Tonwell St Mary's School Curriculum Overview of Intent for Computing

Overall Aims:
We aim to ensure that all children become digitally literate and able to flourish in an ever changing digital world. We recognise that knowledge and understanding of ICT is of increasing importance for children's future both at home and for employment. We aim for children to be safe, responsible, creative and competent users of technology.
Our unique context:
Due to the unique context of our school with mixed-age classes and rolling programmes of study, we have organised our curriculum for Computing in the following ways: Our Computing curriculum focuses on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become competent in safely using, as well as understanding, technology. These strands are revisited repeatedly through a range of themes during children's time in school to ensure the learning is embedded and skills are successfully developed. Our intention is that Computing also supports children's creativity and cross curricular learning to engage children and enrich their experiences in school. In EYFS, basic computing skills are taught through a combination of adult-led and child-initiated activities. Children have weekly discrete Computing lessons in KS1 and KS2 using the online program 'Purple Mash'.

	Autumn Term	Spring Term	Summer Term
EYFS Years A & B	**What technology can I use in the classroom?** Use of the interactive whiteboard during continuous provision and adult led activities. Phones, cameras, laptops, computers and keyboards in the home corner. All About Me and Feelings unit on Purple Mash (PSED – self regulation) Foods and Grocers unit on Purple Mash (PSED – managing self)	**How can I stay safe online? (Jessie and Friends videos/activities)** Vehicles from the past unit on Purple Mash (UW – past and present) Online safety week (February) – know to tell an adult if they see something they don't like online. Using technology to record and find information about minibeasts e.g. iPads, cameras, google. Continuation of technology included in the role play area.	**What is coding? (Studio code Course A 13 lessons)** Begin precoding e.g. using instructions and using beebots. Once secure on this, work through Course A on Studio code as a whole class and individually on laptops. Focus on logging in using the children's individual codes pictures. Fantasy & Fairy tales unit on Purple Mash (EAD – creating with materials). Paint projects on creating traditional tales. Continuation of technology included in the role play area.
	Christmas, Chinese New Year and Celebrations Paint projects unit on Purple	Easter unit on Purple Mash (UW – people, culture and communities)	People who helps us, Vets, Builders unit on Purple Mash (UW – past and present)

	Mash (UW – people, culture and communities)									
	Continuous provision and regularly available: ipads, laptops, beebots, IWB, CD player and CD's, headphones, thermometers, clocks, timers, digital scales.									
	ELG: Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.									
KS1 Year A	**Unit 1.1 Online Safety & Exploring Purple Mash** What is a password and why should we keep one?	**Unit 2.5 Effective Searching** How can I search the internet?	**Unit 1.4 Lego Builders** Why do we need to debug code?	**Unit 1.9 Technology outside school** How does technology make our lives easier?	**Unit 1.2 Grouping & Sorting** In what ways can we sort objects?	**Unit 2.6 Creating Pictures** Can we create a picture linked to a familiar fairy tale?	**Unit 1.8 Spreadsheets** What does a spreadsheet look like?	**Unit 1.7 Coding** What is coding?	**Unit 2.1 Coding** What is an algorithm? Why is it useful in coding?	
	Log in, username, password, special characters, Avatar, my work, log out, topics, tools, learning apps.	Internet, search engine, digital, non-digital, world wide web, website, address, keywords, icons, search boxes, hyperlinks, hotspots, menus.	Instruction, algorithm, problem, objective, computer, electronic device, storing, processing data, programme, output, coded instructions, debug, hardware, software.	Technology, message, digital, non-digital, Skype™, Facetime ™, email, school website, message board, communication, online, class blog, e-safety, personal, private.	Sort, criteria, digital, non-digital, information, keywords, research, mind map, Venn and Carroll diagrams, tables, pictograms and bar charts.	Impressionism, palette, colours, Pointillism, Surrealism, graphics, keypads, touch screens, hardware, software, drawing, painting, image, clipart.	Arrow keys, cells, spreadsheet, backspace, delete, cursor, input, vertical line, columns, cells, data, calculation, document, value, image, toolbox, lock, rows,	Action, commands, background, character, code block, code design, program, coder, coding, instructions, command, design mode, device, properties, design, image, scale, stop command, sound, output.	Action, commands, algorithm, instructions, bug, character, properties, code block, code design, debug/debugging, design mode, input, device, scale, repeat, timer, interval, touchscreen.	
KS1 Year B	**Unit 1.1**	**Unit 1.5**		**Unit 2.4**	**Unit 2.2**	**Unit 1.6**	**Unit 2.7**	**Unit 2.3**	**Unit 1.3**	**Unit 2.8**

	Online Safety & Exploring Purple Mash Where is my work stored on purple mash?	**Maze Explorers** Can we write a program to instruct an onscreen device to achieve an objective or target?	**Questioning** How is information organised in a binary tree?	**Online Safety** What is an email?	**Animated Story Books** What is an animated story?	**Making Music** What is meant by digital music?	**Spreadsheets** How could a spreadsheet help you when you are planning some shopping?	**Pictograms** Can we use simple software to organise the information we have found about a topic?	**Presenting Ideas** What do we need to think about when planning a presentation?
	Log in, username, password, special characters, Avatar, my work, log out, topics, tools, learning apps.	Direction, code, challenge, arrow, position, input, cancel, reverse, rewind, steps, start, forward, backwards, opposite, output, right turn, left turn, clockwise, debug, instruction, algorithm.	Pictogram, question, data, facts, statistics, information, collate, binary tree, sorting, avatar, database, search, select, store.	Search, database, e-safety, World Wide Web, search engine, website, internet, Email, attachment, digital footprint.	Animation, illusion, movement, drawings, models, E-Book, tablet, font, file, sound effect, speech, display board.	Bpm, composition, digitally, instrument, musical sounds, Vocal, sound effects (Sfx), soundtrack, tempo, volume.	Spreadsheet, backspace key, delete, copy and paste, columns, cells, data, calculations, count tool, equals tool, image toolbox, lock tool, move cell tool, rows, columns, speak tool.	Data, collate, sort, criteria, information, keywords, research, mind map, Venn and Carroll diagrams, tables, pictograms, bar charts.	Concept map, knowledge, node, text, images, animated, quiz, non-fiction, factual, presentation, speech, audience, narrative.
KS1 Years A & B revisited objectives	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions. • Write and test simple programs. • Use logical reasoning to predict the behaviour of simple programs. • Organise, store, manipulate and retrieve data in a range of digital formats. • Communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.								
Years 3 & 4 Year A	**3.1. Coding** How could you use a variable in coding?	**Unit 3.2 Online safety** How do I know if I am old enough to	**Unit 3.3 Spreadsheets** Explain how you would collect	**Unit 3.4 Touch Typing**	**Unit 3.5 Email** What should I do if I receive an	**Unit 3.6 Branching Databases**	**Unit 3.7 Simulations**	**Unit 3.8 Graphing**	

		play a computer game?	data to find out children's favourite school subjects. What sort of graph would you create?	Why should I type certain keys with certain fingers?	email that makes me upset or scared?	What is a branching database?	What is a computer simulation?	What different kinds of graphs are there?	
	Action, code, commands, algorithm, bug, program, Debug/debugging, design mode, input, output, object, properties, Characters, computer simulation, variable.	E-safety, password, internet, blog, web page, concept map, username, website, spoof website, PEGI rating.	< > =, symbols , compare, values, advance mode, copy and paste, information, memory, columns, cells, spreadsheet, grid, data, calculations, equals tool, move cell tool.	Posture, keyboard, top row keys, home row keys, middle, bottom row keys, spacebar, left, right.	Communication, email, messages, device, compose, send, address book, delivered, received, attachment, file, password, CC, copy, formatting.	Branching database, question, data, facts, statistics, information, sort, choice, stored, binary tree.	Simulation, program, model, real-life situation, dangerous, training.	Graph, diagram, field, record, data, facts, statistics, bar chart, lines, rectangles, block graph, line graph, amount.	
Years 3 & 4 Year B	**4.1 Coding** What are the stages of the design, code, test, debug coding process?		**Unit 4.2** **Online safety** What is meant by a digital footprint?	**Unit 4.3** **Spreadsheets** How would you add a formula so that the cell shows the percentage score for a test?	**Unit 4.4** **Writing for different audiences** Why should I change the font when I am writing?	**Unit 4.5** **Logo** What is Logo?	**Unit 4.6** **Animation** What is an animation?	**Unit 4.7** **Effective Search** What is a search engine?	**Unit 4.8** **Hardware Investigators** What is the difference between hardware and software?
	Action, alert, algorithm, bug, code design, character, command, control, debug, design mode, event,		Computer virus, website, cookies, copyright, digital footprint, e-safety, email, identity	Average, columns, cells, charts, database, equal tools,	Font, bold, text, italic, formatting, underline,	LOGO, coding language, turtle,	Animation, flipbook, frame, onion	Easter egg – An unexpected or	Motherboard, CPU, RAM, graphics,

	conditional, input, output, repeat, selection, simulation, timer, variable.	theft, malware, phishing, plagiarism, spam, advertising.	formula wizard, calculation, random tool, rows, vertical, spreadsheet, timer.	highlight, toolbar, size, style.	BK – move backwards, FD – move forward, RT – turn right, LT – turn left, repeat, SETPC – set pen colour to a given colour. SETPS – set the pen thickness. PU – lift the pen up off the screen. PD - put the pen back down.	skinning, image, shadow, background, play, sound, stop motion, video clip.	undocumented feature in a piece of computer software or on a DVD, internet, internet browser, search engine, spoof website.	network card, circuit board, monitor, speakers, external devices.
Years 5 & 6 Year A	**Unit 5.1** **Coding** What does simulating a physical system mean?	**Unit 5.2** **Online safety** Why are passwords so important?	**Unit 5.3** **Spreadsheets** How would you add a formula so that the cell shows the product of two other cells?	**Unit 5.4** **Databases** How can we word questions so that they can be effectively answered using a search on our database?	**Unit 5.5** **Game Creator** What makes a good computer game?	**Unit 5.6** **3D Modelling** What are the different possibilities of 3D printing?	**Unit 5.7** **Concept Maps** What is a concept map?	
	Action, alert, algorithm, bug, code design, command, control, debug, design mode, if/else, conditional command,	E-safety, smart rules, password, characters, reputable, encryption, code, identity theft,	Average, symbols, advance mode, columns, cells, charts, equal	Design, collaborative, individual, database, field,	Animation, computer game, customise, evaluation,	Template, design, building, evaluate, refine, edit, adapt, 3D	Audience, collaboratively, concept, concept map,	

	input, output, object, repeat, sequence, selection, simulation, timer, variable.	shared image, website, plagiarism, citations, reference, bibliography.	tools, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer.	topic, data, table view, chart, statistics tool, report.	image, interactive, input, device, screenshot, texture, perspective, playability.	model, criteria, screenshot, brief, purpose.	connection, idea, node, thought, visual.
Years 5 & 6 Year B	**Unit 6.1 Coding** What is a function in coding?	**Unit 6.2 Online safety** Why do I need to be aware of the dangers of being online?	**Unit 6.3 Spreadsheets** How would you add a formula so that the cell shows the total of a column of cells?	**Unit 6.4 Blogging** How can we create a blog with a specific purpose?	**Unit 6.5 Text Adventures** What is a text based adventure?	**Unit 6.6 Networks** What is the difference between the Internet and the World Wide Web?	**Unit 6.7 Quizzing** What factors do you need to consider when creating a quiz
	Action, alert, algorithm, bug, character, code design, command, control, debug, design mode, if/else, conditional command, input, output, object, repeat, sequence, selection, simulation, tab, timer, variable.	Digital footprint, e-safety, password, PEGI rating, phishing, email, personal information, credit card numbers, screen time, spoof website.	Average, symbols, advance mode, columns, cells, charts, count tool, dice, equal tools, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer.	Blog, purpose, comments, approval process, posts, cyberbullying, features, page, plan, design, create, contributor, response, respectful.	Text-based adventure, concept map, debug, image, sprite, function.	Internet, website, World Wide Web, hypertext links, network, wide area network (WAN), router, network cables, wireless.	Audience, collaboration, concept map, database, quiz, knowledge, entertainment.
KS2 Years A, B, C & D revisited objectives	• Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.			• Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs. • Use logical reasoning to explain how a simple algorithm works, 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. • Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	• 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. • Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely. • Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Computing Skills Ladder

The purpose of the skills ladder is to break down the revisited objectives to show the expectation for each year group. This is not to limit what children can achieve but to give guidance to staff to support short term planning and implementation of the intent document.

Nursery/Reception	Range 4	Range 5	Range 6	ELG (non-statutory)
	• Seeks to acquire basic skills in turning on and operating some digital equipment • Operates mechanical toys, e.g. turns the knob on a wind-up toy or pulls back on a friction car • Plays with water to investigate "low technology" such as washing and cleaning • Uses pipes, funnels and other tools to carry/ transport water from one place to another	• Knows how to operate simple equipment, e.g. turns on CD player, uses a remote control, can navigate touch-capable technology with support • Shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images • Knows that information can be retrieved from digital devices and the internet	• Completes a simple program on electronic devices • Uses ICT hardware to interact with age appropriate computer software • Can create content such as a video recording, stories, and/or draw a picture on screen • Develops digital literacy skills by being able to access, understand and interact with a range of technologies • Can use the internet with adult supervision to find and retrieve information of interest to them	• To have access to a range of technologies, both digital and non-digital in their early lives. • To explore with different technologies through play

		• Plays with a range of materials to learn cause and effect, for example, makes a string puppet using dowels and string to suspend the puppet		

Year group	Computer science (Programming)	Information technology (Data handling and media)	Digital literacy (Impact of technology and e-safety)
Year 1	• Understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. • Know that an algorithm written for a computer is called a program. • Write their own simple algorithm. • Know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code. • When looking at a program, they can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program.	• Sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources. • Use Purple Mash 2Quiz (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.	• Understand what is meant by technology and can identify a variety of examples both in and out of school. • They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. • Understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. • Take ownership of their work and save this in their own private space such as their My Work folder on
Year 2	• Explain that an algorithm is a set of instructions to complete a task. • When designing simple programs, show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. • Create a simple program that achieves a specific purpose. • Identify and correct some errors, e.g. Debug Challenges. • Program designs display a growing awareness of the need for logical, programmable steps. • Identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.	• Demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. • Edit more complex digital data such as music compositions within 2Sequence. • Are confident when creating, naming, saving and retrieving content. • Use a range of media in their digital content including photos, text and sound.	• Retrieve relevant, purposeful digital content using a search engine. • Apply their learning of effective searching beyond the classroom and share this knowledge, e.g. 2Publish example template. • Make links between technology they see around them, coding and multimedia work they do in school. • Know the implications of inappropriate online searches. • Begin to understand how things are shared electronically such as posting work to the Purple Mash display board. • Develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.

Year 3	• Can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. • Can identify an error within their program that prevents it following the desired algorithm and then fix it. • Demonstrates the ability to design and code a program that follows a simple sequence. • They experiment with timers to achieve repetition effects in their programs. • They are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. • Understand how variables can be used to store information while a program is executing. • Designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. • In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	• Carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine. • Can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. • Can consider what software is most appropriate for a given task. • They can create purposeful content to attach to emails, e.g. 2Respond.	• Demonstrate the importance of having a secure password and not sharing this with anyone else. • Can explain the negative implications of failure to keep passwords safe and secure. • Understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. • They know more than one way to report unacceptable content and contact. • List a range of ways that the internet can be used to provide different methods of communication. • They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email.
Year 4	•When turning a real life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. • Make more intuitive attempts to debug their own programs. • Use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. • They understand 'if statements' for selection and attempt to combine these with other coding	• Understand the function, features and layout of a search engine. • They can appraise selected webpages for credibility and information at a basic level. • Are able to make improvements to digital solutions based on feedback. • Make informed software choices when presenting information and data. • They create linked content using a range of software such as 2Connect and 2Publish+. •Share digital content within their community, i.e. using Virtual Display Boards.	• Can explore key concepts relating to online safety using concept mapping such as 2Connect. • They can help others to understand the importance of online safety. • Know a range of ways of reporting inappropriate content and contact. • Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.

	structures including variables to achieve the effects that they design in their programs. • Are able to use and manipulate the value of variables. • Can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code. • Designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. • They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. • In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately. • Recognise the main component parts of hardware which allow computers to join and form a network.		
Year 5	• Attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. • Are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code. • Can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. • They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design. • They are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables.	• Search with greater complexity for digital content when using a search engine. • They are able to explain in some detail how credible a webpage is and the information it contains. • They are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. • They objectively review solutions from others. • Can collaboratively create content and solutions using digital features within software such as collaborative mode. • They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.	• Have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. • Implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others. • They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.

	• Understand the value of computer networks but are also aware of the main dangers.		
Year 6	• Able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. • Test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. • Translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. • Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions. • Able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.	• Readily apply filters when searching for digital content. • They are able to explain in detail how credible a webpage is and the information it contains. • They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. • Use critical thinking skills in everyday use of online communication. • Make clear connections to the audience when designing and creating digital content. • Design and create their own blogs to become a content creator on the internet, e.g. 2Blog. • They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.	• Demonstrate the safe and respectful use of a range of different technologies and online services. • They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. • They recognise the value in preserving their privacy when online for their own and other people's safety. • Understand and can explain in some depth the difference between the internet and the World Wide Web. • Know what a WAN and LAN are and can describe how they access the internet in school.

Computing Knowledge

Information about specific knowledge for each unit can be found at https://www.purplemash.com