





# Computing Curriculum

*“Technology will never replace great teachers but technology in the hands of great teachers is transformational.”*

~George Couros

## Purpose of Study:

 <b>Philosophical</b>	Children will be able to evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems. They will be equipped with the computational thinking and creativity to understand and change the world.
 <b>Practical</b>	Children will become digitally literate – being able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.
 <b>Emotional</b>	Children will learn to use technology safely and respectfully and recognise the impact of their online behaviour on the wellbeing of others. They will become responsible, competent, confident and creative users of technology who have the depth of knowledge to apply their skills to non-routine problems and technology yet to be invented.
 <b>Intellectual</b>	Children will make links with mathematics, science, and design and technology to gain insights into both natural and artificial systems. They will learn the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming.

# Computing

## Summary and Progression

## Computer Science

EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>Children can for example, interpret where the turtle in 2Go challenges will end up at the end of the program.</li> </ul>	<ul style="list-style-type: none"> <li>Children can explain that an algorithm is a set of instructions to complete a task.</li> <li>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.</li> <li>Children can create a simple program that achieves a specific purpose.</li> <li>They can also identify and correct some errors, e.g. Debug Challenges: Chimp.</li> <li>Children's program designs display a growing awareness of the need for logical, programmable steps.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Children can identify an error within their program that prevents it following the desired algorithm and then fix it.</li> <li>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.</li> <li>Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</li> <li>Children understand how variables can be used to store information while a program is executing.</li> <li>Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. E.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately</li> <li>Children can list a range of ways that the internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Children make more intuitive attempts to debug their own programs.</li> <li>Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They 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. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables.</li> <li>Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code.</li> <li>Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.</li> <li>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</li> <li>Children can 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. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</li> <li>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.</li> <li>Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe.</li> <li>Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>Children 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 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.</li> <li>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.</li> <li>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.</li> <li>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.</li> <li>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in</li> </ul>

**Summary and Progression**

**Digital Literacy**



EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.</li> </ul>	<ul style="list-style-type: none"> <li>Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</li> <li>Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons.</li> <li>Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.</li> </ul>	<ul style="list-style-type: none"> <li>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template.</li> <li>Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.</li> <li>Children know the implications of inappropriate online searches.</li> <li>Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.</li> </ul>	<ul style="list-style-type: none"> <li>Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.</li> </ul>	<ul style="list-style-type: none"> <li>Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety.</li> <li>Children know a range of ways of reporting inappropriate content and contact.</li> </ul>	<ul style="list-style-type: none"> <li>Children 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.</li> <li>Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.</li> </ul>	<ul style="list-style-type: none"> <li>Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people's safety.</li> </ul>

**Summary and Progression**

**Information Technology**

EYFS	Y1	Y2	Y3	Y4	Y5	Y6
<ul style="list-style-type: none"> <li>EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). Communication and Language Personal, Social and Emotional Development Literacy Mathematics Understanding the World Expressive Arts and Design.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches.</li> <li>Children are able to edit more complex digital data such as music compositions within 2Sequence.</li> <li>Children are confident when creating, naming, saving and retrieving content.</li> <li>Children use a range of media in their digital content including photos, text and sound.</li> </ul>	<ul style="list-style-type: none"> <li>Children can carry out simple searches to retrieve digital content. They 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.</li> <li>Children can 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.</li> <li>Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.</li> </ul>	<ul style="list-style-type: none"> <li>Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level.</li> <li>Children are able to make improvements to digital solutions based on feedback.</li> <li>Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+.</li> <li>Children share digital content within their community, i.e. using Virtual Display Boards.</li> </ul>	<ul style="list-style-type: none"> <li>Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains.</li> <li>Children are able to 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. They objectively review solutions from others.</li> <li>Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.</li> </ul>	<ul style="list-style-type: none"> <li>Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy.</li> <li>Children use critical thinking skills in everyday use of online communication.</li> <li>Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</li> </ul>





## EYFS

End Points EYFS		Key Learning – what children must know, do and remember		Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 1
<b>Technology:</b>					
<p>Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.</p>		<p>EYFS pupils follow mini MASH computing which links the appropriate resources on Purple Mash to the areas of learning and development from the Statutory Framework for the Early Years Foundation Stage (2012). <b>Communication and Language Personal, Social and Emotional Development Physical Development Literacy Mathematics Understanding the World Expressive Arts and Design.</b></p>		<p>Follow Mini MASH online Units for each area of learning.</p>	<p>Pupils access Purple MASH on different types of technology.</p> <p><b>PC/ laptop</b> Use the mouse or glide pad to paint images using 2Paint.</p> <p><b>iPads/tablets</b> Explore 2 Paint on the iPad using their fingers to control to the painting tools.</p> <p><b>Whiteboards/screen</b> See 2Paint being used on a large surface like the whiteboard or screen.</p> <p><b>Logging in at home</b> Access Purple Mash at home so they can see it being used on technology which may be used in their home.</p> <p><b>Making choices</b> Children make in their setting using Purple Mash on the different technology which is available for them.</p>

## Year 1

National Curriculum End Points for Key Stage 1	Key Learning – what children must know, do and remember	Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 1
<b>Computer Science:</b>			
<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p>	<p>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.</p> <p>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.</p> <p>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.</p>	<p>1.4 – Lego Builders <b>Vocabulary:</b> instruction, algorithm, computer, program, debug</p> <p>1.5 – Maze Explorers <b>Vocabulary:</b> direction, challenge, arrow, undo, rewind, forward, backwards, right turn, left turn, debug, instruction, algorithm</p> <p>1.7 – Coding <b>Vocabulary:</b> action, background, button, character, code block, code design, coder, coding, collision detection, command, design mode, input, object, program, properties, scale, stop command, sound, when clicked, when key </p>	<p><b>Understand</b> an algorithm is a precise set of instructions. <b>Know</b> that an algorithm written for a computer to follow is called a program. <b>Know</b> that correcting errors in an algorithm is called debugging. <b>Understand</b> the function of the direction keys. Create and debug an algorithm. <b>Explain</b> what coding means. <b>Design</b> and make a simple program using 2Code.</p>
<b>Digital Literacy:</b>			
<p>Recognise common uses of information technology beyond school.</p> <p>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.</p>	<p>Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</p> <p>Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.</p>	<p>1.2 – Grouping &amp; Sorting <b>Vocabulary:</b> sort, criteria</p> <p>1.3 – Pictograms <b>Vocabulary:</b> pictogram, data, collate</p> <p>1.6 – Animated Story Books <b>Vocabulary:</b> animation, e-book, file, sound effect, display board</p> <p>1.7 – Coding <b>Vocabulary:</b> action, background, button, character, code block, code design, coder, coding, collision detection, command, design mode, input, object, program, properties, scale, stop command, sound, when click, when key </p> <p>1.8 – Spreadsheets <b>Vocabulary:</b> arrow keys, backspace, cursor, columns, cells, clipart, count tool, delete key, image toolbar, lock tool, move cell tool, rows, speak tool, spreadsheet</p>	<p><b>Tell</b> you what my personal information is. <b>Keep</b> my password private. <b>Log in</b> to the student drive. <b>Log in</b> to PurpleMash using a personal login. <b>Tell</b> an adult I trust when I see something unexpected or worrying online. Know why it is important for trusted adults to know what I am doing online. <b>Say</b> well done to my friends when I view their work. Always <b>ask</b> an adult before I go on the internet. <b>Know</b> what these are: clipart, photograph, text, video and sound. <b>Understand</b> what is meant by technology.</p>
<b>Information Technology:</b>			
<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>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.</p>	<p>1.9 – Technology Outside School <b>Vocabulary:</b> technology</p> <p>1.1 – Online Safety &amp; Exploring Purple Mash <b>Vocabulary:</b> log in, username, password, avatar, my work, log out, save, notification, topics, tools </p>	<p><b>Sort and group</b> data. <b>Understand</b> that data can be represented in different ways. <b>Create</b> an animated storybook including sound, animation and backgrounds. <b>Use</b> a simple spreadsheet to resolve problems.</p>





## Year 2

National Curriculum End Points for Key Stage 1		Key Learning – what children must know, do and remember		Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 2
<b>Computer Science:</b>					
<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p> <p>Create and debug simple programs.</p> <p>Use logical reasoning to predict the behaviour of simple programs.</p>	<p>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.</p> <p>Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp. Children’s program designs display a growing awareness of the need for logical, programmable steps.</p> <p>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.</p>	<p>2.1 – Coding</p> <p><b>Vocabulary:</b> action, algorithm, bug, character, code block, code design, command, debug/debugging, design mode, input, object, properties, repeat, scale, timer, when clicked, when key</p>		<p><b>Computer Science:</b></p> <p><b>Create</b> a computer program using simple algorithms.</p> <p><b>Debug</b> simple programs.</p> <p><b>Predict</b> what objects will do.</p>	
<b>Digital Literacy:</b>					
<p>Recognise common uses of information technology beyond school</p>	<p>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template.</p>	<p>2.2 Online Safety</p> <p><b>Vocabulary:</b> search, display-board, internet, sharing, email, attachment, digital footprint</p>		<p>Always <b>ask</b> an adult before I go on the internet.</p> <p><b>Know why</b> it is important for trusted adults to know what I am doing online.</p> <p><b>Know when</b> I am playing a game with a real person on the internet.</p> <p><b>Talk about why</b> I should only use the internet for a short amount of time.</p> <p><b>Know what</b> an advert looks like on the Internet.</p> <p><b>Describe</b> things that happen on line that I must tell an adult about.</p> <p><b>Know</b> that some things on the Internet are not true.</p> <p><b>Know</b> what these are: clipart, photograph, text, video, and sound.</p> <p><b>Know</b> that some things on the Internet are not true.</p> <p><b>Explain why</b> I need to keep my password private.</p> <p>Talk about why it is important to be kind and polite online and in real life.</p> <p><b>Know</b> pictures on the Internet belong to the person who puts them there.</p> <p><b>Say</b> well done to my friends when I see their work.</p> <p><b>Know that</b> not everyone is who they say they are on the internet.</p> <p><b>Refine</b> internet searches.</p> <p><b>Understand</b> how we talk to others.</p> <p><b>Understand</b> what a digital footprint is.</p> <p><b>Understand</b> how internet searches work.</p>	
<p>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.</p>	<p>Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs. Children know the implications of inappropriate online searches.</p> <p>Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.</p>	<p>2.5 Effective Searching</p> <p><b>Vocabulary:</b> search, search engine, internet</p>			

**Information Technology:**

<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches.</p> <p>Children are able to edit more complex digital data such as music compositions within 2Sequence.</p> <p>Children are confident when creating, naming, saving and retrieving content.</p> <p>Children use a range of media in their digital content including photos, text and sound.</p>	<p>2.3 - Spreadsheets <b>Vocabulary:</b> backspace key, copy and paste, columns, cells, count tool, delete key, equals tool, image toolbox, lock tool, move cell tool, rows, speak tool, spreadsheet</p> <p>2.4 - Questioning <b>Vocabulary:</b> pictogram, question, data, collate, binary tree, avatar, database</p> <p>2.5 - Effective Searching <b>Vocabulary:</b> search, search engine, internet</p> <p>2.6 - Creating Pictures <b>Vocabulary:</b> impressionism, palette, pointillism, share, surrealism, template</p> <p>2.7 - Making Music <b>Vocabulary:</b> bpm, composition, digitally, instrument, music, sound effects, soundtrack, tempo, volume</p> <p>2.8 - Presenting Ideas <b>Vocabulary:</b> concept map, node, animated, quiz, non-fiction, presentation, narrative, audience</p>	<p>Use a spreadsheet to solve a mathematical puzzle.</p> <p><b>Construct</b> a binary tree to separate different items.</p> <p>Use a database to answer more complex questions.</p> <p><b>Create</b> surrealist art using drawing and clip art.</p> <p><b>Create</b> a tune using sound I have recorded and uploaded.</p> <p><b>Present</b> my ideas in a variety of ways.</p>
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## Year 3

National Curriculum End Points for Key Stage 2 	Key Learning – what children must know, do and remember 	Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 3
<b>Computer Science:</b>			
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and detect and correct errors in algorithms and programs.</p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, ‘if’ statements, repetition and variables. They make good attempts to ‘step through’ more complex code in order to identify errors in algorithms and can correct this e.g. traffic light algorithm in 2Code. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately.</p> <p>Children can list a range of ways that the internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.</p>	<p>3.1 – Coding <b>Vocabulary:</b> action, algorithm, code block, code design, command, control, debug, design mode, event, if, input, output, object, properties, repeat, computer simulation, selection, timer, variable, communication</p> <p>3.5 – Email <b>Vocabulary:</b> email, compose, send, report to the teacher, attachment, address book, save to draft, password, CC</p>	 <p><b>Design</b> and write a program that simulates a physical system. <b>Make</b> use of X and Y properties of objects. Use the repeat command.</p>
<b>Digital Literacy:</b>			
<p>Use search the technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>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.</p>	<p>Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.</p>	<p>3.2 – Online Safety <b>Vocabulary:</b> send, report to the teacher, spoof website, PEGI rating</p> <p>3.5 – Email <b>Vocabulary:</b> communication, Email, compose attachment, address book, save to draft, password, CC internet, blog, concept map, username, website</p>	 <p><b>Protect my personal information when</b> I do different things online. <b>Use the safety features</b> of websites as well as reporting concerns to an adult. <b>Make</b> good choices about how long I spend online. Know I must <b>check</b> who it belongs to before I copy images or text. Ask an adult before downloading files and games from the internet. Know how to <b>communicate safely</b> with others online and use age appropriate websites to do this. Know that some information on the internet is not accurate. I must <b>think carefully</b> before I rely on it. <b>Understand</b> how a blog can be used to communicate. <b>Evaluate</b> the reliability of websites. Recognise PEGI restrictions. Use email safely. Attach files to email.</p>



**Information Technology:**

Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

Children can carry out simple searches to retrieve digital content. They 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. Children can 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. Children can consider what software is most

3.2 – Online Safety

**Vocabulary**

send, report to the teacher, spoof website, PEGI rating



3.3 – Spreadsheets

**Vocabulary**

> < =, advance mode, copy and paste, columns, cells, delete key, equals tool, move cell tool, rows, spin tool, spreadsheet

3.4 – Touch-typing

**Vocabulary**

posture, top row keys, home row keys, bottom row keys, space bar

3.5 – Email

**Vocabulary**

communication, Email, compose attachment, address book, save to draft, password, CC, internet, blog, concept map, username, website

3.6 – Branching Databases

**Vocabulary**

branching database

3.7 – Simulations

**Vocabulary**

simulation

3.8– Graphing

**Vocabulary**

branching database, data, database, question, simulation, graph, field, data, bar chart, block graph, line graph

**Create** pie charts and bar graphs to present Information.

**Describe** a cell location

**Practise and improve** typing skills.


**Create** a branching database.

**Use and bug** a branching database.

**Understand** what a computer simulation is.

## Year 4

Year 4			
National Curriculum End Points for Key Stage 2	Key Learning – what children must know, do and remember	Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 4
<b>Computer Science:</b>			
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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.</p>	<p>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.</p> <p>Children’s use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They 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. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as ‘print to screen’. e.g. 2Code.</p> <p>Children’s designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, ‘if’ statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this e.g. traffic light algorithm in 2Code. In programs such as Logo, they can ‘read’ programs with several steps and predict the outcome accurately.</p> <p>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.</p>	<p>4.1 – Coding <b>Vocabulary:</b> action, alert, algorithm, bug, code design, command, control, debug/debugging, design mode, event, get input, if, if/else, input, output, object, repeat, selection, simulation, timer, variable</p> <p>4.5 – Logo <b>Vocabulary:</b> logo, BK, FD, RT, LT, repeat, SETPC, SETPS, PU, PD</p> <p>4.2 – Online Safety <b>Vocabulary:</b> computer virus, cookies, copyright, digital footprint, email, identity theft, malware, phishing, plagiarism, spam</p> <p>4.7 – Effective searching <b>Vocabulary:</b> Easter egg, internet, internet browser, search, search engine, spoof website, website</p> <p>4.8 – Hardware investigators <b>Vocabulary:</b> motherboard, CPU, RAM, graphics card, network card, monitor, speakers, keyboard, mouse</p>	<p><b>Create</b> a programme that responds to the ‘If / Else’ command.</p> <p><b>Create</b> an algorithm modelling the sequence of a simple event.</p> <p>Can <b>use the language</b> of Logo.</p> <p>Can <b>use Logo instructions</b> to create a picture.</p> <p>Can <b>structure search queries</b> to locate specific information.</p> <p>Can <b>assess</b> whether an information source is true and reliable.</p> <p><b>Understand</b> the different parts that make up a computer.</p>
<b>Digital Literacy:</b>			
<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.</p>	<p>4.2 – Online safety <b>Vocabulary:</b> computer virus, cookies, copyright, digital footprint, email, identity theft, malware, phishing, plagiarism, spam</p>	<p>Use the <b>safety features</b> of websites as well as reporting concerns to an adult.</p> <p><b>Choose</b> a secure password and appropriate screen name when I am using a website.</p> <p><b>Make good choices</b> about how long I spend online.</p> <p><b>Respect</b> what other people present on the internet.</p> <p><b>Know that</b> anything I share on line can be seen and used by others. <b>Comment positively and respectfully</b> online and through text messages.</p> <p><b>Recognise</b> that websites use different methods to advertise products.</p> <p><b>Choose websites</b> and <b>games</b> that are appropriate for my age.</p> <p><b>Identify the risks</b> and <b>benefits</b> of installing software including apps.</p> <p>Understand that copying someone else’s work is called plagiarism.</p>

<b>Information Technology:</b>			
<p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p>	<p>Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level.</p>	<p>4.7 – Effective searching <b>Vocabulary:</b> Easter egg, internet, internet browser, search, search engine, spoof website, website.</p>	<p><b>Use the formula wizard.</b> <b>Use a spreadsheet</b> for budgeting. <b>Use text formatting</b> to make a piece of writing fit for purpose. <b>Use 2Connect</b> to mind map ideas. <b>Create</b> a simple animation. <b>Explore</b> stop motion animation.</p>
<p>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.</p>	<p>Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards.</p>	<p>4.1 – Coding <b>Vocabulary:</b> action, alert, algorithm, bug, code design, command, control, debug/debugging, design mode, event, get input, if, if/else, input, output, object, repeat, selection, simulation, timer, variable</p> <p>4.3 – Spreadsheets <b>Vocabulary:</b> average, advance mode, copy and paste, columns, cells, charts, equals tool, formula, wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer</p> <p>4.4 – Writing for different audiences <b>Vocabulary:</b> font, bold, italic, underline</p> <p>4.6 - Animation <b>Vocabulary:</b> animation, flipbook, frame, onion skinning, background, play, sound, stop motion, video clip</p>	<p></p>

## Year 5

Year 5			
National Curriculum End Points for Key Stage 2	Key Learning – what children must know, do and remember	Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 5
<b>Computer Science:</b>			
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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.</p>	<p>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.</p> <p>Children can 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. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</p> <p>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.</p> <p>Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.</p>	<p>5.1 – Coding <b>Vocabulary:</b> action, alert, algorithm, bug, code design, command, debug/debugging, design mode, event, get input, if, else, input, output, object, repeat, sequence, selection, simulation, timer, variable </p> <p>5.2 – Online safety <b>Vocabulary:</b> online safety, smart rules, password, reputable, encryption, identity thief, shared image, plagiarism, citations, reference, bibliography </p> <p>5.5 – Game creator <b>Vocabulary:</b> animation, computer game, customise, evaluation, image, instructions, interactive, screenshot, texture, perspective, playability</p>	<p><b>Create</b> a playable, competitive game.</p> <p><b>Create</b> a program to inform others.</p> <p><b>Review</b> and analyse a computer game.</p> <p><b>Create</b> a computer game.</p> <p><b>Evaluate</b> my computer game.</p>
<b>Digital Literacy:</b>			
<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>Children 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. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.</p>	<p>5.2 – Online safety <b>Vocabulary:</b> online safety, smart rules, password, reputable, encryption, identity thief, shared image, plagiarism, citations, reference, bibliography </p>	<p><b>Keep</b> my password and personal information private.</p> <p><b>Discuss</b> appropriate and inappropriate use of the internet.</p> <p><b>Support</b> my friends to protect themselves and make good choices online.</p> <p><b>Explain</b> why I need to protect my computer or device from harm.</p> <p><b>Explain</b> why I need to protect myself and my friends, and the best way to do this including reporting my concerns to a friend.</p> <p><b>Know</b> anything I share online can be seen and used by others. The way I use the internet demonstrates I respect the people I share it with.</p> <p><b>Know</b> that a website has an author who is targeting an audience.</p> <p><b>Know</b> that some people publish inaccurate information on the internet.</p> <p><b>Discuss</b> the importance of choosing an age appropriate website or game.</p> <p><b>Know</b> which resources on the internet I can download and use.</p> <p><b>Understand</b> the advantages and disadvantages, permissions and purposes of altering an image digitally.</p>

**Information Technology:**

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

Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains.

Children are able to 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. They objectively review solutions from others. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.

5.1 – Coding

**Vocabulary:**

action, alert, algorithm, bug, code design, command, debug/debugging, design mode, event, get input, if, else, input, output, object, repeat, sequence, selection, simulation, timer, variable



5.3 – Spreadsheets

**Vocabulary:**

average, advance mode, copy & paste, columns, cells, charts, equals tools, formula, formula wizard, move cell formula, random tool, rows, spin tool, spreadsheets, timer

5.4 – Databases

**Vocabulary:**

avatar, binary tree, charts, collaborative data, database, find, record, sort, group, arrange, statistics, reports, table

5.5 – Game creator

**Vocabulary:**

animation, computer game, customise, evaluation, image, instructions, interactive, screenshot, texture, perspective, playability

5.6 – 3D Modelling

**Vocabulary:**

CAD, modelling, 3D, viewpoint, polygon, 2D, net, 3D printing, points, template

5.7 – Concept maps

**Vocabulary:**

audience, collaboratively, concept, concept map, connection, idea, node, thought, visual

**Create** a formula in a spreadsheet.

**Use** text variables to perform calculations.

**Search** for information on a database.

**Create** a database.

**Explore** different viewpoints in 3D modelling.

**Explore** the possibilities of 3D modelling.

**Create** a concept map.

## Year 6

Year 6			
National Curriculum End Points for Key Stage 2	Key Learning – what children must know, do and remember	Purple Mash Units of Work	Evidence to demonstrate working at the Expected Standard for Year 6
<b>Computer Science:</b>			
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>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.</p>	<p>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.</p> <p>Children 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 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.</p> <p>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.</p> <p>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.</p> <p>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.</p>	<p>6.1 – Coding <b>Vocabulary:</b> action, alert, algorithm, bug, code design, command, control, debug, debugging, event, function, get input, if, else, input, output, object, repeat, sequence, selection, simulation, tab, timer, variable</p> <p>6.2 – Online Safety <b>Vocabulary:</b> digital footprint, password, PEGI rating, phishing, screen time, spoof time, spoof website</p> <p>6.4 – Blogging <b>Vocabulary:</b> audience, blog, blog page, blog post, collaborative, icon</p> <p>6.5 – Text adventures <b>Vocabulary:</b> text-based adventure, concept map, debug, sprite, function</p> <p>6.6 – Networks <b>Vocabulary:</b> Internet, World Wide Web, network, local area (LAN), wide area network (WAN), network cables, wireless network</p>	<p> <b>Use</b> variables within a game. <b>Create</b> a simulation of a room in which devices can be control. <b>Understand</b> what a LAN and WAN are. <b>Explain</b> what the future might hold for Computing.</p>
<b>Digital Literacy:</b>			
<p>Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.</p>	<p>Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people’s safety.</p>	<p>6.2 – Online Safety <b>Vocabulary:</b> digital footprint, password, PEGI rating, phishing, screen time, spoof time, spoof website</p> <p>6.4 – Blogging <b>Vocabulary:</b> audience, blog, blog page, blog post, collaborative, icon</p> <p>N.B Digital Literacy discussed in other units.</p>	<p> <b>Choose</b> a secure password for different purposes. <b>Explain</b> the consequences of spending too much time online or on a game. <b>Protect</b> my computer or device from harm online. <b>Explain</b> the consequences of sharing too much of myself online. <b>Explain</b> the consequences to myself and others for not communicating kindly and respectfully. <b>Check information</b> that I find online. <b>Know</b> that using unreliable information will mislead people. <b>Know</b> that websites can use my data to make money and target their advertising. <b>Always acknowledge</b> the source of materials I use in my work. <b>Ask</b> my friends before I use things I created in my work. <b>Identify</b> the benefits and risks of mobile devices. <b>Understand</b> the importance of balancing screen time. <b>Identify</b> the features of successful blog writing.</p>

		Understand the importance of commenting on blogs.	
<b>Information Technology:</b>			
<p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>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.</p>	<p>Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy.</p> <p>Children use critical thinking skills in everyday use of online communication.</p> <p>Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p>	<p>6.1 – Coding <b>Vocabulary:</b> action, alert, algorithm, bug, code design, command, control, debug, debugging, event, function, get input, if, else, input, output, object, repeat, sequence, selection, simulation, tab, timer, variable</p> <p>6.2- Online Safety <b>Vocabulary:</b> digital footprint, password, PEGI rating, phishing, screen time, spoof time, spoof website</p> <p>6.3 – Spreadsheets <b>Vocabulary:</b> average, advance mode, copy and paste, columns, cells, charts, count tool, dice, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer</p> <p>6.4 – Blogging <b>Vocabulary:</b> audience, blog, blog page, blog post, collaborative, icon</p> <p>6.5 – Text adventures <b>Vocabulary:</b> text-based adventure, concept map, debug, sprite, function</p> <p>6.7 – Quizzing <b>Vocabulary:</b> audience, collaboration, concept map, database, quiz</p>	<p><b>Explore</b> a probability. <b>Create</b> a story based adventure. <b>Code</b> a map based text adventure. <b>Create</b> a picture quiz for young children.</p>