****Over Hall Computing Knowledge and Skills Progression Overview

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| **RECEPTION** | **Mouse and Trackpad Skills** | **Keyboard Skills** | **Drawing Skills** | **Robots** | **Sounds** | **Photography** | **Technology Around Us** | **Hardware** | **Safety and Privacy** | **Using Purple Mash with a login** | **Quizzes** |
| **Pupil Outcomes** | To know how to ‘hold’ a mouse. -To be able to move the mouse purposefully. -To be able to click the left-hand mouse button to perform an action. -To be able to use click and drag to move objects purposefully. -To be able to use the scroll roller on a mouse. -To know how to use a laptop touchpad. | To be able to find individual letters on the keyboard. -To use the spacebar. -To be able to delete using the backspace key and the DELETE key. -To be able to type both uppercase and lowercase letters using CAPS LOCK and shift. -To be able to type numbers. -To be able to use the ENTER key. -To be able to use the arrow keys. -To be able to use the keyboard with all the above skills | To be able to select colours. -To be able to mark make purposefully on a screen. -To be able to control the pencil width. -To be able to control tools to experiment with. -To be able to use the undo function. -To be able to erase parts of pictures. -To be able to draw using a touch screen. -To be able to draw using mouse control. | To be able to describe a route that is in progress and a route taken by another person while it is being enacted. -To be able to follow a route taken by another person after it has been enacted. -To plan routes for toy vehicles and follow plans for toy vehicles. -To use the buttons on a floor robot to make it move developing to using buttons with greater purpose e.g., program several buttons to make it move. -To be able to interpret simple instructions to predict an outcome. -To be able to plan and input instructions for a floor robot building up to several steps. | To experiment in the music area of Mini Mash to combine sounds. -To use the built-in sound effects in Purple Mash. -To be able to record spoken words and play these back. | To be able to look at photos and identify features. -To be able to take photos using a device. -To be able to use the webcam in Mini Mash. -To be able to open photos in Purple Mash. -To be able to use own photos in work on a digital device | -To know the technology used in the home. -To be able to identify how technology is used outdoors. -To be able to identify technology used in the wider world. | -To be able to take appropriate actions before using technology. -To be able to understand why food should be kept away from devices. -To be able to identify electrical safety as important. -To know safe ways to transport portable devices. -To be able to relate being gentle and sharing to the use of devices. -To be able to understand what technology is. -To be able to identify the main parts of a computer. | To be able to explain what it means to own digital content. -To be able to explain what ‘private’ means when using technology. -To be able to express how it feels to be uncomfortable with something. -To be able to name 5 people who can help with negative feelings. -To be able to think about how to show kindness to others. -To begin to be aware of the impact of a lot of screen time. | To navigate to PM login page. -Using login shortcuts. -Login in picture password. -Login in numbers. -Login in words. -My work area. -2Dos. | To know what a quiz is. -To be able to participate in a multiple-choice quiz using pictures. -To be able to participate in a sequencing quiz using pictures. -To be able to answer quiz questions by typing. -To be able to participate in a cloze quiz. -To be able to participate in a sorting and sequencing quiz. -To be able to complete a quiz with mixed questions. -To be able to play a quiz game. |
| **EYFS Framework** | **Communication and Language**Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. Make comments about what they have heard and ask questions to clarify their understanding. Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. | **Expressive Arts and Design**Invent, adapt and recount narratives and stories with peers and their teacher. Sing a range of well-known nursery rhymes and songs. Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music. | **Fine Motor**. Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases. Use a range of small tools, including scissors, paint brushes and cutlery. Begin to show accuracy and care when drawing | **Understanding the World**Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. Know some similarities and differences between different religious and cultural communities in this country, drawing on their experiences and what has been read in class. Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and – when appropriate – maps | **Literacy** Write recognisable letters, most of which are correctly formed. Spell words by identifying sounds in them and representing the sounds with a letter or letters. Write simple phrases and sentences that can be read by others. | **Maths**Verbally count beyond 20, recognising the pattern of the counting system. Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally |

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| **YEAR 1** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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, keep personal information private; identify where to go for help\ support with concerns about content or contact on the internet or other online technologies |
| **Pupil Outcomes** | Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand. | Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich 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 can 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. | 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. | 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. |

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| **YEAR 2** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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. |
| **Pupil Outcomes** | 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: Chimp. 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-andeffect sentence of what will happen in a program. | Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. Children can edit more complex digital data such as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound. | 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. Children make links between the 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. 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 |

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| **YEAR 3** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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 |
| **Pupil 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 from following the desired algorithm and then fix it. | 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. | 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 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. 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. | 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 appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond. | 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. |

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| **YEAR 4** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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. |
| **Pupil Outcomes** | 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 programs. | 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 can 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 can trace code and use step-through methods to identify errors in code and make logical attempts to correct them. 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 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. | 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 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. | 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 |
| **YEAR 5** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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 |
| **Pupil Outcomes** | Children may attempt to turn more complex real life situations into algorithms for a program by deconstructing them into manageable parts. Children can 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 increasing ease and their designs show that they are thinking of how to accomplish the set task in code utilising such structures. They combine 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 | 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 communication contingent on the audience and digital content, e.g. 2Blog, 2Email and Display Boards. | Children search with greater complexity for digital content when using a search engine. They can explain in some detail how credible a webpage is and the information it contains. | Children can make appropriate improvements to digital solutions based on feedback and can comment on the success of the solution. e.g. coding to a design brief using 2Code. They objectively review solutions from others. Children can collaboratively create content and solutions using digital features within software such as collaborative mode. They can use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email. | 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 the mental well-being of themselves and others. |

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| **YEAR 6** |  **Computer Science**  | **Information Technology** | **Digital Literacy** |
| **National Curriculum** | 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. |
| **Pupil Outcomes** | Children can turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then logically decomposing them 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 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, and inputs from the user of the program such as button clicks and the value of functions. | Children can 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 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. | Children readily apply filters when searching for digital content. They can explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and can rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication. | 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 can use criteria to evaluate the quality of digital solutions and can identify improvements, making some refinements. | 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. |