Computing Progression Map

Computing Science

	Year R	Year 1	Year 2
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Use commands / instructions e.g. forward, backwards, go, stop, when using simple software / hardware e.g. Beebots Make choices about the buttons/icons to press, touch or click on when using simple software / hardware e.g. IWB.	Understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. Know that a computer program turns an algorithm into code that the computer can understand.	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 so that they can be successfully converted into code.
Create and debug simple programs		Work out what is wrong with a simple algorithm when the steps are out of order and can 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.	Create a simple program that achieves a specific purpose. Identify and correct some errors. Through their programming, display a growing awareness of the need for logical, programmable steps.
Use logical reasoning to predict the behaviour of simple programs		Read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program.	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.

	Year 3	Year 4	Year 5	Year 6
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts, with the design showing thinking of the desired task and how this translates into code.	When turning a real-life situation into an algorithm, the design shows thinking of the required task and how to accomplish this in code using coding structures for selection and repetition.	Attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.	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

	Identify an error within their program that prevents it following the desired algorithm and then fix it.	Make more intuitive attempts to debug their own programs	Test and debug their programs as they go and use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.	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
Use sequence, selection and repetition in programs; work with variables and various forms of input and output	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. Understand how variables can be used to store information while a program is executing.	Use of timers to achieve repetition effects are becoming more logical and are integrated into program designs. 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. Understand how variables can be used to store information while a program is executing and manipulate the value of variables. Make use of user inputs and outputs such as 'print to screen'.	Translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show thinking of how to accomplish the set task in code utilising such structures. Combine sequence, selection and repetition with other coding structures to achieve their algorithm design.	Translate algorithms that include sequence, selection and repetition into code and their own designs show 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.
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors	Designs for programs show thinking of the structure of a program in logical, achievable steps and absorption of some	Designs for programs show thinking of the structure of a program in logical, achievable steps and absorption of some	When coding, begin to think about code structure in terms of the ability to debug and interpret the code later, e.g. the	Interpret a program in parts and can make logical attempts to put the separate parts of a complex

in algorithms and programs	new knowledge of coding structures. e.g. 'if' statements, repetition and variables. Make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	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 this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	use of tabs to organise code and the naming of variables.	algorithm together to explain the program as a whole.
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	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 and attach files to emails using 2Email. Describe appropriate email conventions when communicating in this way.	Recognise the main component parts of hardware which allow computers to join and form a network. Increase understanding of the online safety implications associated with the ways the internet can be used to provide different methods of communication.	Understand the value of computer networks as well as 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.	Understand and 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.

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Information Technology

	Year R	Year 1	Year 2
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Manage a device by correctly closing websites or apps and safely turning on and off. Input commands using the space bar, backspace, enter, letters and numbers on a keyboard on any device (including on a Chromebook). Activate a talking peg to access learning in continuous provision. Experience simple apps and software and use these to present ideas.	Sort, collate, edit and store simple digital content. Name, save and retrieve their work and follow simple instructions to access online resources.	Demonstrate an ability to organise data using a database and retrieve specific data for conducting simple searches. Edit more complex digital data such as music compositions. Confidently create, name, save and retrieve content. Use a range of media in their digital content including photos, text and sound.

	Year 3	Year 4	Year 5	Year 6
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Carry out simple searches to retrieve digital content. Understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.	Understand the function, features and layout of a search engine. Appraise selected webpages for credibility and information at a basic level.	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.	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 rate them in terms of content quality and accuracy. Use critical thinking skills in everyday use of online communication.

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	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. Consider what software is most appropriate for a given task. Create purposeful content to attach to emails, e.g. 2Respond.	Make improvements to digital solutions based on feedback. Make informed software choices when presenting information and data. Create linked content using a range of software such as 2Connect and 2Publish+. Share digital content within their community, e.g. using Virtual Display Boards	Make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code. Objectively review solutions from others. Collaboratively create content and solutions using digital features within software such as collaborative mode. Use several ways of sharing digital content, e.g. 2Blog, Display Boards and 2Email.	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 are able to identify improvements, making some refinements.

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Digital Literacy

	Year R	Year 1	Year 2
Recognise common uses of information technology beyond school	Recognise technology that is used at home and in school. Understand what a computer is and the different uses of computers i.e. learning, communicating, finding information, playing games etc. Recognise some ways in which the internet can be used to communicate.	Understand what is meant by technology and can identify a variety of examples both in and out of school. Make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.	Retrieve relevant, purposeful digital content using a search engine. Apply their learning of effective searching beyond the classroom and share this knowledge. Make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.
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	Know who they can go to if something upsets them in real life or online.	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 Purple Mash.	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 and know ways of reporting inappropriate behaviours and content.

	Year 3	Year 4	Year 5	Year 6
Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	Demonstrate the importance of having a secure password and not sharing this with anyone else. Explain the negative implications of failure to keep passwords safe and secure.	Explore key concepts relating to online safety using concept mapping. Help others to understand the importance of online safety.	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. Relate appropriate online behaviour to their right to	Demonstrate the safe and respectful use of a range of different technologies and online services. Identify more discreet inappropriate behaviours through developing critical thinking.

	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.	Know a range of ways of reporting inappropriate content and contact.	personal privacy and mental wellbeing of themselves and others.	Recognise the value in preserving their privacy when online for their own and other people's safety.