Natural and artificial systems</li> <li>Knowing the dangers of a digital world and understanding how to protect themselves.</li> </ul>	<ul> <li>Implementation:</li> <li>Topic overviews and timings are planned through the use of Rising stars switched on computing. This ensures a broad and balanced curriculum is taught across all areas of computing at an age-appropriate level.</li> <li>Computing lessons will follow the structure of Switched on computing and will provide opportunities in lessons to focus on the six key strands in computing.</li> <li>Ipads, netbooks and Beebots are available to be used to support learning in addition to computing lessons</li> <li>E-safety is taught regularly as part of units</li> <li>Computing is taught in all year groups.</li> <li>Assessment takes place at the end of each unit.</li> <li>Evidence of computing learning is recorded in children's topic books.</li> </ul>	<ul> <li>Know more</li> <li>Switched on computing ensures that all children are taught age related content which builds on previous learning.</li> <li>Working walls showcase worked examples so that children can refer to them when undertaking their independent work.</li> <li>Vocabulary is explicitly taught that is relevant to the area of study. Children are encouraged to use the correct vocabulary during lessons and this is modelled by the teacher.</li> <li>End of term assessments are completed to gain insight into what the children have learnt.</li> <li>Switched on computing covers all the strands of the computing curriculum.</li> <li>Children are exposed to a range of computing devices that are relevant to today's digital world.</li> <li>Do more <ul> <li>Lessons are planned which build upon skills previously learnt.</li> <li>Children are given time to apply skills.</li> <li>Children use the skills they have learnt independently.</li> <li>Children use connections to do more.</li> </ul> </li> <li>Remember more <ul> <li>At the beginning of a unit previous earning is recapped to enable children to make links.</li> <li>Exposure to a range of technologies.</li> <li>Children can use vocabulary to discuss learning.</li> <li>Children can explain how to keep themselves safe.</li> </ul> </li> </ul>

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	of effective learning ( placing this in the moder about recording their	playing and exploring, active m, current world. Children o learning (photographs, sequ	learning, creating and think use Apps to widen their lear uencing and videos) and how ogle is used and explicitly ex	king critically) the use of co ming and make it relevant a to make their learning crea	n that enables children to a mputing and the teaching of nd so that computing skills a ative and purposeful. Childre arn about how to find out mo	skills are paramount to re taught. Children learn en begin to learn about
Year 1	Computer skills We are treasure hunters. Solving problems using programmable toys Computer science / Coding	We are TV chefs. Filming the steps of a recipe Computer science/ Computational thinking	We are digital artists. Creating work inspired by great artists. Information technology : creativity	We are publishers. Creating a multimedia ebook about our achievements. Digital Literacy: Online Safety	We are Rhythmic Creating sound patterns in Scratch Junior and Garage band Information technology : Media	We are detectives. Using data to solve clues Information technology: data
Year 2	We are astronauts. Programming on screen in Scratch Junior Computer science - coding	We are game testers. Working out the rules for the games. Computer science: computational thinking	We are photographers. Taking, selecting and editing digital images Information technology: media	We are researchers. Researching a topic Digital Literacy Online Safety	We are animators Creating a stop - motion animation Information technology: Media	We are zoologists. Collecting data about bugs Information technology: Data
Year 3	We are programmers. Programming an animation Computer Science: Coding	We are bug fixers. Finding and correcting bugs Computer science : computational thinking.	We are presenters. Videoing a presentation against a green screen. Information technology: Media	We are who we are. Creating presentations about ourselves. Digital Literacy Online safety.	We are co-authors. Producing a wiki Information technology : Media	We are opinion pollsters. Collecting and analysing data. Information technology: Data

Year 4	We are software developers.	We are makers.	We are musicians.	We are bloggers.	We are artists.	We are meteorologists.
	Developing a simple educational game.	Coding for micro: bit Computer science :	Creating a piece of music in garage band.	Sharing experiences and opinions.	Fusing Geometry and art.	Recording and presenting the weather
	Computer Science: Codina	coding	Information technology: Media	Digital Literacy: online safety.	Computer science: coding	Information technologu: Data
Year 5	We are game developers.	We are cryptographers.	We are architects.	We are web developers.	We are adventure gamers.	We are VR designers.
	Developing and interactive game.	Cracking codes Computer science: Computational thinking.	Creating a virtual space Information technology: Media	Making sense of the internet and building a website.	Creating an interactive adventure using presentation software.	Experimenting with virtual and augmented reality.
	Computer science: Coding			Digital Literacy: Online safety	' Information technology: Media	Information technology: Media.
Year 6	We are toy makers.	We are computational thinkers.	We are publishers.	We are connected.	We are advertisers.	We are AI developers.
	Coding and physical computing.	Mastering algorithms for searching, sorting	Creating a yearbook or magazine.	Developing skills for social media.	Creating a short television advert.	Learning about artificial intelligence and machine learning.
	Computer science: coding	maths. Computer science: computational thinking.	Computer science: Computational thinking.	Digital literacy: online safety	Information technology: Media	Computer science: coding.

## Progression of Skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum objectives	are implemented devices; and that following precise instructions Create and debug Use logical reaso behaviour of simp Use technology p organise, store, n digital content Recognise common technology beyon Use technology so keeping personal identify where to when they have co	simple programs ning to predict the le programs urposefully to create, anipulate and retrieve n uses of information	<ul> <li>physical systems</li> <li>Use sequence, s and output</li> <li>Use logical reaso algorithms and p</li> <li>Understand com the world wide w</li> <li>Use search tech discerning in eva</li> <li>Select, use and devices to design including collecti</li> <li>Use technology</li> </ul>	d debug programs that accomp ; solve problems by decomposi- election, and repetition in pro- ming to explain how some simp rograms aputer networks including the reb; and the opportunities the unologies effectively, apprecia- luating digital content combine a variety of software in and create a range of progra- ng, analysing, evaluating and p safely, respectfully and respo of ways to report concerns ab	ing them into smaller parts grams; work with variables an ole algorithms work and to det internet; how they can provid y offer for communication an ote how results are selected a e (including internet services) ams, systems and content that resenting data and informatic unsibly; recognise acceptable/	d various forms of input tect and correct errors in le multiple services, such as d collaboration and ranked, and be on a range of digital t accomplish given goals, on

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	understand	can understand	can explore simulations of	can work with others	can design, write and debug a	can design, write and debug	1.1, 1.2, 2.1, 2.2,
	algorithms as	algorithms as	physical systems on	to plan a project.	program using a block language	a program using a second	2.3, 3.1, 3.2,4.1,
	sequences of	sequences of	screen.		based on their own ideas.	programming language	4.2, 4.6, 5.1, 5.3,
	instructions in	instructions or sets		Given a particular		based on their own ideas.	6.1, 6.2
	everyday contexts.	of rules in everyday	can experiment with some	project, the pupil can	can design a program of their own		
		contexts.	on-screen simulations of	work as part of a	and write this in a block-based	can design a program of	
	take real-world		physical systems, perhaps	team to plan how to	language such as Scratch.	their own and write this in a	
	problems and then	can recognize that	linked to topics from	accomplish their goal,		programming language	
	plan a sequence of	common sequences	other curriculum areas,	breaking the project	can test and debug their code,	other than	
	steps to solve these.	of instructions or		down into a set of	explain what bugs they found and		
		sets of rules can be	can discuss what they	tasks.	how they fixed them.	can test and debug their	
	program floor	thought of as	have learned from using		and destruction and define a	code, explain what bugs	
	turtles using	algorithms.	the simulation.		can design, write and debug a	they found and how they fixed these.	
	sequences of instructions to	can program on	The pupil can plan a		program using a block language based on their own ideas.	fixed these.	
Problem	implement an	can program on screen using	project.		based on their own ideas.	can design, write and debug	
solving	algorithm.	sequences of	Working with the teacher		can design a program of their own	their own computer control	
Solving	algorithm.	instructions to	and, perhaps, other		and write this in a block-based	application.	
	can create a Blue-	implement an	pupils, the pupil can		language such as Scratch.	application.	
	Bot program using a	algorithm.	develop an outline plan			can solve problems using	
	number of steps in	algorithm	for a project in computing,		can test and debug their code,	decomposition, tackling	
	order before	can create	involving multiple steps		explain what bugs they found and	each part separately?	
	pressing the Go	programs as	and resources.		how they fixed them.		
	button.	sequences of			,	can take a complex problem,	
		instructions when			can plan a solution to a problem	identify component parts,	
		programming on			using decomposition.	use decomposition to break	
		screen.				this problem down and then	
					can take a complex problem,	plan how they can solve the	
					identify component parts, use	problem by working through	
					decomposition to break this	the elements they have	
					problem down and then plan how	identified. they can then use	
					they can solve the problem by	their plan to solve the	
					working through the elements	original problem.	
					they have identified.		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can give a	The pupil can create	The pupil can use	The pupil can use	The pupil can use sequence,	The pupil can use sequence,	1.1, 2.1, 2.2, 3.1,
	sequence of	a simple program	sequence in programs.	sequence and	selection and repetition in	selection, repetition,	3.2, 4.1, 4.2, 4.3,
	instructions to a	on screen,		repetition in	programs.	variables and procedures in	5.1, 6.1, 6.2
	floor turtle.	correcting any	In on-screen	programs.		programs.	
		errors.	programming, the pupil's	-	The pupil's program, typically	_	
	The pupil can create		program should include a	The pupil's program,	written in Scratch, or similar,	The pupil's program should	
	a Blue-Bot program	The pupil can create	sequence of commands or	typically written in	should include sequences of	include sequences of	
	using a sequence of	a simple program	blocks in an appropriate	Scratch, or similar,	commands or blocks, some	commands or blocks,	
	instructions before	on screen (e.g. using	order. A typical program	should include	repetition and selection.	repetition, selection,	
	running it using the	ScratchJr) with a	could be a simple scripted	sequences of	Repetition might include exit	variables and user-defined	
	Go button. The	particular goal or	animation, e.g. telling a	commands or blocks	conditions (e.g. repeatuntil).	procedures, functions or	

Programming	length of the pupil's programs might be expected to increase over the course of the year The pupil can give explanations for what they think a program will do. The pupil can explain to the teacher, and to peers, what they think a program will do. This could be a program they or their peers have written, or it could be a familiar piece of software (including computer games). The pupil could use an audio recorder or video camera to capture their explanations.	purpose in mind (e.g. moving a sprite from one place to another). The pupil can debug any errors in their own code.	joke, a story or explaining an idea taken from elsewhere on the curriculum. The pupil's program might include multiple sprites; instructions could include movement, on-screen text, sound and/or costume changes. The pupil can write a program to produce output on screen. The pupil can create a program that produces output on screen, such as moving sprites or displayed text, e.g. a simple animation program.	and some repetition. Repetition would typically be for a fixed number of times, but might also include exit conditions (e.g. repeatuntil). Programs might include simple music or a simple game. The pupil can write a program that accepts keyboard input and produces on-screen output. In Scratch (or similar), the pupil can write a program that displays a question, accepts typed input and responds in an appropriate way to what is typed. This might be used as the basis for a dialogue program or a simple maths game.	Selection would normally be of an ifthen or ifthenelse type. At this level, expect the pupil to be able to combine repetition with selection. Programs might include a computer game. The pupil can write a program that accepts keyboard and mouse input and produces output on screen and through speakers. In Scratch (or similar), the pupil can create a computer game using the keyboard or mouse for input and the screen and speakers for output.	custom blocks. Repetition might include exit conditions (e.g. repeatuntil) and perhaps a counter-variable for iteration. Selection would normally be of an ifthen or ifthenelse type. At this level, expect the pupil to be able to combine repetition with selection and variables. Procedures or custom blocks need not include passing parameters, although they might. The pupil can use principles of good user-interface design, including accessibility, when developing programs. In developing their program, the pupil should take account of the needs of their intended users and be able to explain how these have influenced design and development decisions. The pupil should test their program with intended users making changes on	
	Vor 1	Vor 2	Voor 2	Voor 4	Vor E	users, making changes on the basis of the feedback they receive. The pupil should consider design for accessibility.	Unit links
	Year 1 The pupil can give	Year 2 The pupil can give	Year 3 The pupil can explain a	Year 4 The pupil can explain	Year 5 The pupil can explain a rule-based	Year 6 The pupil can give clear and	1.1, 2.1, 2.2, 3.1,
	explanations for	logical explanations	simple, sequence-based	an algorithm using	algorithm in their own words.	precise logical explanations	3.2, 4.1, 5.1, 5.2,
	what they think a	for what they think	algorithm in their own words.	sequence and repetition in their	When provided with a rule-based	of a number of algorithms.	6.1, 6.2
	program will do.	a program will do.	worus.	own words.	algorithm (e.g. for a computer	Given an algorithm, the	
	The pupil can	The pupil can give	The pupil can give an	Gwin Words.	game), the pupil should be able to	pupil can describe what it	
	explain to the	logical explanations	explanation for a simple	Given an algorithm	explain what it does and how it	does and, using logical	
	teacher, and to	of what a program	algorithm based on a	using both sequence	works, in their own words.	reasoning, give precise	
	peers, what they	will do under given	sequence of instructions.	and repetition, the		explanations of how it	
	All the first states and states and the	circumstances,	The algorithm could be	pupil can give a	The pupil can use logical reasoning	works. Algorithms could be	
	think a program will	ch cumstances,	5				
	do. This could be a	including some	one of their own, or a	coherent, logically	to detect errors in algorithms.	linked to programming	
			5	coherent, logically reasoned explanation of what it does and	to detect errors in algorithms. When given an algorithm for a	linked to programming projects, but might include a key algorithm such as binary	

Logical	written, or it could	does what it does.	The algorithms could be	how it works.	particular purpose, e.g. a rule-	search.	
thinking	be a familiar piece	The program could	recorded graphically, e.g.	Repetition is likely to	based algorithm for a computer		
	of software	be one they have	as a storyboard.	be 'forever' or for a	game or a sequence of steps to	The pupil can use logical	
	(including computer	written or it could		set number of times,	draw a geometric pattern, the	reasoning to detect and	
	games). The pupil	be a computer	The pupil can use logical	although end	pupil can use logical reasoning to	correct errors in algorithms	
	could use an audio	game or a familiar	reasoning to detect errors	conditions (e.g.	identify possible errors in the	(and programs).	
	recorder or video	piece of software.	in programs.	repeatuntil) could	algorithm, explaining why they		
	camera to capture	The pupil could use		be used.	believe the algorithm is incorrect	When given an algorithm for	
	their explanations.	an audio recorder	The pupil can give well-			a particular purpose, e.g. a	
		or a video camera	thought-through reasons	The pupil can use		rule-based algorithm for a	
		to record their	for errors they find in	logical reasoning to		smartphone app, the pupil	
		explanations.	programs. Typically, the	detect and correct		can use logical reasoning to	
			pupil can find errors by	errors in programs.		identify possible errors in	
			reasoning logically about			the algorithm, explaining	
			the program code, but	The pupil can give		why they believe the	
			they might also be able to	well-thought-through		algorithm is incorrect. The	
			use logical reasoning to	reasons for errors		pupil can use logical	
			identify errors in	they find in programs		reasoning to suggest	
			programs when they are	and explain how they		possible corrections to the	
			executed. The programs	have fixed these. The		algorithm, explaining why	
			do not have to be written	pupil can find and		these would correct the bug	
			originally by the pupil.	correct errors by		they identified.	
				reasoning logically			
				about the program			
				code; they might also			
				be able to use logical			
				reasoning to identify			
				errors in programs			
				when executed and			
				confirm that they			
				have fixed these by			
				testing the new			
				version of their			
				program. The			
				programs do not have			
				to be written			
				originally by the pupil.			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
			The pupil can understand	The pupil can	The pupil can explain how Internet	The pupil can understand	3.5,3.6, 4.4, 5.2,
			that computer networks	understand that the	routing adapts to faults in the	how mobile phone or other	5.4,
			transmit information in a	Internet transmits	network.	networks operate.	
			digital (binary) format.	information as			
				packets of data.	The pupil can give a coherent	The pupil can give an	
			The pupil can explain that		explanation of how data packets	explanation of how	
			any information has to be	When working online,	are routed from one computer to	networks operate: they	
			converted to numbers	the pupil can explain	another on a separate network,	should know that	
			before it can travel	that the information	which is also connected to the	information is transmitted	
			through computer	they send and receive	Internet, and how this routing	digitally, and have some	
			networks. The pupil	is automatically	would change if the network were	understanding of the	
			should understand that	broken down into	to develop a fault.	network topology involved.	
			this conversion happens	packets of data, and			
			according to an agreed	that these sometimes	The pupil can show an	The pupil can understand	
			system or code.	take different routes	understanding of how content	how domain names are	
Wider				across the Internet.	management systems are used on	converted into IP addresses	
understanding			The pupil can understand		the web.	on the Internet.	
			that email and	The pupil can			
			videoconferencing are	understand how the	The pupil can explain some	The pupil can give some	
			made possible through	Internet makes the	differences between static web	explanation of how a	
			the Internet.	web possible.	pages written as simple HTML files	domain name is converted	
					and those generated from a	into an IP address using the	
			The pupil should know	The pupil can give an	database of content elements by	distributed domain name	
			that email messages are	explanation of how	content management systems	system (DNS) using	
			sent and received through	requests for web	such as WordPress.	something similar to a set of	
			servers connected to the	pages, and the HTML		phone books. The pupil	
			Internet. The pupil should	for those pages, are		should show an awareness	
			know that other systems	transmitted via the		of the looked-up addresses	
			also work through the	Internet.		(DNS records) being copied	
			Internet, but these			(cached), and that more	
			services may be direct,			local records are used in	
			peer-to-peer connections			preference to more	
			rather than via servers.			authoritative records in	
						most circumstances.	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can use	The pupil can store,	The pupil can use a range	The pupil can use	The pupil can use and combine a	The pupil can select, use and	1.2, 1.3, 14, 1.5,
	digital technology	organise and	of programs on a	and combine a	range of programs on multiple	combine a range of	1.6, 2.3, 2.4, 2.5,
	to store and	retrieve content on	computer.	range of programs	devices.	programs on multiple	2.6, 3.3, 3.4, 3.6,
	retrieve content.	digital devices for a		on a computer.		devices.	4.3, 4.4, 5.3, 5.4,
		given purpose.	The pupil can use a range		The pupil can use multiple digital		6.3
	The pupil can use a		of software on laptop or	The pupil can use	devices (such as tablets and laptops	The pupil can choose for	
	range of digital	With a given	tablet computers with	multiple programs	or digital cameras and laptops) to	themselves from a range of	
	technologies to	purpose, the pupil	some degree of	on laptop or tablet	achieve particular goals. The devices	available programs on	
	store and access	can use a range of	independence. Software	computers to	might include web servers, allowing	laptops, tablets or cloud-	
	digital content.	digital technologies	might include video	achieve particular	them to use cloud-based	based services to achieve	
	These might include	to retrieve, organise	editing, diagnostic tools,	goals. For example,	applications. For example, they	particular goals. For	
	laptop computers,	and store digital	email clients,	they might record	might use local media in conjunction	example, they might choose	
	tablets,	content.	videoconferencing (with	audio and then use	with a cloud-based programming	which image editors and	
	smartphones,	Technologies will	the teacher or another	this as samples in a	platform, such as Scratch; digital	presentation software to	
	digital cameras,	typically include	adult), survey design	composition; create	cameras and video cameras to	use when making a	
Creating	video cameras and	laptop computers,	software, spreadsheets	HTML content in a	capture content to use on an	presentation; which image	
content	audio recorders.	tablets and	and presentation	text editor and	externally hosted website or blog; a	and audio editors to use	
	Projects might	smartphones with	software.	preview it in a	digital camera to take photos they	when creating media	
	include videoing	access to the		browser; analyse	could import into 3D design	content for an app; which	
	one another	Internet, but the	The pupil can design and	data in a	software on a laptop.	DTP, video editor and	
	cooking, developing	pupil might also be	create content on a	spreadsheet and		website tools to use when	
	an eBook or an	expected to use	computer.	then create a	The pupil can use filters to make	developing marking	
	audiobook, creating	digital cameras,		presentation to	more effective use of a standard	materials for an app.	
	a greetings card.	video cameras and	The pupil can plan and	show the results of	search engine.		
		audio recorders (or	execute a project in which	their analysis.			
	The pupil can create	the equivalent apps	they use software on a		The pupil can use a common search	The pupil can design and	
	original content	on a tablet or	laptop or tablet to create	The pupil can	engine (such as Google with safe	create systems in response	
	using digital	smartphone).	digital content with some	design and create	search mode locked in place)	to a given goal.	
	technology.	Projects might	degree of independence.	content on a	effectively, to search for particular		
		include digital	For example, they could	computer in	information on the web, such as	The pupil can plan, design	
	The pupil can create	photography,	plan and shoot a video,	response to a given	answers to questions they identify in	and implement a system	
	their own original	searching for	plan and create a	goal.	a research project. They should use	with multiple, interrelated	
	digital content using	images online and	, presentation on a given	-	built-in search tools to filter their	components with a given	
	a range of	creating image-	topic or plan and then	With a given goal,	results, such as by time, location or	goal in mind.	
	technologies. These	based presentation	create an online survey.	the pupil can plan	reading level.	-	
	might include	slides.	-,	and execute a	-	The pupil can analyse and	
	laptop computers,		The pupil can collect and	project in which	The pupil can understand that	evaluate data.	
	tablets,	The pupil can create	present information.	they use software	search engines use a cached copy of		

and a large state	and a discussion of		and the track of the		The second second second second second	
smartphones,	and edit original	<b>The second second</b>	on a laptop or	the crawled web to select and rank	The pupil can evaluate the	
digital cameras,	content for a given	The pupil can use	tablet to create	results.	quality of numerical data,	
video cameras and	purpose using	computers to collect	digital content with		deciding the extent to which	
audio recorders.	digital technology.	information and present	some degree of	The pupil can explain how a search	it is affected by systematic	
Projects might		this to an audience. For	independence. For	engine creates an index from a	or random errors. They	
include videoing	The pupil can create	example, they could shoot	example, they could	cached copy of the web and uses	should analyse their data,	
one another	and edit their own	and then show a video or	plan and compose	this to select and rank results. The	perhaps producing summary	
cooking, developing	original digital	conduct an online survey	original music using	pupil might also show an awareness	statistics, looking for	
an eBook or an	content using a	and present the results.	sequencing	of the Page Rank algorithm in which	relationships, trends and	
audiobook, creating	range of	They should be able to do	software; plan and	results are ranked according to the	exceptions.	
a greetings card.	technologies.	this with a degree of	create a web page;	number and quality of in-bound		
Look for some	Content-creation	independence.	plan how they could	links.	The pupil can make use of a	
indication of the	technology might		contribute to a		range of search engines	
pupil's creativity in	include laptop		shared wiki and		appropriate to finding	
this work.	computers, tablets,		then do so; plan		information that is required.	
	smartphones with		and create a			
	network		presentation about		The pupil can show that	
	connections, digital		the weather. They		they can use effectively a	
	cameras, video		should evaluate		range of different search	
	cameras and audio		how effectively they		technologies, including	
	recorders, although		have met the		alternatives to Google (such	
	editing is likely to		requirements of the		as Bing or Yahoo) and site-	
	take place on		original goal.		specific search engines (such	
	laptops or tablets.				as those for the App Store or	
	Projects might				Google Play). E.g. They could	
	include digital				demonstrate how they	
	photography,				would use a range of search	
	creating image-				engines when researching	
	based presentation				available smartphone apps	
	slides, composing				for a particular purpose.	
	an email and					
	creating simple				The pupil can appreciate	
	charts. Look for				that search engines rank	
	some indication of				pages based on the number	
	the pupil's creativity				and guality of in-bound	
	in this work and				links.	
	evidence that they					
	have edited				The pupil can demonstrate	
	content.				some awareness of the Page	
					Rank algorithm, explaining	
					that the quality of a page is	
					determined largely on the	
					basis of the number and	
					quality of links pointing to	
					that page in the engine's	
					cached copy of the web, and	
					that quality is itself	
					determined recursively	
					through Page Rank.	
			l			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
			The pupil can search for	The pupil can use a	The pupil can use filters to make	The pupil can make use of a	3.5, 4.6, 5.3, 6.3,
			information within a	standard search	more effective use of a standard	range of search engines	6.4
			single site.	engine to find	search engine.	appropriate to finding	
				information.		information that is required.	
			The pupil can use		The pupil can use a common		
			browser-specific tools	The pupil can use a	search engine (such as Google	The pupil can show that	
			(e.g. the Find command)	common search	with safe search mode locked in	they can use effectively a	
			and site-specific tools	engine (such as	place) effectively, to search for	range of different search	
			(such as the search tools	Google with safe	particular information on the web,	technologies, including	
			for Wikipedia or YouTube)	search mode locked in	such as answers to questions they	alternatives to Google (such	
			to locate particular	place) effectively, to	identify in a research project. They	as Bing or Yahoo) and site-	
			information on a web	search for particular	should use built-in search tools to	specific search engines (such	
			page or within a website.	information on the	filter their results, such as by time,	as those for the App Store or	
				web, such as answers	location or reading level.	Google Play). E.g. They could	
			The pupil can understand	to questions they		demonstrate how they	
Searching			that search engines select	identify in a research	The pupil can understand that	would use a range of search	
			pages according to	project.	search engines use a cached copy	engines when researching	
			keywords found in the		of the crawled web to select and	available smartphone apps	
			content.	The pupil can	rank results.	for a particular purpose.	
				understand that			
			When using search	search engines rank	The pupil can explain how a search	The pupil can appreciate	
			engines, the pupil should	pages according to	engine creates an index from a	that search engines rank	
			demonstrate their	relevance.	cached copy of the web and uses	pages based on the number	
			understanding that the		this to select and rank results. The	and quality of in-bound	
			pages shown include the	The pupil can	pupil might also show an	links.	
			keywords they have	demonstrate their	awareness of the Page Rank	The second second second second	
			specified. The pupil can	understanding that	algorithm in which results are	The pupil can demonstrate	
			use this knowledge by	search engine results	ranked according to the number and quality of in-bound links.	some awareness of the Page Rank algorithm, explaining	
			thinking of good keywords	are ranked according	and quality of in-bound links.	<b>o o</b>	
			appropriate for what they	to relevance, and that		that the quality of a page is	
			are searching.	normally the top results on the first		determined largely on the basis of the number and	
				page are likely to be		quality of links pointing to	
				those most relevant		that page in the engine's	
				to their query. If the		cached copy of the web, and	
				pupil is unable to find		that quality is itself	
				good results on the		determined recursively	
						through Page Rank.	
				first page, expect	l	uniougn Page Kank.	

	them to reconsider their keywords rather than looking at further pages of results.
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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can keep	The pupil can keep	The pupil can use digital	The pupil can	The pupil can demonstrate that	The pupil can show that	1.2,1.3,1.4, 1.6,
	themselves safe	safe and show	technology safely and	demonstrate that	they can act responsibly when	they can think through the	2.2, 2.3, 2.4, 2.6,
	while using digital	respect to others	show respect for others	they can act	using the Internet.	consequences of their	3.3, 3.4,3.5,3.6,
	technology.	while using digital	when working online.	responsibly when		actions when using digital	4.3, 4.4, 4.6, 5.2,
		technology.		using computers.	The pupil can act responsibly	technology.	5.3, 5.4, 6.3, 6.4,
	The pupil can		The pupil should know		when using the Internet. For		6.5
	understand that	The pupil should	that they need to keep	The pupil can act	example, they should act	The pupil can discuss likely	
	they need to keep	know that they	themselves safe when	responsibly when	responsibly when participating in	and potential consequences	
	safe when using	need to keep	using digital technology.	using computers. For	an online community, such as the	of their actions when using	
	digital technology.	themselves safe	For example, they should	example, they should	Scratch community, if permitted	digital technology in a range	
	For example, they	when using digital	show respect for others	act responsibly when	to do so. They should demonstrate	of contexts. Contexts might	
	should know to use	technology. E.g.	when filming and should	developing computer	that they understand the	include developing	
	filtered Safe Search	They should know	not normally post videos	games or prototype	importance of encrypted (HTTPS)	smartphone apps; using	
	when looking for	to use filtered	online. If responding to	products. They should	connections when browsing the	online project management	
	images on the web	SafeSearch when	online surveys, they	behave responsibly	web and of using strong	tools; collecting information	
E-safety	and that they	looking for images	should do so	when using sampled	passwords to protect their identity	for market research; posting	
	should close the lid	on the web and that	anonymously, thinking	music or creating a	online. They should act	original content online.	
	of a laptop (or turn	they should close	carefully about	composition. They	responsibly when creating, editing		
	over a tablet) and	the lid of a laptop	information they give out.	should show	or commenting on web pages or	The pupil can identify	
	alert an adult if they	(or similar action) if		responsibility when	blog posts.	principles underpinning	
	come across	they find	The pupil can recognise	creating or remixing		acceptable use of digital	
	unsuitable content.	inappropriate	unacceptable behaviour	online content,	The pupil can discuss the	technologies.	
	The pupil can	images. They should	when using digital	including observing	consequences of particular		
	understand that	know to respect	technology.	copyright and any	behaviours when using digital	The pupil can identify some	
	information on the	others' rights,		terms and conditions.	technology.	principles underpinning	
	Internet can be	including privacy	The pupil can identify	They should		acceptable behaviour when	
	seen by others.	and intellectual	what would be	contribute positively	The pupil can discuss the likely or	using technologies in a	
		property when	unacceptable or	to a shared wiki.	possible consequences of	range of contexts. Contexts	
	The pupil should be	using computers, so	inappropriate behaviour		particular behaviours when using	could include smartphone or	
	aware that	should not look at	when using digital		digital technology in a range of	tablet use; the use of online	
	information stored	someone else's	technology in a range of	The pupil can	contexts. Contexts could include	project management tools;	
	on the web or	work or copy it	contexts. For example,	understand the	the Scratch website, or other	online surveys and recording	
	transmitted via the	without permission	they should know what	difference between	online communities; using	of interviews; creating and	
	Internet is available	and	would be unacceptable	acceptable and	cryptography and passwords;	sharing digital content.	
	to other people. E.g.	acknowledgement.	when using online	unacceptable	creating websites or writing blog		
	They should know	They should	communities, such as the	behaviours when	posts.	Know a range of ways to	
	that the images	observe age	Scratch website, or when	using digital		report concerns and	

they find online can	restrictions on	shooting or publishing	technology.	Know how to report concerns and	inappropriate behaviour in a	
be found by others	computer games.	video. They should know		inappropriate behaviour in a range	variety of contexts.	
too, and that the	computer Bamesi	what would be	The pupil can discuss	of contexts.		
queries they type in	The pupil can	unacceptable use of the	the difference		Pupils should know how to	
can be seen by	understand that	Command prompt, email	between acceptable	Pupils should know how to report	report inappropriate	
those who run the	they should not	or online survey tools.	and unacceptable	inappropriate behaviour when	behaviour when using	
search engine they	share personal	or online survey tools.	behaviours when	using technology in school:	technology in school:	
use and the school's	information online.	The pupil can decide	using digital	preferably this will be to their	preferably this will be to	
network.	information online.	whether a web page is	technology in a range	teacher, the network manager or	their teacher, the network	
network.	The pupil should	relevant for a given	of contexts. Contexts	another trusted adult. They should	manager or another trusted	
The pupil can	understand that	purpose or question.	could include the	know how to report any concerns	adult. They should know	
understand what to	personal	purpose of question.	Scratch website, or	over inappropriate behaviour with	how to report any concerns	
do if they see	information should	The pupil can form a	other online	digital technology at home.	over, or inappropriate	
disturbing content	be kept private: it	judgement about whether	communities; the use	Preferably this would be through	behaviour with, digital	
online at home or at	should not be	a web page is appropriate	of others' original	discussion with their parents, with	technology at home.	
school.	posted online to a	for finding out the answer	content, such as	you or with another trusted adult.	Preferably this would be	
501001.	public audience and	to a question they have or	music samples or web	Pupils should also know how to	through discussion with	
The pupil should	should only be	for a given purpose.	pages; wikis, including	report inappropriate behaviour to	their parents, with you or	
know to close their	shared privately	ior a given purpose.	Wikipedia.	those running websites which they	with another trusted adult.	
laptop lid or turn	with those who they	The pupil can use email	wikipeula.	regularly use, and to Childline,	Pupils should also know how	
their tablet over if	(or their parents)	and videoconferencing in	Know who to talk to	CEOP or to the police.	to report inappropriate	
they find content,	would trust. E.g.	class.	about concerns and	CLOP of to the police.	behaviour to those running	
such as	The pupil should	class.	inappropriate	The pupil can decide whether	websites which they	
inappropriate	recognise that		behaviour at home or	digital content is reliable and	regularly use, and to	
images, which	photos they take in		in school.	unbiased.	Childline, CEOP or the	
might disturb them	school should not		III SCHOOL	unblased.	police. Pupils should know	
or other pupils.	normally be posted		Pupils should know to	The pupil can discuss whether	that illegal content or	
They should know	to the open web.		report inappropriate	particular content (such as a web	activities can be reported to	
to tell their teacher	They should know		behaviour when using	page, other pupils' pages or blog	CEOP or the police.	
or their	that photos taken		technology in school	posts) is reliable and whether it	CLOF of the police.	
parents/carers if	with smartphones		to their teacher, the	has been written from a neutral	The pupil can form an	
this happens	often contain		network manager or	point of view. They should be able	opinion about the	
tills happens	hidden information		another trusted adult,	to spot some examples of bias in	effectiveness of digital	
	about where the		and that they can	digital content.	content.	
	photo was taken.		discuss any concerns	digital content.	content.	
	איטנט שמש נמגפוו.		they have with their	The pupil can work collaboratively	Taking into account the	
	The pupil can		teacher or other	with classmates on a class website	intended audience and	
	understand that		trusted adults in	or blog.	purpose of the content, the	
	they should not		school. They should	о ыод.	pupil can form a judgement	
	share personal		also know that any	The pupil can work productively	as to, and provide reasons	
	information online.		concerns over, or	and positively with others when	for, the extent to which they	
	internation online.		inappropriate	developing a shared website or	consider digital content to	
	The pupil should		behaviour with, digital	contributing to a class blog.	be effective. The content	
	understand that		technology at home	contributing to a class blog.	might be media resources or	
	personal		can be discussed with		marketing materials.	
	information should		their parents, with		marketing materials.	
	be kept private: it		you or with another		The pupil can use online	
	should not be		trusted adult.		tools to plan and carry out a	
	posted online to a				collaborative project.	
	public audience and		The pupil can decide		conaborative project.	
	public addience and					

shared privately white we have they (of their premis) would rust. E.e. The pull should recognie that recognie that photos they take in screenia base photos they take in screenia base photos they take in screenia base screenia	should only be	whether digital	The pupil can make use of
a given purpose or you'd' toxit F.g. The pupil should recognise that protost they take in school should not normally be posted to the ponential. The pupil chould to the ponential. The pupil chould to the ponential. The pupil chould to the ponential. The pupil chould to the ponential. The pupil chould with smartphones with smartphones they have of for a with smartphones they have of for a with smartphones they have of for a school should not normers about where the photo was taken. The pupil chould do if they have collaboratively with do if they have collaboratively with content to appropriate mine. The pupil chould do if they have collaboratively with content to applic an understand whit to content to applic an understand whit to do if they have content to applic an with smartphones they hould for turn they find content, someone they don't they find content, they find content, they find content, they find content, someone they don't they find content, they find they find they find content, they find they find they find they find they find they find they fi		<u> </u>	
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would trust. E.e. The pupil should photos they take in school should not normally be posted normally be posted to the appen web. Content is appropriate they should how they should how they they should how they they should how they they should how they should how t	-		
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independent of the set of t	-		
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They should know     for finding out the       hit aphote taken     answer to a question       with smartphones     given purpose.       hidden information     given purpose.       hidden information     about where the       about where the     The pupi can work       collaboratively with     collaboratively with       classmates on a     shared witk.       understand what to     of if they have       of if they have     The pupi can work       content or contact     their pupi can work       online.     shared witk.       a also kitk, making     useful contributions       a lapt pupi should     useful contributions       inappropriate     useful contributions       inappropriate     ind providing       inappropriate     ind providing       inappropriate     index on their       inappropriate     index on their       inappropriate     index on their       inappropriate     index on their <tr< th=""><th>normally be posted</th><th>article, or other digital</th><th></th></tr<>	normally be posted	article, or other digital	
that photos taken     answer to a question often contain       hidden information about where the photo was taken.     The pupil can work collaboratively with classmates on a shared wiki.       The pupil can understand what to do if they have content or contact online.     The pupil can work collaboratively with classmates on a shared orgicit, such as class with, making understand what to do if they have content or contact online.     The pupil should here you work content or contact       The pupil should know to close their their tablet over if their find content, such as they find content, such as them or conter pupils, if such as them or conter pupils, if such as they they cont table they find they they cont table they they cont table th			
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The pupil can understand what to do if they have concerns about content or contact online.       The pupil can work collaboratively with to about collaboratively with their peers on a shared project, such as a class witk, making useful contributions an daproviding feedback to others.         The pupil should know to close their laptop lid or turn their tablet over if they find content, such as inappropriate or other pupils; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their papers, and be aware that they could talk to another trusted			
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makes       inappropriate         contact online. They       contact online. They         should know to tell       their teacher or         their parents/carers       if this happens, and         be aware that they       could talk to         another trusted       another trusted			
inappropriate contact online. They should know to tell their teacher or their parents/carers if this happens, and be aware that they could talk to another trusted			
contact online. They should know to tell their teacher or their parents/carers if this happens, and be aware that they could talk to another trusted			
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their teacher or their parents/carers if this happens, and be aware that they could talk to another trusted	-		
their parents/carers if this happens, and be aware that they could talk to another trusted			
if this happens, and be aware that they could talk to another trusted			
be aware that they could talk to another trusted	their parents/carers		
could talk to another trusted	if this happens, and		
another trusted	be aware that they		
	could talk to		
and the set of Child Proce	another trusted		
adult or to Childline	adult or to Childline		

	about this.			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Unit links
	The pupil can show	The pupil can show an					1.2, 1.3, 1.4, 1.5,
	an awareness of	awareness of how IT is					1.6, 2.1, 2.2, 2.3,
	how IT is used for	used for a range of					2.4, 2.5, 2.6
	communication	purposes beyond school.					
	beyond school.						
		The pupil can name a					
	The pupil can	number of purposes for					
	mention some of	which IT is used beyond					
	the ways in which IT						
	is used to	know that adults can					
	communicate	share work and discuss					
	beyond school. E.g.	ideas in online					
	They might know	communities; that photos					
	that some people	can be taken, edited and					
	use social media	shared easily using digital					
Using IT	such as Facebook,	technology; that the web					
beyond	email, video calls or	is made up of information					
school	online greetings to	shared by people and					
	say happy birthday	organisations; that people					
	to their friends.	use email for a range of					
		purposes and in a variety					
		of contexts; that					
		scientists use computers					
		when collecting and					
		analysing data.					

	Vocabulary Progression							
Year 1	<ul> <li>Algorithm</li> <li>Bug</li> <li>Debug Robot</li> </ul>	<ul> <li>Algorithm</li> <li>Audio</li> <li>Edit</li> <li>Narration Frame</li> </ul>	<ul> <li>Zoom</li> <li>Undo</li> <li>Transform</li> <li>Layer</li> <li>Effect</li> </ul>	<ul> <li>Audio Clip</li> <li>Art</li> <li>eBook</li> <li>Filter</li> <li>Font</li> <li>Multimedia</li> </ul>	<ul> <li>Audio</li> <li>Message</li> <li>Microphone</li> <li>Repetition</li> <li>Speaker</li> <li>Track</li> <li>Virtual</li> </ul>	<ul> <li>Database</li> <li>Filter</li> <li>Sort</li> <li>Table</li> <li>Field</li> </ul>		
Year 2	<ul> <li>Algorithm</li> <li>Bug</li> <li>Debug</li> <li>Input</li> <li>Output Code</li> </ul>	<ul> <li>Algorithm</li> <li>Input</li> <li>Output</li> <li>Remix</li> <li>Repetition Sprite</li> </ul>	<ul> <li>Camera roll</li> <li>Adjustment</li> <li>Crop</li> <li>Filter</li> <li>iCloud Pixel</li> </ul>	<ul> <li>Bing</li> <li>Google</li> <li>Mind Map</li> <li>Safe Search</li> <li>Search engine</li> <li>Wikipedia</li> </ul>	<ul> <li>Animation</li> <li>Background</li> <li>Flipbook animation</li> <li>Frame Prop</li> <li>Sound track</li> <li>Stop motion</li> </ul>	<ul> <li>Data Database</li> <li>Branching database</li> <li>Tally charts</li> <li>Binary</li> <li>Classification key</li> </ul>		
Year 3	<ul> <li>Algorithm</li> <li>Bug</li> <li>Debug</li> <li>Input</li> <li>Output</li> <li>Code</li> <li>Repetition</li> <li>Sequence</li> </ul>	<ul> <li>Algorithm</li> <li>Bug</li> <li>Debug</li> <li>Input</li> <li>Output</li> <li>Code</li> <li>Repetition</li> <li>Sequence</li> </ul>	<ul> <li>Camera roll</li> <li>Green screen</li> <li>'Ken Burns'</li> <li>Pixel</li> <li>Resolution</li> <li>Rushes</li> <li>Search engine</li> </ul>	<ul> <li>Comments</li> <li>Data centre Outline</li> <li>Personal information</li> <li>Privacy</li> </ul>	<ul> <li>Algorithm</li> <li>Debug</li> <li>Five Pillars</li> <li>Hyperlinks</li> <li>Wikipedia</li> <li>Wiki</li> </ul>	<ul> <li>Data</li> <li>Survey</li> <li>Personal information</li> <li>Data protection</li> <li>Analyse</li> <li>Data centre</li> <li>Anonymous</li> </ul>		
Year 4	<ul> <li>Algorithm</li> <li>Repetition</li> <li>Sequence</li> <li>Input</li> <li>Output</li> <li>Repeat Loop Variable</li> </ul>	<ul> <li>LED</li> <li>Runtime</li> <li>Simulator</li> <li>Source code Variable</li> </ul>	<ul> <li>Live loops</li> <li>MIDI</li> <li>Sample</li> <li>Piano Roll</li> <li>Touch Instrument Tracks</li> </ul>	<ul> <li>Blog</li> <li>Bloggers</li> <li>Creative commons</li> <li>Hyperlink</li> <li>Uniform Resource Locator (URL)</li> <li>Web server</li> </ul>	<ul> <li>Bitmap</li> <li>Pixel</li> <li>Tessellation</li> <li>Transform</li> <li>Turtle</li> </ul>	<ul> <li>Data</li> <li>Analogue</li> <li>Digital</li> <li>Filter (database) Input</li> <li>Interface</li> <li>Sensor</li> </ul>		
Year 5	<ul><li>Algorithm</li><li>Bug</li><li>Debug</li></ul>	<ul><li>Cipher</li><li>Codes</li><li>Cryptanalysis</li></ul>	<ul> <li>Computer-aided design (CAD)</li> </ul>	<ul> <li>Hypertext mark-up</li> </ul>	<ul><li>Hyperlink</li><li>MP3</li><li>Safe search</li></ul>	<ul> <li>Accelerometer</li> <li>Augmented reality (AR)</li> </ul>		

	<ul> <li>Code</li> <li>Iterative</li> <li>Development</li> <li>Logical reasoning</li> <li>Program</li> </ul>	<ul> <li>Cryptography</li> <li>Decrypt</li> <li>Encode</li> <li>Encrypt</li> <li>Morse Code</li> </ul>	<ul> <li>Creative Commons</li> <li>Photorealistic</li> <li>Indistinguishable</li> <li>Render</li> </ul>	language (HTML) • Hypertext transfer protocol (HTTP) • Internet • Internet protocol addresses (IP) • Protocol • Web browser • Web server • World Wide Web	<ul> <li>Non-linear game</li> <li>Interlinked</li> </ul>	<ul> <li>Global positioning system (GPS)</li> <li>Virtual reality (VR)</li> <li>Stereographic</li> <li>Google</li> <li>Cardboard</li> </ul>
Year 6	<ul> <li>Accelorometer</li> <li>Bluetooth</li> <li>Decomposition</li> <li>Edge</li> <li>Connector</li> <li>Embedded System</li> <li>Micro;bit</li> <li>Microprocessor</li> <li>Simulator</li> </ul>	<ul> <li>Abstraction</li> <li>Binary search</li> <li>Decomposition</li> <li>Divide and conquer</li> <li>Graph Linear search</li> <li>Quicksort</li> <li>Selection sort</li> </ul>	<ul> <li>eBook</li> <li>ePub</li> <li>Folder</li> <li>Portable document format (PDF)</li> <li>Desktop publishing (DTP)</li> </ul>	<ul> <li>Fake news</li> <li>Neutral point of view</li> <li>Online bullying (cyberbullying)</li> <li>Plausible</li> <li>Reliable</li> <li>Social media Source</li> </ul>	<ul> <li>Storyboard</li> <li>Export</li> <li>Final Cut</li> <li>Rough Cut</li> <li>Rushes</li> </ul>	<ul> <li>Artificial Intelligence</li> <li>Classifier</li> <li>Decision Tree</li> <li>Image recognition</li> <li>Neural</li> <li>Network</li> <li>Node</li> </ul>