# Computing Long Term Plan

| Learning Focus | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Coding and Computational Thinking | | Internet/Email (incl. esafety) | | Digital Music | | Writing/Publishing |
| | Spreadsheets | | Computer Aided Design and Multimedia | | Statistics | | Communication and Networks (incl. esafety) |

## KS1

| YR 1&2 CYCLE A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Online safety & introduction to Learning Platforms (1.1) [Purple Mash/Google Classroom] | | | | Effective Searching (2.5) [Safari/Chrome] | | | Lego Builders (1.4) [2DIY] | | | Technology (1.9) [various] | |
| Spring | Grouping & Sorting (1.2) [2DIY] | | | | Creating Pictures (2.6) [2PaintAPicture] | | | | Spreadsheets A (1.8) [2Calculate] | | | |
| Summer | Coding A (1.7) [2Code] | | | | | | | Coding B (2.1) [2Code] | | | | |

| YR 1&2 CYCLE B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3Autumn | Online Safety & Introduction to Learning Platforms (1.1) [Purple Mash/Google Classroom] | | | | Maze Explorers (1.5) [2Go] | | | Questioning (2.4) [2Question & 2Investigate] | | | | |
| Spring | Online Safety (2.2) [various] | | Animated Story Books (1.6) [2CreateAStory] | | | | | Making Music (2.7) [2Sequence] | | | | |
| Summer | Spreadsheets B (2.3) [2Calculate] | | | | Pictograms (1.3) [2Count] | | | | Presenting Ideas (2.8) [various] | | | |

# LKS2

| YR 3&4 CYCLE A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Online Safety & Revisiting Learning Platforms (3.2) [various] | | Coding C *Accomplishing a Goal* (Y3L1&Y4L1) [2Code] | | Coding D *Simulating a Physical System* (Y3L2&Y4L6) [2Code] | | Coding E *Debugging* (Y3L5&Y4L4) [2Code] | | Spreadsheets C (3.3) [2Calculate] | | | |
| Spring | Touch Typing (3.4) [2Type and other online programs] | | | | | | Using Email Safely (3.5) [2Email, 2Connect & 2DIY] | | | | | |
| Summer | Branching Databases (3.6) [2Question] | | | | Simulations (3.7) [2Simulate & 2Publish] | | | | Graphing (3.8) [2Graph] | | | |

| YR 3&4 CYCLE B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Online Safety & Revisiting Learning Platforms (4.2) [various] | | Coding F *Variables and 'if/else' statements* (Y3L4&Y4L2) [2Code] | | Coding G *Repetition, Timers, Repeats and User Input* (Y3L3&Y4L3) [2Code] | | Coding H *More Complex Variables* (Y3L6&Y4L5) [2Code] | | Spreadsheets D (4.3) [2Calculate] | | | |
| Spring | Writing for Different Audiences (4.4) [2Email, 2Connect & 2DIY] | | | | | | Logo (4.5) [Logo] | | | | | |
| Summer | Animation & Film (4.6) [2Animate & others e.g. iMovie] | | | | | | Effective Searching (4.7) [Safari/Chrome] | | | Hardware Investigators (4.8) [Various] | | |

# UKS2

| YR 5&6 CYCLE A | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Autumn | Online Safety & Revisiting Learning Platforms (5.2) [various] | | Coding I *Accomplishing Goals and Simulations* (Y5L1&Y5L2) [2Code] | | Coding J *Games with Scores and Timers* (Y5L4&Y5L5) [2Code] | | Coding K *Using Buttons to Showcase Work* (Y6L6&Y6L6) [2Code] | | Spreadsheets E (5.3) [2Calculate] | | | |
| Spring | Databases (5.4) [2Question&2Investigatge] | | | | Game Creator (5.5) [2DIY 3D] | | | | | | | |
| Summer | 3D Modelling (5.6) [2Design and Make and others] | | | | | | Concept Maps (5.7) [2Connect] | | | | | |
| YR 5&6 CYCLE B | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Autumn | Online Safety & Revisiting Learning Platforms (6.2) [various] | | Coding L *Designing Complex Programs* (Y6L1&Y6L2) [2Code] | | Coding M *Text Variables and Functions* (Y5L3&Y6L3) [2Code] | | Coding N *Adventures in Text* (Y6L6) [2Code] | | Spreadsheets F (6.3) [2Calculate] | | | |
| Spring | Blogging (6.4) [2Blog] | | | | | | Text Adventures Continued (6.5) (2Code & 2Connect) | | | | | |
| Summer | Surveys and Quizzes (6.7) [2Quiz, 2DIY, Text Toolkit & 2Investigate] | | | | | | Networks (6.6) [various] | | | | | |

# Opportunities for Computing in the EYFS

| Understanding the World | Literacy | Physical Development |
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| • Classrooms could contain a role play area with a range of technology, both functioning and model / broken devices, or a variety of electronic toys, such as remote-controlled cars, walkie-talkies and interactive pets, as part of continuous provision.<br>• Further technology could be included in conjunction with other activities, such as digital cameras for pupils to photograph their own learning, although it is worth bearing in mind that the EYFS Framework (pg. 12) states children need to "select and use technology for a particular purpose", rather than simply being given a device.<br>• The pedagogical approaches used this age group should also be carefully considered, which includes the need to tinker, or play, with a device, in order to discover how it functions. | • Bee Bots continue to be extremely popular in both EYFS and Key Stage 1, and provide a number of opportunities to develop pupils' computing knowledge within literacy sessions.<br>• Children could create a story about the Bee Bot's journey, such as around a local area or a country being studied, or they could sequence events within a story being studied. For example, children could guide the Bee Bot between different locations, characters and locations within Little Red Riding Hood.<br>• Programming devices suitable for young children are being developed by a range of manufacturers, such as the Code-a-pillar by Fisher-Price. | • Many children entering Early Years settings are already familiar with tablet devices, although their ability to use a keyboard and mouse is often limited. This has recently become a more significant issue, due to the prevalence of tablet devices in the home. It is therefore important that children are given opportunities to become familiar with a range of input devices, including the keyboard and mouse, in order to develop the required fine motor skills.<br>• Usage could be linked to phonics sessions, such as through the use of drill and practice games, including Dance Mat Typing or the Animal Typing app, or more creative outcomes. |
| **Communication and Language** | **Personal, Social and Emotional Development** | **Expressive Arts and Design** |

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| • Unplugged activities, or those away from the machine, give children an opportunity to develop their understanding of technology without the need for expensive devices.<br>• Children could be asked to give precise instructions verbally, such as through giving instructions to a sandwich making robot, with links made to the importance of using the correct vocabulary, along with speaking clearly and precisely.<br>• Give me instructions could also form part of sessions linked to physical development activities, such as determining rules for certain playground games. | • Voice recorders, or the microphone built into a tablet device, could be used to record how pupils are feeling, or to discuss their relationships with others.<br>• This could be extended through pupils creating their own videos, which could also link to children giving online safety guidance to their peers on using technology safely and what to do if they feel worried or concerned when you using a device.<br>• A range of age-appropriate books are now available for young children to examine online safety, such as Chicken Clicking, Goldilocks (A hashtag cautionary tale) and the free Smartie the Penguin.<br>• Using voice and video recorders also allows children to self-evaluate their own speaking. | • The use of painting and graphics applications can further develop pupils' keyboard and mouse skills, whilst a range of tablet-based apps are also available, such as the free Doodle Buddy.<br>• Creative outcomes can be produced, which allows pupils to take ownership of their work and could even be part of an extended project.<br>• Outputs produced could be linked to other uses of technology, such as producing mats for Bee Beets to travel around, other physical computing devices, such as Spheros, can even be put into paint and controlled using a tablet device to produce images.<br>• Outfits for the device to wear, such as Bee Bot head dresses or Sphero paper cup people, could also be developed. |

# Progression of Knowledge, Understanding and Skills in Computing

## Key Stage 1

| | Computing Science | | | Information Technology | Digital Literacy | |
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| **Statement** | **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.** |

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| **Demonstrative Outcomes** | • 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.<br>• 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 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.<br>• 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.<br>• 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. | • 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.<br>• 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. | • 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.<br>• Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches.<br>• Children are able to edit more complex digital data such as music compositions within 2Sequence.<br>• Children use a range of media in their digital content including photos, text and sound. | • 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.<br>• 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.<br>• 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 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.<br>• Children know the implications of inappropriate online searches. 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. |

## LKS2

| | **Computing Science** | | | | **Information Technology** | | **Digital Literacy** |
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| **Statement** | **Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems;** | **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** | **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** | **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** |

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| | **solve problems by decomposing them into smaller parts.** | | | **Wide Web, and the opportunities they offer for communication and collaboration.** | | **given goals, including collecting, analysing, evaluating and presenting data and information.** | **on the internet or other online technologies.** |
| **Demonstrative Outcomes** | • 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. | • Children use timers to achieve repetition effects are integrated into their program designs.<br>• They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that 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. | • 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. | • Children can list a range of ways that the internet can be used to provide different methods of communication.<br>• They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email.<br>• They can describe appropriate email conventions when communicating in this way.<br>• Children recognise the main component parts of hardware which allow computers to join and form a network.<br>• Their ability to understand the online safety implications. | • 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.<br>• 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 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 appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.<br>• Children are able to make improvements to digital solutions based on feedback.<br>• Children make informed software choices when presenting information and data.<br>• 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. | • 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.<br>• They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash.<br>• They know more than one way to report unacceptable content and contact.<br>• Children can explore key concepts relating to online safety using concept mapping such as 2Connect.<br>• They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact. |

## UKS2

| Computing Science | Information Technology | Digital Literacy |
|---|---|---|

| Statement | 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 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. |
|---|---|---|---|---|---|---|---|
| Demonstrative Outcomes | • 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.<br>• 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 they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other.<br>• 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. | • 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.<br>• 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. | • Children understand the value of computer networks but are also aware of the main dangers.<br>• They recognise what personal information is and can explain how this can be kept safe.<br>• Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.<br>• 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 | • Children search with greater complexity for digital content when using a search engine.<br>• They are able to explain in some detail how credible a webpage is and the information it contains.<br>• 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.<br>• They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. | • 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.<br>• They objectively review solutions from others.<br>• Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode.<br>• They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.<br>• 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 | • 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.<br>• Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.<br>• Children demonstrate the safe and respectful use of a range of different technologies and online services.<br>• They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities.<br>• They recognise the value in preserving their privacy when online for their own and other people's safety. |

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| | | | | they access the internet in school. | | improvements, making some refinements. | |