

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	EYFS –	Key Stage One	Lower key Stage Two	Upper Key Stage Two
Aims		The national curriculum for computing aims to ensure that all pupils: • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • are responsible, competent, confident and creative users of information and communication technology.		
Subject Content		Pupils should be taught to: ♣ understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions ♣ create and debug simple programs ♣ use logical reasoning to predict the behaviour of simple programs ♣ use technology purposefully to create, organise, store, manipulate and retrieve digital content ♣ recognise common uses of information technology beyond school ♣ 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.	Pupils should be taught to: ♣ design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts ♣ use sequence, selection, and repetition in programs; work with variables and various forms of input and output ♣ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs ♣ 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 ♣ use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content ♣ 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 ♣ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

Computing Assessment - Word Processing

	<u>Progression</u>	<u>Notes</u>
<u>EYFS</u>	Be able to use a variety of devices to make marks, type and write letters and words Be able to use a mouse to point to things on the screen Be able to use the buttons on a mouse to select, drag and drop and move objects Be able to use a keyboard to type letters and words	
<u>Year 1</u>	Be able to use the spacebar, back space, enter, shift and arrow keys Be able to start using two hands when typing Be able to word process short texts, rather than copying up written work	
<u>Year 2</u>	Be able to use word processing in a purposeful way. Be able to select text and make simple changes including bold, italic and underlined. Be able to change the colour and font of texts for a purpose.	
<u>Year 3</u>	Be able to increase speed at typing using both hands, publishing more work using IT. Be able to add clipart and images to typed work. Be able to use cut, copy and paste tools. Be able to manipulate text (bold, underline, colour, font, size) to reflect purpose. Be able to organise the structure of the text (centre, bullet points / paragraphs)	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

<u>Year 4</u>	Be able to use a mouse or pad with confidence (right click, scroll etc) Be able to insert, crop and edit images from a variety of sources Be able to change the design of the page to suit purpose (columns / text boxes) Be able to insert and format a table	
<u>Year 5</u>	Be able to begin to use keyboard shortcuts (ctrl c, v, x,) Be able to select appropriate printer to print work Be able to begin to use touch type. Be able to change the order of the text using the sorting tool Be able to use paragraph / line spacing Be able to change the direction of the text. Be able to insert symbols.	
<u>Year 6</u>	Be able to use Find, Search and Replace Be able to use a range of word processing skills suitable for the purpose and audience	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

Computing Assessment – Multimedia

	<u>Progression</u>	<u>Notes</u>
<u>EYFS</u>	Be able to take photographs and videos for a purpose using camera tools.	
<u>Year 1</u>	Be able to take and edit photographs for a purpose using camera tools. Be able to download photos to appropriate software (PP or Book Creator) Be able to resize images in software. Be able to use photos in multimedia software for a purpose adding text.	
<u>Year 2</u>	Be able to use Book Creator or PP with increased confidence. Be able to add new pages / slides. Be able to use text/images / own photos in multimedia software. Be able to record sound / audio to add to Book Creator.	
<u>Year 3</u>	Be able to include titles pages and credit pages to presentations slides. Be able to evaluate layout of slides and make changes as necessary. Be able to include text boxes to label as a purpose. Be able to include hyperlinks to external sites. (iMovie, movie maker) Be able to capture video using iPads. Be able to discuss which videos to keep and why	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	Be able to arrange clips to make a short film that conveys meaning. Be able to add simple titles and credits in iMovie.	
<u>Year 4</u>	Be able to include Hyperlinks to internal slides and external sites. Be able to aquire, store and combine images from cameras or the internet for a purpose Be able to select certain areas of an image and resize, rotate an image Be able to edit pictures using various tools in paint or photo-manipulation software. Be able to use photos taken for a purpose. Be able to capture video for a purpose Be able to discuss the quality of videos and choose which to keep and which to re-shoot (Using iMovie) Be able to add titles, credits, slide transitions, special effects and talk about the effect these have on the audience. Be able to begin to narrate over a video/stills in iMovie using voice record.	
<u>Year 5</u>	Be able to produce a multimedia ebook . presentation combining video, pictures, text and audio. Know slide transitions and effects for purpose. Be able to confidently navigate videoing software (iMovie), including videos, still images, photos and sounds. Be able to narrate an IMovie confidently to create a visually appealing final piece of work. Be able to plan what they would like to happen in their animation.	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	Be able to take a series of pictures to form a simple animation using figures and objects to create animation. Be able to move items within their animation to create movement on playback. Be able to edit/improve their animation.	
<u>Year 6</u>	Know how to plan a multi-scene animation including characters, scenes, camera angles and special effects. Know how to use drawing as a tool to create animation. Be able to use stop-go animation software with an external camera to shoot the animation frames Be able to adjust the number of photographs taken and the playback rate to improve the quality of the animation Be able to publish their animation into iMovie to edit refine and add titles. Be able to narrate over an animation using microphone tools. Be able to publish work.	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

Computing Assessment – Data

	<u>Progression</u>	
<u>EYFS</u>	Be able to explore the information that pictures/images give you Be able to sort objects and pictures Be able to organise objects and pictures in different ways through play	<u>Notes</u>
<u>Year 1</u>	Know that images give information Be able to say what a pictogram is showing them Be able to put data into a program using pictures to create a pictogram Be able to sort objects and pictures in lists or simple tables	
<u>Year 2</u>	Be able to place objects and pictures in simple tables. Be able to gather own information into tables and tally charts. Know what a branching database is. Be able to create a branching database using a simple Y/N tree diagram to sort given information. Be able to use IT software to create own branching databases.	
<u>Year 3</u>	Be able to choose information to put into a data table. Be able to collect own data into tables and charts using IT. Design a questionnaire to collect information. Know what a database is. Be able to sort and organise information to find given details.	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

<u>Year 4</u>	Be able to confidently navigate and search a database. Know the and/or tools in databases. Be able to create a database from information I have selected. Be able to sort and organise information to use in other ways	
<u>Year 5</u>	Be able to create data collection forms and enter data from these accurately, presenting these in a variety of ways. Know how to check for and spot inaccurate data Know what spreadsheets are and how to input data into them. Know and use the language – cell, row, column correctly. Know how to total using the Autosum button. Be able to sort and order information using sorting tools. Be able to make graphs and charts from the calculations on my spreadsheet. (MISCOSFT EXCEL)	
<u>Year 6</u>	Be able to create data collection forms and enter data from these accurately, presenting these in a variety of ways, including graphs, charts and pie charts to represent findings. Know how to use the formula bar to carry out simple calculations. Know which formulae to use when wanting to change a spreadsheet model Know that changing the numerical data effects a calculation. (MISCOSFT EXCEL)	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	Be able to collect live data using data-logging equipment identifying data errors, patterns and sequences.	
--	--	--

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

Computing Assessment – Programming

	<u>Progression</u>	
<u>EYFS</u>	Be able to follow/understand instructions. Be able to create instructions for a friend to follow. Know the positional language of forwards, backwards, left and right turn,	<u>Notes</u>
<u>Year 1</u>	<i>(Practical understanding before transferring to Beebot and Beebot software.)</i> Be able to give and follow instructions, which include straight and turning commands, one at a time. Be able to explore outcomes when instructions are given in sequence. Be able to give a simple sequence of instructions. Know and use the term algorithm.	
<u>Year 2</u>	Know what an algorithm is, giving examples. Know how to move a sprite forwards, left and right Be able to generate a sequence of instructions including 'right angle' turns left and right. Be able to identify different algorithms to reach the same destination including shortest routes. Be able to create a sequence of algorithms to generate simple geometric shapes (oblong/square) and routes. Know and discuss how to improve/change their sequence of commands	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	<i>Code4life levels 1-16</i>	
<u>Year 3</u>	Be able to use a variety of inputs Know that codes should be written in shortest amount of instructions. Know how to use simple repetition commands within a series of instructions. Be able to navigate coding program with confidence. Know the terms sprite, input, output, algorithms. <i>Code4life levels 14-28</i> Once learned in code for life – apply to a project	
<u>Year 4</u>	Know and use repeat loops Know how to and be able to use loops with conditional statements and infinite loops. Be able to use known knowledge to develop own levels within selected coding program. Be able to create a background and sprite for own level. Be able to add inputs to control their sprite. Be able to evaluate and debug their program with support. <i>Code4life levels 19-32</i> Once learned in code for life – apply to a project	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

<u>Year 5</u>	Be able to use movement instructions and repeat loops and infinite loops confidently to program. Know how to use a conditional repeat — repeat until at destination Know how to use and program if do statements. Know that you can use an if statement inside a repeat loop. Be able to use known knowledge to develop own levels within selected coding program. Be able to test own level, evaluate and debug if needed independently. <i>Code4life levels 29-44</i> Once learned in code for life – apply to a project	
<u>Year 6</u>	Know how to use if... else if... statements. Be able to incorporate a wait command. Be able to use conditional statements, loops, if...do, if...else if variables. Be able to design own game including sprites, backgrounds, scoring and/or timers Know how to evaluate the effectiveness of the game and debug if required <i>Code4life levels 44-67</i>	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

Computing Assessment – Working Online

	<u>Progression</u>	
<u>EYFS</u>	Be able to use a search engine to retrieve information and images from the internet under the supervision of an adult. Be able to use technology to view maps, satellite images & the weather forecast	<u>Notes</u>
<u>Year 1</u>	Be able to talk about websites they have been on Be able to explore a website by clicking on buttons, arrows, menus and hyperlinks Be able to navigate back by using the back button Be able to complete search using a search engine under the supervision of an adult.	
<u>Year 2</u>	Be able to recognise an email address and understand what email is. Be able to find and use the @ key on a keyboard Be able to contribute to a class email. Be able to open and select to reply to an email as a class. Be able to complete own searches safely using the Internet.	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

<u>Year 3</u>	Be able to type in a URL to find a website rather than a search engine. Be able to use a search engine to find a range of media, e.g. images, text Be able to think of search terms to use linked to questions they are finding the answers for Be able to search a range of websites with confidence and know which websites are useful and which ones are not. Be able to talk about the reliability of information on the internet. Be able to log in to an email account, open emails, create and send replies.	
<u>Year 4</u>	Be able to log in to an email account independently, open emails, create and send replies. Be able to attach files to an email to send documents. Be able to download and save files from an email Be able to email more than one person and participate in group emails by replying to all. Know how to add websites to favourites in Internet Browsers.	
<u>Year 5</u>	Know websites such as Wikipedia are made by users (link to E-Safety) Be able to use strategies to check the reliability of information, e.g. cross checking with books Be able to use knowledge of domain names to aid their judgement of the validity of websites Know files may be saved off their device in 'clouds' (remote servers)	

Computing Progression of Skills and Knowledge

Substantive Knowledge – Established facts

Disciplinary Knowledge – Methods and concepts

	Be able to upload/download a file to the cloud on different devices Know and be able to talk about syncing files using cloud computing folders. <i>All email and internet research should be used independently across the curriculum in line with the Acceptable User Policy</i>	
<u>Year 6</u>	Know how to edit a webpage. Be able to alter the theme and appearance of their page, adding background, images, widgets and other content. Be able to create a new post, save it as a draft and publish it. Be able to embed photos, hyperlinks and videos into posts. Be able to reorganise posts and remove posts they no longer want. Be able to confidently access and use files in cloud storage. <i>All email and internet research should be used independently across the curriculum in line with the Acceptable</i>	