Year Group	Knowledge and Skills to be taught:	Learning Opportunities:
Nursery	• Talk to the children about how computers and onscreen activities can help us write. • Talk to the children about how we use a printer. • Support children in making marks to represent letters, words, objects using a range of devices, such as desktop computer, laptop, tablet, interactive display • Work with children using simple software with speech support • Explore different graphics packages with children, experimenting with pens, brushes, shapes, colours and stamps, and using different devices • Work with the children helping them to use simple graphics software to create pictures to support storytelling and recount, including combining drawing with existing pictures, building up pictures with backgrounds and adding stamps or pre-drawn elements. Link this experience to reading stories in digital and non-digital form. • Talk about who we can tell if any technology makes us feel worried or uncomfortable	• Talk about computing • Discuss uses of computing • Discuss all positive aspects • Discuss digital footprints • Discuss e-safety • Discuss appropriate use of computing • Show different devices and how to use them
Reception	• Talk to the children about how computers and onscreen activities can help us write. • Talk to the children about how we use a printer. • Support children in making marks to represent letters, words, objects using a range of devices, such as desktop computer, laptop, tablet, interactive display • Work with children using simple software with speech support • Explore different graphics packages with children, experimenting with pens, brushes, shapes, colours and stamps, and using different devices • Work with the children helping them to use simple graphics software to create pictures to support storytelling and recount, including combining drawing with existing pictures, building up pictures with backgrounds and adding stamps or pre-drawn elements. Link this experience to reading stories in digital and non-digital form. • Talk about who we can tell if any technology makes us feel worried or uncomfortable	• Talk about computing • Discuss uses of computing • Discuss all positive aspects • Discuss digital footprints • Discuss e-safety • Discuss appropriate use of computing • Show different devices and how to use them • Purple Mash • Scratch • https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ • https://www.ilearn2.co.uk/

Year 1	• Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program. • 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. • Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 1 **Online Safety & Exploring Purple Mash** | **Grouping & Sorting** | **Pictograms** • **Lego Builders** | **Maze Explorers** | **Animated Story Books** • **Coding** | **Spreadsheets** | **Technology outside school** •	• Fun activities such as clapping out a rhythm as the start of planning an algorithm. • Purple Mash • Scratch • https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ • https://www.ilearn2.co.uk/ • Children can 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 can write their own simple algorithm, e.g. Colouring in a Bird activity. Children 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. • When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program. • Children are able to 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 example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.

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. • 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. • Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 2 **Coding** | **Online Safety** | **Spreadsheets** | **Questioning** **Effective Searching** | **Creating Pictures** | **Making Music** | **Presenting Ideas** • •	• Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code. • Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges. Children's program designs display a growing awareness of the need for logical, programmable steps. • Children can 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. • Purple Mash • Scratch • https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ • https://www.ilearn2.co.uk/
Year 3	• 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.	• Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it.

	• 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 concern about content and contact. • Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 3 • **Coding** **Online Safety** **Spreadsheets** **Touch-Typing** **Email** **Branching** (including email safety) **Databases** **Simulations** **Graphing** •	• Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. Children understand how variables can be used to store information while a program is executing. • Purple mash • Scratch
Year 4	• 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	• Purple Mash • Scratch • https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ • https://www.ilearn2.co.uk/ • 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. Children make more intuitive attempts to debug their own programs.

	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 concern about content and contact. • Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 4 • **Coding** **Online Safety** **Spreadsheets** **Writing for Different Audiences** **Logo** **Animation** • **Logo** **Animation** **Effective Searching** **Hardware Investigators** •	• Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. • Children recognise the main component parts of hardware which allow computers to join and form a network. 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.
Year 5	• 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.	• Purple Mash • Scratch • https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ • https://www.ilearn2.co.uk/ • Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children 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. Children can translate algorithms that include sequence, selection and repetition into code with

	- Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact. - Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 5 **Coding** | **Online Safety** | **Spreadsheets** | **Databases** **Game Creator** | **3D Modelling** | **Concept Maps**	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. When children code, 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
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. - 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 concern about content and contact. - Additional learning opportunities on Purple Mash covering all strands of the NNC14 for year 6	- Purple Mash - Scratch - https://sheffieldclc.net/scratch-progression-resource-for-primary-and-send/ - https://www.ilearn2.co.uk/ - Children are 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. - Children 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. - Children translate algorithms that include sequence, selection and repetition into code and their own designs show that

	Coding	Online Safety	Spreadsheets	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. Children are 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.
	Blogging	Text Adventures	Networks	
	Quizzing			