St Peter's CE (VA) Primary School

Curriculum Progression Map - Computing

	EYFS	Objectives: KS1	Objectives: KS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	KS3
Computer Science	• Interact with simulation – understand that 'output' is the result of a trigger (pressing the play button). • Control a programmable toy. • **To understand the basic functions of an iPad (home button, lock button and volume buttons).**	**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.**	**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.**	I can explain that an algorithm is a set of instructions. **(1.4, 1.5, 1.7)** I know that an algorithm written for a computer is called a program. **(1.4, 1.7)** I can work out what is wrong when the steps are out of order in instructions. **(1.4, 1.7)** I can say that if something does not work how it should it is because my code is incorrect. **(1.7)** I can try and fix my code if it isn't working properly. **(1.7)** I can make good guesses of what is going to happen in a program. For example, where the turtle might go. **(1.5, 1.7)**	I can explain an algorithm is a set of instructions to complete a task. **(2.1)** I know I need to carefully plan my algorithm so it will work when I make it into code. **(2.1)** I can design a simple program using 2Code that achieves a purpose. **(2.1)** I can find and correct some errors in my program. **(2.1)** I can say what will happen in a program. **(2.1)** I can spot something in a program that has an action or effect (does Something. **(2.1)**	I can make a real-life situation into an algorithm for a program. **(3.1)** I can design an algorithm carefully, thinking about what I want it to do and how I can turn it into code. **(3.1)** I can identify an error in my program and fix it. **(3.1)** I can experiment with timers in my programs. **(3.1)** I can identify the difference in using the effect of a timer or repeat command in my code. **(3.1)** I am able to design a program thinking logically about the sequence of steps required. **(3.1)** I can experiment with the effect of using repeat commands. **(3.1)** I can read programs with several steps and predict what it will do. **(3.1)** I can identify different ways that the internet can be used for communication. **(3.5)** I can use email such as 2Email to respond to others appropriately and attach files. **(3.5)**	I can turn a real-life situation to solve into an algorithm, using a design that shows how I can accomplish this in code. **(4.1, 4.5)** I can use repetition in my code. For example, using a loop that continues until a condition is met such as the correct answer being entered. **(4.1)** I can use timers within my program designs more accurately to create repetition effects. **(4.1)** I can use selection (decision) in my programming. For example, using an 'if statement' for a question being asked and the program takes one of two paths. **(4.1)** I can use variables within my program and know how to change the value of variables. **(4.1)** I can use the user inputs and output features within my program, such as 'Print to screen'. **(4.1)** I can identify errors in my code by using different methods, such as steeping through lines of code and fixing them. **(4.1)** I can read programs that contain several steps and predict the outcomes with increasing accuracy. **(4.1, 4.5)** I recognise the main component parts of hardware which allow computers to join and form a network. **(4.8)** I understand that network and communication components can be found in many different devices which allow them to join the internet. **(4.2, 4.7, 4.8)**	I can make more complex real-life problems into algorithms for a program. **(5.1)** I can test and debug my programs as I work. **(5.1, 5.5)** I can convert (translate) algorithms that contain sequence, selection and repetition into code that works. **(5.1)** I can use sequence, selection, repetition, and some other coding structures in my code. **(5.1)** I can organise my code carefully for example, naming variables and using tabs. I know this will help me debug more efficiently. **(5.1)** I can use logical methods to identify the cause of any bug with support to identify the specific line of code. **(5.1)** I know the importance of computer networks and how they help solve problems and enhance communication. **(5.2)** I recognise the main dangers that can be perpetuated via computer networks. **(5.2)** I can explain what personal information is and know strategies for keeping this safe. **(5.2)** I can use the most appropriate form of online communication according to the digital content. For example, use 2Email, 2Blog and Display Boards. **(5.2 & others)**	I can turn a complex programming task into an algorithm. **(6.1)** I can identify the important aspects of a programming task (abstraction). **(6.1)** I can decompose important aspects of a programming task in a logical way, identifying appropriate coding structures that would work. **(6.1)** I can test and debug my program as I work on it and use logical methods to identify a cause of a bug. **(6.1)** I can identify a specific line of code that is causing a problem in my program and attempt a fix. **(6.1)** I can translate algorithms that include sequence, selection and repetition into code and nest these structures within each other. **(6.1)** I can use inputs and outputs within my coded programs such as sound, movement and buttons and represent the state of an object **(6.1, 6.7)** I can interpret (understand) a program in parts and can make logical attempts to put the separate parts together in an algorithm to explain the program as a whole. **(6.1)** I can explain the difference between the internet and the World Wide Web. **(6.2, 6.4,6.6)** I can explain what a WAN and LAN is and describe the process of how access to the internet in school is possible. **(6.2,6.6.6)**	• Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. • Understand several key algorithms that reflect computational thinking [for example, algorithms for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem. • Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions. • Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]. • Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. • Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.

Information Technology	• To know that digital devices can present information in a variety of ways. • Interact with multimedia software: children to record a video or take a picture. • Identify how technology is used to share information. (Email/text message/What's App). • To log on to the computer. To start to access Purple Mash. To know that information may be stored on a digital device.	**Use technology purposefully to create, organise, store, manipulate and retrieve digital content.**	**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.**	I can sort sound, pictures and text. **(1.2)** I can add sound, pictures and text to a program such as 2Create a Story. **(1.6)** I can change content on a file such as text, sound and images. **(1.3, 1.6, 1.7, 1.8)** I can name my work. **(1.2, 1.3, 1.6, 1.7, 1.8)** I can save my work. **(1.2, 1.3, 1.6, 1.7, 1.8)** I can find my work. **(1.2, 1.3, 1.6, 1.7, 1.8)**	I can organise data – for example, using a database such as 2Investigate. **(2.3, 2.4)** I can find data using specific searches – for example, using 2Investigate. **(2.4, 2.5)** I can use several programs to organise information – for example, using binary trees such as 2Question or spreadsheets such as 2Calculate. **(2.4, 2.8)** I can edit digital data such as data in music composition software like 2Sequence. **(2.7 and most units)** I can name, save and find my work. **(2.3, 2.4, 2.6, 2.7, 2.8 & most units)** I can include photos, text and sound in my creations. **(2.8, 2.6)**	I can carry out searches to find digital content on a range of online systems, such as within Purple Mash or on an internet search engine. **(Across units)** I can collect data and input it into software. **(3.3, 3.6, 3.8)** I can analyse data using features within software to help such as, formula in 2Calculate **(spreadsheets). (3.3, 3.6, 3.8)** I can present data and information using different software such as 2Question (branching database) or 2Graph (graphing tool). **(3.3, 3.6, 3.8,3.9)** I can consider what the most appropriate software to use when given a task by my teacher. **(Across units)** I can create purposeful (appropriate) content and attach this to emails. **(3.3, 3.5, 3.6, 3.7, 3.8, 3.9)**	I understand the purpose of a search engine and the main features within it. **(4.7)** I can look at information on a webpage and make predictions about the accuracy of information contained within it. **(4.7)** I can create and improve my solutions to a problem based on feedback. For example, create a program using 2Code. **(4.1, 4.2)** I can review solutions that others have created, using a checklist of criteria. **(4.1, 4.2)** I can work collaboratively to create content and solutions. **(4.1, 4.3, 4.4,4.8)** I can share digital content using a variety of applications such as: 2Blog, 2Email and Display Boards. **(Across units)**	I can search precisely when using a search engine. For example, I know I can add additional words or removes words to help find better results. **(5.2)** I can explain in detail how accurate, safe and reliable the content is on a webpage. **(5.2)** I can make appropriate improvements to digital work I have created. **(Across units)** I can comment on how successful a digital solution is that I have created. For example, a program built in 2Code that sorts decimals numbers. **(Across units)** I can work collaboratively with others creating solutions to problems using appropriate software such as 2Code. **(Across units)** I can use collaborative modes such as within 2Connect to work with others and share it. **(5.7)**	I can use filters when searching for digital content. **(6.2,6.9)** I can explain in detail how accurate and reliable a webpage and its content is. **(6.2)** I can compare a range of digital content sources and rate them in terms of content quality and accuracy. **(6.1, 6.3, 6.4, 6.5, 6.7,6.9)** I can consider the intended audience carefully when I design and make digital content. **(6.1, 6.3, 6.4, 6.5, 6.7,6.9)** I can design and create my own online blogs. **(6.4)** I can use criteria to evaluate the quality of my own and others digital solutions, suggesting refinements. **(6.1, 6.3, 6.4, 6.5, 6.7,6.9)**	• Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users. • Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.

Digital Literacy	• Identify everyday technology: links to technology at home. • Make marks on a digital device to communicate their ideas. • Talk about how everyday technology is controlled. • To know that ICT may be used to communicate information electronically. • Introduce to an iPad and say what the rules are to use them. • To know the difference between computer-based activities (painting changes can easily be made, text can be deleted etc). • Introduce how to look after and use a computer, (links with EAD Safely use and explore a variety of materials, tools and techniques). • To navigate their way around an iPad and operate on app confidently, (links with PSE: Manging Self, "Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain the reasons for rules).	**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.**	**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**.	I can say what technology is. **(1.9)** I can say what examples of technology are in school. **(1.9)** I can say what examples of technology are at home. **(1.9)** I know that a chair uses old technology and a smart phone uses new technology. **(1.9)** I can keep my login information safe. **(1.1 and most units)** I can save my work in a safe place such as 'My Work' folder. **(1.1 and most units)**	I can find information I need using a search engine. **(2.5)** I know the consequences of not searching online safely. **(2.2, 2.5)** I can share work and communicate electronically – for example using 2Email or the display boards. **(2.2 and others)** I can report unkind behaviour and things that upset me online, to a trusted adult. **(2.2)** I can see where technology is used at school such as in the office or canteen. **(2.2)** I understand that my creations such as programs in 2Code, need similar skills to the adult world. e.g. The program used for collecting money for school trips. **(2.1)**	I can create a secure password. **(3.2)** I can explain the importance of having a secure password and not sharing it with others. **(3.2, 3.5)** I can explain the negative consequences of not keeping passwords safe and secure. **(3.2, 3.5)** I understand the importance of keeping safe online and behaving respectfully. **(3.2)** I can use communication tools such as 2Email respectfully and use good etiquette. **(3.2, 3.5)** I can report unacceptable content and contact online in more than one way to a trusted adult. **(3.2)**	I have a good understanding of the online safety rules we learn at school. **(4.2 & across curriculum)** I can demonstrate how to use different online technologies safely. **(4.2 & across curriculum)** I can demonstrate how to use a few different online services safely. **(4.2 & across curriculum)** I know I have a right to privacy both on and offline. **(4.2 & across curriculum)** I recognise that my wellbeing can be affected by how I use technology. **(4.2 & across curriculum)** I can report with ease any concerns with content and contact online and know immediate strategies to keep safe. **(4.2 & across curriculum)**	I have a secure knowledge of online safety rules taught at school. **(5.2 & across units)** I can demonstrate the safe and respectful use of different online technologies and online services. **(5.2 & across units)** I always relate appropriate online behaviour to my right to have personal privacy. **(5.2 & across units)** I know how to not let my mental wellbeing or others be affected by use of online technologies and services. **(5.2 & across units)**	I can demonstrate safe and respectful use of a range of different technologies and online services. **(6.2, 6.4)** I can identify more discrete inappropriate behaviours online. For example, someone who may be trying to groom me or someone else. **(6.2)** I can use critical thinking to help me stay safe online. **(6.2)** I know the value of protecting my privacy and others online. **(6.2, 6.4)**	• Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns

Computing Progression – N.C. Statements – Progression of Skills by Purple Mash.

Unit Theme					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1.1 – Online Safety	2.1 - Coding	3.1 - Coding	4.1 - Coding	5.1 - Coding	6.1 - Coding
1.2 – Grouping & Sorting	2.2 - Online Safety	3.2 - Online Safety	4.2 - Online Safety	5.2 - Online Safety	6.2 - Online Safety
1.3 – Pictograms	2.3 - Spreadsheets	3.3 - Spreadsheets	4.3 - Spreadsheets	5.3 - Spreadsheets	6.3 - Spreadsheets
1.4 – Lego Builders	2.4 - Questioning	3.4 - Typing	4.4 - Writing for different audiences	5.4 - Databases	6.4 - Blogging
1.5 – Maze Explorers	2.5 - Effective Searching	3.5 - Email		5.5 - Game Creator	6.5 - Text Adventures
1.6 – Animated Stories	2.6 - Creating Pictures	3.6 - Branching Data	4.5 - Logo	5.6 - 3D Modelling	6.6 - Networks
1.7 – Coding	2.7 - Making Music	3.7 - Simulations	4.6 - Animation	5.7 - Concept Maps	6.7 - Binary
1.8 – Spreadsheets	2.8 - Presenting Ideas	3.8 - Graphing	4.7 - Effective Searching	5.8 - Word Processing	6.9 - Spreadsheets
1.9 – Tech Outside School		3.9 - Presenting	4.8 - Hardware Investigators		