Computing Long Term Overview 2023/2024

KS1 National Curriculum Objectives

- 1. Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- 2. Create and debug simple programs
- 3. Use logical reasoning to predict the behaviour of simple programs
- 4. Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 5. Recognise common uses of information technology beyond school
- 6. 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.

contac	ct on the internet or other onlir	ne technologies.				
	Autumn		Spring		Summer	
Year 1	Technology around us	Technology around us	Programming A -	Data – Grouping data	Creating media –	Programming B –
	(5,6)	(5,6)	Moving a robot (1,2,3)	(4)	Digital painting (4)	Programming a robot
	Creating Media – Digital	Creating Media – Digital				(1,2,3)
	Writing (4)	Writing (4)	Skills	<u>Skills</u>	<u>Skills</u>	
			Recognise that computers	Choose media from a	Create digital content,	<u>Skills</u>
	Skills	<u>Skills</u>	don't have a brain.	selection (e.g. images,	e.g. digital art.	Recognise that
	Recognise a range of digital	Recognise a range of digital	Explain that we control	video, sound) to	Choose media from a	computers don't have a
	devices.	devices.	computers by giving them	present information on	selection (e.g. images,	brain.
	Select a digital device to fulfil	Select a digital device to	instructions.	a topic.	video, sound) to	Explain that we control
	a specific task, e.g. to take a	fulfil a specific task, e.g. to	Create a simple program	Recognise different	present information on	computers by giving
	photo.	take a photo.	e.g. to control a floor	forms of digital content,	a topic.	them instructions.
	Name a range of digital	Name a range of digital	robot.	i.e. text, image, video	Recognise that you can	Create a simple
	devices, e.g. laptop, phone,	devices, e.g. laptop, phone,	Create a simple algorithm.	and audio.	find out information	program e.g. to control
	games console.	games console.	Predict the outcome of a	Collect simple data (e.g.	from a website.	a floor robot.
	Log on to the school	Log on to the school	simple algorithm or	likes/dislikes) on a	Recognise that you can	Create a simple
	computer / unlock the school	computer / unlock the	program.	topic.	edit digital content to	algorithm. Predict the
	tablet with support. Identify	school tablet with support.	Explain what an algorithm	Present simple data	change its appearance.	outcome of a simple
	the basic parts of a computer,	Identify the basic parts of a	is – a sequence of	using images, e.g.	Select basic tools/	algorithm or program.
	e.g. mouse, keyboard, screen.	computer, e.g. mouse,	instructions to make	Recognise charts and	options to change the appearance of digital	Explain what an
	Use a suitable access device	keyboard, screen.	something happen.	pictograms and why we	content, e.g. filter on an	algorithm is – a
	(mouse, keyboard,	Use a suitable access device	Recognise that the order of instructions in an	use them.	image / font / size of	sequence of instructions to make
	touchscreen, switch) to access	(mouse, keyboard,	algorithm is important.	Use a suitable access	paintbrush.	something happen.
	and control an activity on a	touchscreen, switch) to	Debug an error in a simple	device (mouse,	Combine media with	Recognise that the
	Computer.	access and control an	algorithm or program e.g.	keyboard, touchscreen,	support to present	order of instructions in
	Open key applications independently.	activity on a computer. Open key applications		switch) to access and	information, e.g. text	an algorithm is
	Save and open files with	independently.	for a floor robot.	control an activity on a	, 3	important. Debug an
	support.	independently.		computer.	and images.	error in a simple
	Support.			1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1		c.r.o. iii a simple

Recognise different forms of digital content, i.e. text, image, video and audio Add an image to a document from a given folder/source with support.	Save and open files with support. Recognise different forms of digital content, i.e. text, image, video and audio Add an image to a document from a given folder/source with support.		Open key applications independently. Save and open files with support. Add an image to a document from a given folder/source with support.	Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer. Open key applications independently. Save and open files with support. Add an image to a document from a given folder/source with support.	algorithm or program e.g. for a floor robot.
Autu	Programming A – Moving	Spri	ng	Sum	imer
Skills Create simple digital content for a purpose, e.g. digital art. Recognise that we can use technology to take and view photographs. Select a digital device to fulfil a specific task, e.g. to take a photo.	Skills Explain that computers have no intelligence and we have to program them to do things. Create a program with multiple steps e.g. to control a floor robot.	Making music (4) Skills Create simple digital content for a purpose, e.g. digital art. Recognise that we can use technology to record and playback audio. Recognise different forms	Digital Photography (4) Skills Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer.	Skills Explain that computers have no intelligence and we have to program them to do things. Create a program with multiple steps e.g. to control a floor robot.	taught through Maths (Statistics)
Use a suitable access device (mouse, keyboard, touchscreen, switch) to access and control an activity on a computer. Save and open files with support Add an image to a document from a given folder/source with support. Apply edits to digital content to achieve a particular effect, e.g. emphasise part of a text. Save and open files with support	Predict the outcome of an algorithm or program with multiple steps. Recognise that the instructions in an algorithm need to be clear and unambiguous. Identify and correct errors in a given algorithm or program, and recognise the term debugging.	of digital content, i.e. text, image, video and audio Collect simple data (e.g. likes/dislikes) on a topic	Recognise that we can use technology to record and playback audio or take and view photographs. Recognise that we can use different types of media to convey information, e.g. text, image, audio, video. Add an image to a document from a given folder/source with support.	Predict the outcome of an algorithm or program with multiple steps. Recognise that the instructions in an algorithm need to be clear and unambiguous. Identify and correct errors in a given algorithm or program, and recognise the term debugging. Explain what an algorithm is, and that when inputted on a	

		computer it is called a	
		program.	
		Plan out a program by	
		creating an algorithm,	
		and evaluate its	
		success.	

KS2 National Curriculum Objectives

- 1. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- 2. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- 3. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- 4. Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
- 5. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 6. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- 7. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

	Autumn		Spring		Summer	
Year 3	Connecting Computers (4,5,7) Skills	Creating media – Animation (6) Skills	Programming A – Sequence in music (1,2,3)	Data and Information - Branching databases (6)	Creating media – Desktop publishing (6)	Programming B – Events and actions (1,2,3)
	Describe what a computer is (input > process > output). Explain the difference between input and output devices on a computer. Know where to save and open files (e.g. in shared folder). Save files with appropriate names. Use a keyboard effectively to type in text. Use left-, right- and double-click on the mouse. Add an image to a document from the internet.	Present ideas and information by combining media independently, e.g. text and images. Design and create simple digital content for a purpose/audience, e.g. poster. Edit digital content to improve it, e.g. resize text. Identify the features of a good piece of digital content.	Skills Children can Predict the outcome of a block or text-based program. Successfully modify an existing program, e.g. change background, number of times things happen. Identify repeated steps in a program or algorithm. Create examples of algorithms	Skills Recognise charts, pictograms and databases, and why we use them Create a branching database using pre- prepared images and questions Identify the features of a good question in a branching database. Independently plan out and create a Identify	Skills Present ideas and information by combining media independently, e.g. text and images. Design and create simple digital content for a purpose/audience, e.g. poster. Edit digital content to improve it, e.g. resize text. Identify the features of a good piece of digital content.	Skills Skills Children can Predict the outcome of a block or text-based program. Successfully modify an existing program, e.g. change background, number of times things happen. Identify repeated steps in a program or algorithm.

		content. Recognise why we use different types of media to convey information, e.g. text, image, audio, video Know where to save and open files (e.g. in shared folder). Save files with appropriate names. Use a keyboard effectively to type in text. Use left-, right- and double- click on the mouse	help plan out a program. Identify errors in a program and debug them Plan a program that involves sequencing and implement it	branching database. Evaluate a given branching database and suggest improvements. Name some benefits of using computers to create branching databases	digital content. Recognise why we use different types of media to convey information, e.g. text, image, audio, video Know where to save and open files (e.g. in shared folder). Save files with appropriate names. Use a keyboard effectively to type in text. Use left-, right- and double-click on the mouse. Add an image to a document from the internet. Resize and move an image in a document.	Recognise that we can create an algorithm to help plan out a program. Identify errors in a program and debug them Plan a program that involves sequencing and implement it
	Autu	ımn	Spri	nα	Sun	nmer
Year 4	Computer systems and Networks – Including the Internet (4,5,7)	Programming A – Repetition in shapes (1,2,3)	Creating Media – Photo editing (6)	Data and information – Data logging (6)	Creating media - Audio editing (6)	Programming B – repetition in games (1,2,3)
	Skills Collect, organise and present information using a range of media. Design and create digital content for a specific purpose, e.g. poster, animation. Edit digital content to improve it according to feedback.	Skills Create a program using a range of events/inputs to control what happens. Recognise that we can decompose a problem into smaller parts to help solve it. Explain when to use forever loops and count-controlled	Skills Collect, organise and present information using a range of media. Design and create digital content for a specific purpose, e.g. poster, animation. Edit digital content to improve it according to feedback.	Skills Draw conclusions from information stored in a database, chart or table Pose relevant questions and collect a range of data on a theme. Choose appropriate formats to present data to convey information. Appreciate that you	Skills Collect, organise and present information using a range of media. Design and create digital content for a specific purpose, e.g. poster, animation. Edit digital content to improve it according to feedback.	Skills Create a program using a range of events/inputs to control what happens. Recognise that we can decompose a problem into smaller parts to help solve it. Explain when to use

Recognise that we can

create an algorithm to

the type of data that

can be presented in a

Explain why we use

technology to create

Create examples of

algorithms

Resize and move an image in

a document.

Explain why we use

technology to create digital

Design a program for a Explain the benefits of using program or algorithm. own design. in own design. Explain the benefits of technology to present Use selection in algorithms Explain the benefits of purpose. in programs to alter what using technology to using technology to Decompose into parts information. happens when a condition and create an algorithm present information. present information. Use a search engine to find changes, e.g. if...then... for each one. specific information. Use key parts of a Know where to find Recognise common Design a program for a keyboard effectively, e.g. Recognise that you can copyright-free content, purpose. Decompose into mistakes in programs organise files using folders. shift, arrow keys, delete). e.g. creative commons parts and create an and how to correct Use key parts of a keyboard images. algorithm for each one. them. effectively, e.g. shift, arrow Use key parts of a Recognise common keys, delete). keyboard effectively, mistakes in programs and Know how to copy and paste e.g. shift, arrow keys, how to correct them. text or images in a document. delete). Know how to copy and Crop an image and apply simple filters. paste text or images in a document. Crop an image and apply simple filters. Autumn Spring Summer Creating media - Vector Computing systems and Programming A -Data - Fact files and Creating media -Year 5 Programming B networks - Sharing Selection in physical Selection in auizzes Video editing (6) drawing (6) databases (6) information (4,5,7) computing (1,2,3) (1,2,3)Skills Skills **Skills** Remix and edit a range of Identify and use **Skills** Identify and use **Skills** Skills existing and their own Name a range of sensors appropriate hardware appropriate hardware Type using fingers on both Recognise that different and software to fulfil a media to create content. in physical systems. and software to fulfil a solutions may exist for hands. Consider the audience when specific task specific task. Use common keyboard Recognise that different the same problem. designing and creating Identify success criteria Remix and edit a range shortcuts, e.g. ctrl C (copy), solutions may exist for the Predict what will digital content. for creating digital of existing and their ctrl V (paste). same problem. happen in a program or Identify success criteria for content for a given own media to create Predict what will happen algorithm when the creating digital content for a purpose and audience. content. Consider the in a program or algorithm input changes (e.g. given purpose and audience when when the input changes sensor, data or event). audience.

Identify the features of a

content and apply these in

good piece of digital

Identify the features of

a good piece of digital

content and apply these

count-controlled loops,

and use them in

programs.

software to work with

video, images, audio etc

Identify the features of a good

piece of digital content and

apply these in own design.

loops, and use them in

Recognise selection in a

programs.

		Evaluate their own content against success criteria and make improvements accordingly. Appreciate that different programs work with different types of data, e.g. text, number, video	(e.g. sensor, data or event). Use two-way selection in programs and algorithms, i.e. ifthenelse Create programs including repeat until loops. Evaluate a program and make improvements to the code or design accordingly. Create an algorithm for a physical system containing a sensor. Identify and use appropriate hardware and software to fulfil a specific task.	Explain the difference between data and information. Appreciate that different programs work with different types of data, e.g. text, number, video. Type using fingers on both hands. Use common keyboard shortcuts, e.g. ctrl C (copy), ctrl V (paste).	Use two-way selection in programs and algorithms, i.e. ifthenelse Create programs including repeat until loops. Evaluate a program and make improvements to the code or design accordingly.	designing and creating digital content. Identify success criteria for creating digital content for a given purpose and audience. Evaluate their own content against success criteria and make improvements accordingly.
	Autumn		Spring		Summer	
<u>Year 6</u>	Computing systems and networks –	Programming –Sensing (1,2,3)	Creative design – 3D modelling (6)	Creating media – Web page design	Data – Spreadsheets (6)	Programming – Variables (1,2,3)
	Communication (4,5,7)			(7,6,4)		21.00
	Skills Type efficiently using both hands. Use a range of keyboard shortcuts. Explain the difference between physical, mobile and wireless networks. Explain the difference between the Internet and the World Wide Web. Know the difference between a search engine and a web browser. Explain the basics of how	Skills Design and program a physical computing system that uses sensors. Recognise and use procedures (sub-routines) in programs. Plan out a program in detail, including task, algorithm, code and execution level. Explain common errors in programs and how to fix them. Use nested selection statements in a program or algorithm effectively.	Skills Explain the benefits of using technology to collaborate with others. Evaluate existing digital content in terms of effectiveness and design. Type efficiently using both hands. Use a range of keyboard shortcuts. Identify the most effective tools to present information for a specific purpose. Select, combine and remix	Skills Explain the difference between the Internet and the World Wide Web. Know the difference between a search engine and a web browser. Explain the basics of how search engines work, and that different search engines may give different results. Perform complex	Skills Explain the benefits of using technology to collaborate with others. Evaluate existing digital content in terms of effectiveness and design. Type efficiently using both hands. Use a range of keyboard shortcuts. Recognise what a spreadsheet is and what it is used for Use simple formulae in a spreadsheet to find	Skills Recognise and use procedures (subroutines) in programs. Plan out a program in detail, including task, algorithm, code and execution level. Explain common errors in programs and how to fix them. Use nested selection statements in a program or algorithm effectively. Combine a variable with relational operators (< = >) to

give different results. Perform complex searches for information using advanced settings in search engines. Explain the benefits of using technology to collaborate with others.	selection, repetition and variables) in a range of languages and contexts. Evaluate existing digital content in terms of effectiveness and design. Use a range of keyboard shortcuts.	Consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share.)	advanced settings in search engines. Type efficiently using both hands. Identify the most effective tools to present information for a specific purpose. Select, combine and remix a range of media to create original content. Consider all steps of the design process when creating content (e.g. identify problem, plan, create, evaluate, share.)	out information from a set of data. Collect data for a purpose and plan out a spreadsheet to present it effectively, using relevant formulae. Produce graphs from data in a spreadsheet to answer a question. Analyse and evaluate data and information in a spreadsheet, chart or database. Recognise that poor quality data leads to unreliable results.	program changes, e.g. if score > 5, say "well done". Recognise key concepts (sequence, selection, repetition and variables) in a range of languages and contexts.
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KS2 – Cross-curricular links to Computing Learning Objectives

5 – Covered through cross-curricular learning throughout KS2

7 – Covered through the teaching of Project Evolve and PSHE

1,2 – Also covered through DT (use of Crumbles and Microbits)

5,6 – Covered in Science when studying sound and using Data Loggers