Curriculum Progression Frameworks

Computing

Strand	Aspect	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Overview	**Intent**		*At South Molton United Church of England Primary School, every child is valued as a unique person and can develop their sense of discovery, expectation and wonder. Our children have a sense of belonging in a supportive, happy environment, where their range of talents will be nurtured, enabling them to flourish and achieve excellence. We prioritise the development of language, the golden thread of our pupils' learning. Children are supported to develop mastery of their learning through a spiral of planned progression throughout our ambitious and carefully designed curriculum. We have identified the big ideas and key learning essential for children to remember, encourage them to make links and build on this further. We adapt learning to meet the needs of all learners. We embrace Christian values, which enable us to be compassionate and responsible members of our community and make positive contributions to society. We ensure that our learners have a rich range of experiences on and off our school site to broaden their understanding of the world around them and the range of possibilities at their fingertips. We aim to expand aspiration and world view so that children leaving our school are ready for their next steps, know how to keep themselves and others safe and are respectful of all.*					
	Implementation	Digital technology is an integral part of our lives and the lives of our pupils. Our intent is to equip our children to become not just users of technology, but to understand and create using their own skills in computing. In a world of consistent change and development, our computing lessons will give our pupils the skills needed to create, explore and navigate the digital world safely using their own judgement and discernment. Computing is taught in three major strands: E-safety and using technology which introduces children to the concept of how computer systems and networks function and how they are used globally as well as developing their understanding of e-safety and becoming discerning users of the internet. The second strand focuses on programming where children are introduced to the concept of the algorithm to produce and outcome, with a focus on logic and problem solving. The third strand focuses on digital literacy where children learn how to use a range of software to support their learning across the curriculum. We use nationally recognised, high-quality resources from NCCE Teach Computing and Barefoot computing as well as innovations such as Microbits. As computing is constantly changing, we look at have a dynamic curriculum that can adapt to and embrace new technology; for example, discernment about using AI effectively.						
Disciplinary Knowledge *Methods and concepts*		See EYFS Overview- Computing is not a Specific area of the EYFS. However, computing is explored throughout the EYFS in Continuous Provision by being interweaved through Maths, C&L & PSED. (Positional language, instructional language, online safety)	• 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.		• design, write and debug programs that accomplish specific goals, including controlling or stimulating 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.		• 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.	
AUTUMN	**Key Knowledge**	**Maths:** Creating patterns **C&L:** Algorithms (instructional language) **PSHE: Pink Drop** (screen time) Ready Respectful safe	**Computing systems and networks- Technology around us** Know the main parts of a computer. Know why we interact with technology in school. Know how to effectively use a computer keyboard and mouse. **Data and Information- Grouping data** Know the concept of labelling and grouping objects based on their properties. Know why objects can be given labels, which is important in technology. Know how to use dragging and dropping skills on a device.	**Safety snakes** Know that people can be described by attributes. Know why staying safe online is important. **Data and Information- Pictograms** Know how to present information on a computer. **Computing systems and networks all around us** Know that IT can be used in a variety of ways and explain these. Know why we use information technology. Know how to use technology safely and responsibly.	**Computing systems and networks- connecting computers** Know that digital devices accept inputs and produce outputs. Know why digital devices can change the way that we work. Know how devices in networks are connected and the benefits of the devices **Programming- events and actions** Know that a branching database can be used to sort objects according to attributes Know why ordering questions carefully is important in creating a database Know how to create their own simple branching database	**Computing systems and networks- the internet** Know that: the internet is a network of networks. Know why: the internet allows us to explore the World Wide Web. Know how: to determine whether something on the internet is trustworthy. **Data logging and Information** Know that data loggers can be used to collect information over time Know why collecting information over time is useful. Know how to analyse data and use it to answer questions	**Computer systems and networks- communication** Know that computer networks and systems, including the internet, provide multiple services, such as the World Wide Web. Know why search results are selected, ranked and influenced. Know how to use a search engine effectively. **Data and information- flat file databases** Know that there are databases that are programmes used to organise data. Know why databases are used to collect, analyse, evaluate and present information. Know how to present data from a database to answer a question.	**Computing systems and networks- communication** Know that shared working help collaboration and how to create and save a shared document Know why it is important to understand how private and public information is shared Know how computers share information and what IP addresses are **Introductions to spreadsheets** Know that a spreadsheet can be used to manipulate and calculate with data Know why spreadsheets are useful when working with data Know how to create a formula within a spreadsheet
	Vocabulary		Computer Technology Keyboard Mouse Object Label Group Search	tally chart data pictogram attribute conclusion block diagram Information Technology	Input Process Output Device Secure Non-digital Network Attribute, value,	Router Network Switch Server WAP Accuracy Sensor Data logger Data Table	System Component Input Process Output Indexes Database Field Record Refine	protocol, data, address, Internet Protocol (IP) Data Formula Range Duplicate Sigma

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			Screen Double- click Typing	Image Property	most popular least popular	Barcode Scanner Computer	Passwords Digital	table, Branching database, database, equal, even, separate	Web address Web page Links Ownership	Interval Data set Import export	Web search Search engine Web crawler	Chart Filter Sort	address, Domain Name Server (DNS) packet Cell Format	Data set
	Big Ideas	Changes Journeys												
SPRING	**Key Knowledge**	**Maths:** Sorting- Abstraction (sorting important / not) **C&L:** Algorithms (instructional language) **PSHE: Purple Drop** (the news)	**Moving Robot** Know that precise vocabulary is important in a program Know why key vocabulary is important when using a sequence of commands Know how to use create a sequence of commands to solve a problem **Introduction to animation** Know that sprites can have separate algorithms Know why an algorithm may not work and look to solve the problem Know how to add and remove sprites and backgrounds in scratch jr		**Robot algorithms** Know that a series of instructions can be created create an outcome Know why clear language and logic are important when designing a sequence Know how to create a simple, sequenced algorithm and debug errors **An introduction to quizzes** Know that an outcome of a sequence of events can be predicted and altered Know why a program may not work as planned and debug it Know how to change the sprite, background and algorithm in scratch jr		**Sequences in Music** Know that scratch can be used to create an algorithm which acts on a sprite Know why the order of commands is important to create the desired sequence. Know how to create a simple algorithm using commands# **Events and Actions** Know that different effects can be used to manipulate the sprite, background and movements Know why an error has occurred and how to debug to solve it Know how to use extension blocks within scratch		**Repetition in shapes** Know that variables can be changed and the effect this can have on the outcome Know why creating code snippets is useful Know how to create a repeating pattern in logo **Repetition in games** Know that repeats and loops can be used as tools within a program Know how changing values within a program will affect the outcome. Know how to create repetitions within scratch		**Selection in Quizzes** Know that sequence, selection, and repetition in programs determine the outcome of that program. Know why if, then or else statements are used in a program. Know how to design, write and debug programs that accomplish specific goals **Introduction to microbits** Know that the 'if' command can be used to make different outputs happen Know why inputs and outputs are important in using an external device Know how to use code to program and transfer code to a microbit		**Sensing and modelling using microbits** Know that inputs can be used to cause a response and output Know why sensors can be used to fulfil certain jobs Know how to use makecode to transfer an algorithm to the microbit **Programming variables in games** Know that variables can be used within games algorithms Know why being specific in naming variables is important Know how to create a game with a variable	
	Vocabulary		Command Left Right Turn Program sequence predict	Sprite Block Program Background Algorithm Command Value	Command Algorithm Program Route Plan Direction Decomposition Sprite	Background Sequence Algorithm Debug Sequence Command blocks	Programming block Sprite Algorithm Note Chord Sequence Order Code	Sprite Extension Pen Debug Algorithm Event Action errors Run	Logo Command Debug Algorithm Turtle Code snippet Count-controlled loop Repetition Decompose	Sprite Loop Value Infinite loop Count-controlled loop Costume Repetition forever	Conditions Loop Statement Outcome Program flow User Input algorithm Forever On start	Pair Input Output Pin String Loop Variables Logic randomiser	Tilt Sensor Input Bearing Output Random Makecode	Variable Value Variable Algorithm Code Set event
	Big Ideas	Opposites (contrasts) Changes												
SUMMER	**Key Knowledge**	**Maths**: Visualise, build and map **C&L:** Algorithms (instructional language) Logic **PSHE:** Keeping Healthy- screen time/ online safety	**Digital painting** Know that a range of tools can be used in a paint program to create a desired effect Know why digital art is a useful media Know how to use the fill, shape, undo functions and adjust tools to fit their need **Digital writing** Know that a word processor is used for writing text Know why writing on a computer can be more useful than on paper Know how to use key tools on a word processor to create, edit and improve writing		**Digital photography** Know that photos can be edited and effects used to alter them Know why lighting and focus are important to take a good photograph Know how to use my skills to create and edit an image. **Making music** Know that music has rhythm and pitch and is represented by notes. Know why computers can be useful in creating sequences of sounds. Know how to create sequences of sounds		**Creating media- animation** Know that animation software can be used to combine images Know why planning a storyboard carefully is important Know how to use software to plan and make a simple animation **Desktop publishing** Know that different templates can be used for different audiences and purposes Know why manipulating text and images can help good communication Know how to add text and images to templates		**Audio editing** Know that recording can be edited an different effects can be layered. Know why editing is an important part of the production process. Know how to record and edit their own podcast using Audacity. **Vector Drawing** Know that photos can be edited and retouched Know why photo editing can be good and bad Know how to edit a photo using cloning, filters and colour		**Vector drawing** Know that a range of tools can be used to modify a vector-based image Know why vector-based images are used by designers Know how to use layers in drawings and how to group objects to edit them **Video editing** Know that different techniques can be used to film Know why planning a storyboard can be helpful in shooting a short film Know how to edit and export a short film using software		**Website creation** Know that a website must be planned carefully- looking at content and navigation Know why it is important to consider ownership and copyright Know how to use canva and AI to create content for websites **3d modelling** Know that CAD can be used to work on designs in a simulated 3-d environment Know why CAD is an important tool for designers Know how to manipulate shapes to create a 3 structure	

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	Vocabulary		Word processor format undo Backspace Cursor Bold Italic Underline Toolbar Font	Mouse Fill shape Line Undo Tool Brush Style Pointillism Primary colours	Framing Subject Portrait Landscape Compose Editing Filter	Focus Pitch Rhythm Sequence Notes Tempo pulse	Animation Stop frame Frame Onion skinning Animator Sequence Story map Desktop Font	Template Copy Paste Landscape, portrait, orientation, placeholder, layout, content	Podcast Trim Edit Sound effect Input Output Align Layer Audio Waveform	Filter Edit Clone Crop rotate retouch combine copy paste	Vector duplicate rotate align group ungroup order Edit	Storyboard Camera angle Trim Lens High angle Low angle export	HTML Homepage Header Fair use Copyright Workplane Perspective	Placeholder Handles Resize Lift Group Hollow
	Big Ideas 	 Changes  Belonging	 Digital Literacy	 Digital Literacy		 Digital Literacy		 Digital Literacy		 Digital Literacy		 Digital Literacy		
Assessment	**Assessment for Learning – what is done?** **Assessment as Learning - e.g low stakes quizzes**	We use partner talk along with our School Talk Expectations which enables the children to discuss, explain and present their ideas. We use careful questions to elicit children's responses and encourage them to probe further to add to each other's ideas. We use quick feedback techniques such as 123 show me with mini-whiteboards to screen responses from the children. We record learning using Tapestry, our digital learning record. Subject leads are invited to Showcase opportunities and learning organisers are used to prompt pupil voice conversations around this learning. We spiral back to prior learning recapping forever facts from sequences learned before and follow learning of our big ideas from Reception to Year Six. In Key Stage Two we introduce low stakes quizzes, finger voting…..											
	State approach and expectations in each Year group **Assessment of Learning - summative**		Showcases Opportunities: -Creating a picture of myself on the computer -Peer discussion on grouping -Can the robot find the treasure-directions -Creating a short animation -Making a poster -Creating a painting in the style of a famous artist using software	Showcases Opportunities: Creating a pictogram Making a site map of where technology is used Maze challenge Design a quiz Photography competition Composing my own music	Showcases Opportunities: Create a digital and non digital piece of work to compare Testing my database on the class Create a magazine article Creating my own maze and algorithm Creating a virtual performance on scratch Creating my own animation	Showcases Opportunities: Create a poster about internet safety To create my own Viking podcast To create a class gallery Presenting the results of an investigation To design our own games in scratch Making my own wrapping paper	Showcases Opportunities: Create a film premiere Create a vector based picture linked to art Research project for mock webpage Create a chart to answer a question about a database Create a rock paper scissors games Create an algorithm to test a program	Showcases Opportunities: Creating a cloud based shared document Presentation of data for event Create your own version of TTRS Create my own computer game To create my own webpage To design and create my own building in tinkercad	