MIDDLETON PARISH
CHURCH SCHOOL

Computing knowledge and skills progression map

Key concepts	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	**National Curriculum: Pupils understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. They can create and debug simple programs and use logical reasoning to predict the behaviour of simple programs.** Children at Parish will be able to: • 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 • work out what is wrong with a simple algorithm when the steps are out of order (e.g. The Wrong Sandwich in Purple Mash) and	**National Curriculum: Pupils understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. They can create and debug simple programs and use logical reasoning to predict the behaviour of simple programs.** Children at Parish will be able to: • explain that an algorithm is a set of instructions to complete a task • show an awareness of the need to be precise with their algorithms when designing simple programs, so that they can be successfully converted into code • create a simple program that achieves a specific purpose and	**National Curriculum: Pupils design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.** **They use sequence, selection and repetition in programs; work with variables and various forms of input and output.** **They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.** **They 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.**	**National Curriculum: Pupils design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.** **They use sequence, selection and repetition in programs; work with variables and various forms of input and output.** **They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.** **They 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.**	**National Curriculum: Pupils design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.** **They use sequence, selection and repetition in programs; work with variables and various forms of input and output.** **They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.** **They 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.**	**National Curriculum: Pupils design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.** **They use sequence, selection and repetition in programs; work with variables and various forms of input and output.** **They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.** **They 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.**

	write their own simple algorithm (e.g. Colouring in a Bird activity) • know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code (e.g. Bubbles activity in 2Code) • read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program (e.g. interpret where the turtle in 2Go challenges will end up at the end of the program)	identify and correct some errors (e.g. Debug Challenges: Chimp) • display a growing awareness of the need for logical, programmable steps in their program designs • identify the parts of a program that respond to specific events and initiate specific actions (e.g. they can write a cause and effect sentence of what will happen in a program	Children at Parish will be able to: • turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts • show, through their design, that they are thinking of the desired task and how this translates into code • identify an error within their program that prevents it following the desired algorithm and then fix it • demonstrate the ability to design and code a program that follows a simple sequence • experiment with timers to achieve repetition effects in their programs • begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects • show, through their designs, that they are thinking	Children at Parish will be able to: • turn a simple real-life situation into an algorithm, showing coding structures for selection and repetition in their design • make more intuitive attempts to debug their own programs • Integrate timers into their program designs and use them to achieve repetition effects more logically • understand 'IF' statements for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs • use and manipulate the value of variables, make use of user inputs and outputs such as 'print to screen'. e.g. 2Code and understand how variables can be used to store information while	Children at Parish will be able to: • attempt to turn more complex real life situations into algorithms for a program by deconstructing it into manageable parts • 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 • 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 • combine sequence, selection and repetition with other coding structures to	Children at Parish will be 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

			of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures (e.g. repetition and use of timers) • list a range of ways that the internet can be used to provide different methods of communication • use some of these methods of communication, e.g. being able to open, respond to an attach files to emails using 2Email • describe appropriate email conventions when communicating in this way	a program is executing • show, through their designs, that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures (e.g. IF' statements, repetition and variables) • trace code and use step-through methods to identify errors in code and make logical attempts to correct them • 'read' programs with several steps and predict the outcome accurately (e.g. when using Logo) • recognise the main component parts of hardware which allow computers to join and form a network • demonstrate an improved ability to understand the online safety implications associated with the ways the internet can be used for different	achieve their algorithm design • begin 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 • understand the value of computer networks whilst being aware of the main dangers • recognise what personal information is and can explain how this can be kept safe • select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards	structures, including nesting structures within each other • display 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 • interpret a program in parts and make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole • 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 describe how they access the Internet in school

				methods of communication		
Information Technology	**National Curriculum: Pupils use technology purposefully to create, organise, store, manipulate and retrieve digital content.** Children at Parish will be able to: • name, save and retrieve their work • follow simple instructions to access online resources • use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or pictogram software such as 2Count	**National Curriculum: Pupils use technology purposefully to create, organise, store, manipulate and retrieve digital content.** Children at Parish will be able to: • demonstrate an ability to organise data using a database such as 2Investigate • retrieve specific data for conducting simple searches • edit more complex digital data such as music compositions within 2Sequence • confidently create, name, save and retrieve content • use a range of media in their digital content including photos, text and sound	**National Curriculum: Pupils use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. They 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.** Children at Parish will be able to: • carry out simple searches to retrieve digital content, understanding that to do this, they are connecting to the internet and using a search engine • collect, analyse, evaluate and present data and information using a selection of software (e.g. a branching	**National Curriculum: Pupils use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. They 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.** Children at Parish will be able to: • understand the function, features and layout of a search engine • appraise selected webpages for credibility and information at a basic level • make improvements to digital solutions based on feedback • make informed software choices when presenting	**National Curriculum: Pupils use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. They 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.** Children at Parish will be able to: • search with greater complexity for digital content when using a search engine • explain in some detail how credible a webpage is and the information it contains • make appropriate improvements to digital solutions based on feedback received	**National Curriculum: Pupils use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. They 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.** Children at Parish will be able to: • readily apply filters when searching for digital content • explain in detail how credible a webpage is and the information it contains • compare a range of digital content sources and are able to rate them in terms of content quality and accuracy

			database like 2Question) • consider what software is most appropriate for a given task • create purposeful content to attach to emails (e.g. 2Respond)	information and data • 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	and confidently comment on the success of the solution • objectively review solutions from others • collaboratively create content and solutions using digital features within software • use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email	• 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 • use criteria to evaluate the quality of digital solutions and identify improvements, making some refinements
Digital Literacy	**National Curriculum: Pupils recognise common uses of information technology beyond school. They can 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.** Children at Parish will be able to:	**National Curriculum: Pupils recognise common uses of information technology beyond school. They can 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.** Children at Parish will be able to:	**National Curriculum: Pupils use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.** Children at Parish will be able to: • demonstrate the importance of having a secure password and not sharing this with anyone else	**National Curriculum: Pupils use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.** Children at Parish will be able to: • explore key concepts relating to online safety using concept mapping such as 2Connect	**National Curriculum: Pupils use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.** Children at Parish will able to: • demonstrate a secure knowledge of common online safety rules by the safe and respectful use of a few different	**National Curriculum: Pupils use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.** Children at Parish will be able to: • demonstrate the safe and respectful use of a range of different technologies and online services

	• understand what is meant by technology and identify a variety of examples both in and out of school • distinguish between objects that use modern technology and those that do not e.g. a microwave vs. a chair • understand the importance of keeping personal information 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 Purple Mash	• effectively 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 (e.g. animations, interactive code and programs)	• 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 • know more than one way to report unacceptable content and contact	• help others to understand the importance of online safety • know a range of ways of reporting inappropriate content and contact	technologies and online services • implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others	• identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities • recognise the value in preserving their privacy when online for their own and other people's safety