Curriculum Progression of Knowledge & Skills

Computing

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Introduction.

This document sets out the sequence, progression and end-point expectations for Computing at Hollinhey Primary School.

The curriculum is organised through four strands: To Code, To Collect, To Communicate and To Connect. Together, these ensure full coverage of the National Curriculum areas of Computer Science, Information Technology and Digital Literacy.

Curriculum Sequence

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Initial Internet Safety Lesson	Login Skills Intro to Purple Mash	Creative Computing	Technology Around Us	Data Explorers	Creating and Following Instructions	Coding
Year 2		The Internet	Presenting Ideas	Spreadsheets	Route Explorers	Coding	Questioning
Year 3		Touch Typing	Route planners	Coding	Email	Presentations	Spreadsheets
Year 4		Hardware and Software	Effective Searching Intro to AI	Logo	Animation	Sound Stories	Coding
Year 5		Word Processing (MS Word)	Databases	Concept Maps	micro:bit	Spreadsheets	Game Creator
Year 6		Networks	Spreadsheets (MS Excel)	Binary	Blogging	Introduction to Python	Data detectives Post SATs enrichment: 3D Modelling

Knowledge and Skills Progression

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To Code	Follow and create simple instructions	Creating & Following Instructions Coding	Route Explorers Coding	Route Planners Coding	Logo Coding	micro:bit	Binary Introduction to Python
To Collect	Collect and record simple information	Data Explorers	Spreadsheets Questioning	Spreadsheets	Effective Searching	Databases Spreadsheets	Data Detectives Excel Spreadsheets
To Communicate	Use technology to create and express ideas	Creative Computing	Presenting Ideas	Touch Typing Presentations	Animation Sound Stories	Word Processing Concept Maps Game Creator	Blogging 3D Modelling
To Connect	Recognise technology in everyday life	Introduction to Purple Mash Technology Around Us	The Internet	Email	Unpacking Hardware & Software Introduction to AI	*Covered through wider curriculum experiences*	Networks

End Points and Unit Breakdown.

The statements below identify the foundations of Computing knowledge and skills developed through Nursery and Reception that support progression into Key Stage 1.

EYFS			
To code	**To collect**	**To communicate**	**To connect**
Begin to follow and create simple instructions to achieve an outcome. • To follow the rules of a game. • To plan a simple route for a toy or vehicle. • To give simple instructions including directions. • To know that instructions help us achieve a goal.	**Begin to collect and organise information.** • To know that information can be collected and recorded. • To know how to use technology to support collecting information. • To know that information can be presented in different ways. • To know how to add information to a simple pictogram.	**Use technology to create and express ideas.** • To know how to create shapes and patterns using a mouse, trackpad or touchscreen. • To know how to use technology to create pictures and designs. • To know how different tools can be used to express ideas and feelings. • To know how to talk about what they have created.	**Recognise technology in everyday life and use it responsibly.** • To know different types of technology used at home and school. • To know that technology can help us communicate and find information. • To know the importance of following rules when using technology. • To know who can help if something online worries or upsets us.
Possible Mini Mash resources to support Computing Curriculum			

Commented [VM1]: Used Ivy Banks progression document for these ideas – have emailed to Emily and Becky to confirm if they look ok!

Year 1

To code		To collect	To communicate	To connect	
Write and test simple programs. • To know that an algorithm is a set of instructions and that the order is important. • To know how to create and follow simple instructions on a device. • To know how to sequence instructions correctly to achieve an outcome. • To know how to identify and fix errors (debug) in a simple algorithm.	**Create and test simple computer programs.** • To know that code is a set of instructions that a computer can follow. • To know that programs use objects, actions and events to make things happen. • To know how to create a simple program using code blocks. • To know how to identify and fix errors (debug) in a program.	**Sort and group data.** • To know that data is information that can be collected and used. • To know the difference between sorting and grouping. • To know how to sort and group items using different criteria. • To know that data can be represented using pictures such as pictograms.	**Use technology purposefully to create and edit digital content.** • To know how to use paint tools to create digital artwork. • To know how to use colours, shapes and text within a digital design. • To know how to create simple digital games and puzzles. • To know how to edit and improve digital content using simple tools such as undo and redo.	**Recognise how technology is used in school and everyday life.** • To know what technology is and where it is used. • To identify technology used in school and beyond. • To identify parts of a digital device. • To know how to use devices safely and appropriately.	**Understand how to access and use Purple Mash safely.** • To know how to log in using a username and password. • To know how to create and identify an avatar. • To know how to open, save and retrieve work in Purple Mash. • To know how to locate and complete activities set in 2Dos.
Creating and following instructions	**Coding**	**Data Explorers**	**Creative Computing**	**Technology Around Us**	**Login Skills and Introduction to Purple Mash**

Additional optional units: Animated Stories, Making Beats

Commented [VM2]: Chosen to omit as overlap with other units and not essential to end points.
- Making Music in Year 2
- Composing Beats in Year 4

Year 2

To code		To collect		To communicate	To connect
Plan, write and test simple programs. • To know that an algorithm is a sequence of instructions used to complete a route. • To know how to use direction and distance commands to move an object. • To know how to combine commands to create longer routes. • To know how to identify and correct errors within an algorithm.	**Plan, write and test simple programs.** • To know how to create a program from an algorithm. • To know that programs use events and actions to control objects. • To know that different objects have different properties and behaviours. • To know how to test and debug a program to improve its outcome.	**Organise data in a spreadsheet and use it to answer questions.** • To know that a spreadsheet stores information in rows and columns. • To know how to enter, edit and organise data within a spreadsheet. • To know that spreadsheets can perform simple calculations automatically. • To know how to create and interpret simple graphs from data.	**Organise data in charts and use it to answer questions.** • To know how data can be collected to answer a question. • To know how to record data using a tally chart and present it digitally. • To know how yes/no questions can be used to sort and classify information. • To know how to use a branching database to find information and answer questions.	**Use technology purposefully to organise and present ideas.** • To know that a concept map can be used to organise and present information clearly. • To know how to create and organise ideas using nodes and connecting lines. • To know how to group related ideas and show how they are connected. • To know how to present ideas clearly using a concept map	**Understand how the internet connects devices and helps us access information.** • To know that the internet connects devices around the world and allows information to be shared. • To identify smart devices and understand how Wi-Fi connects them to the internet. • To understand that browsers are used to view webpages and websites. • To understand that search engines help us find information online and use a website to locate information safely.
Route Explorers	**Coding**	**Spreadsheets**	**Questioning**	**Presenting ideas**	**The Internet**

Additional optional unit: Making Music, Creating Pictures

Commented [VM3]: Chosen to omit because they are more creative rather than skills/knowledge based. The units chosen make more sense progression wise when looking at later units.

Year 3

To code		To collect	To communicate		To connect
Create and test algorithms to solve navigational problems. • To know how to create algorithms using direction, distance and rotation commands. • To know how to use 45° and 90° turns to control movement. • To know how to use repetition to make programs more efficient. • To know how to test and debug algorithms to achieve a desired route.	**Design and write programs that accomplish specific goals.** • To know how to use flowcharts to plan algorithms and programs. • To know how to use sequence, repetition and timers to control actions within a program. • To know how to create a program from a design and explain how it works. • To know how to test and debug programs to improve their effectiveness.	**Create a range of charts and graphs from data in a spreadsheet.** • To know how to enter, edit and organise data within a spreadsheet. • To know how to use formulae and functions to perform calculations automatically. • To know how to create graphs and charts from spreadsheet data. • To know how to use spreadsheet data to answer questions and solve problems.	**Use keyboard skills to create digital content efficiently.** • To know how to use the correct finger positions on a keyboard. • To know how to type letters, numbers and common punctuation accurately. • To know how to use the shift key to create capital letters and symbols. • To know how posture and hand position improve typing accuracy and speed.	**Know how to create content that accomplishes a given goal using a variety of software.** • To know how to create and organise slides within a presentation. • To know how to combine text, images and media to communicate information. • To know how to use animations and transitions appropriately. • To know how to present information effectively to an audience.	**Recognise how technology can be used to communicate with others.** • To know how email is used to send and receive messages. • To know how to compose, reply to and send an email. • To know how to attach files to an email. • To know how to use email safely and communicate with trusted contacts.
Route Planners	**Coding**	**Spreadsheets**	**Touch typing**	**Presentations**	**Email**

Additional optional unit: Branching Databases

Commented [VM4]: Omitted because skills are covered in other units, and if added to the LTP the skills would be more heavily weighted towards to collect. This would mean leaving another strand covered more lightly and could lead to gaps in skills and knowledge progression.

Year 4

To code		To collect	To communicate		To connect		
Design and write programs that include controlling or simulating systems. • To know how to use sequence, selection and repetition within a program. • To know how to use coordinates and variables in a computer program. • To know how to use selection statements to control outcomes. • To know how to test and debug programs to improve their effectiveness.	**Design and write programs that include controlling or simulating systems.** • To know how to use Logo commands to control an on-screen turtle. • To know how to use repetition to make programs more efficient. • To know how to change line colour and thickness using commands. • To know how to create and use procedures within a program.	**Use search tools effectively to find and evaluate information.** • To know how search engines use keywords to find information. • To know how to refine searches to improve the relevance of results. • To know that search engines collect, sort and rank information. • To know how to identify whether information from a website is reliable and trustworthy.	**Create and evaluate digital animations for an audience.** • To know how animations are created from a sequence of frames. • To know how to use onion skinning to create smooth animations. • To know how to plan and create an animation with a simple narrative. • To know how to evaluate and improve an animation.	**Create and edit digital audio content for an audience.** • To know how to plan and write a script for an audiobook. • To know how to record clear narration using digital tools. • To know how to add sound effects and background audio to enhance a recording. • To know how to edit and improve an audio recording for an audience.	**Recognise how to be responsible digital citizens** • To create safe online profiles and explain why • To know how to stay safe from online threats (phishing, malware) • To understand the term plagiarism. • To identify what is a reasonable, responsible balance between active and digital behaviour • To develop and further their understanding of acceptable / unacceptable online behaviour and know way a range of ways to report	**Recognise how hardware and software work together within a computer system.** • To know the difference between hardware and software. • To know the function of common hardware components and peripherals. • To know that software provides instructions for hardware to follow. • To know how hardware and software work together to complete tasks.	**Recognise how modern technologies use artificial intelligence.** • To know what artificial intelligence is and how it is used in everyday life. • To know how to create clear prompts for AI tools. • To know why information created by AI should be checked by humans. • To know how to use AI responsibly as a digital citizen.
Coding	**Logo**	**Effective Searching**	**Animation**	**Sound Stories**	**Online Safety**	**Unpacking Hardware and Software**	**Introduction to AI**

Additional optional units: Composing beats

Commented [VM5]: Omitted because we have a similar unit as optional in Y2 and there are no skills in this unit that later units are going to rely on.

Year 5

To code	To collect		To communicate			To connect
Design and write programs that accomplish specific goals by decomposing them into smaller parts. • To know how to use variables to store and change information within a program. • To know how to use selection statements to control outcomes. • To know how sensors can be used to provide inputs to a program. • To know how code can control outputs on a micro:bit device.	**Create spreadsheets to solve calculations and problems.** • To know how to use formulae and functions to perform calculations automatically. • To know how to convert measurements using spreadsheet formulae. • To know how to create and interpret line graphs that show change over time. • To know how spreadsheets can be used to analyse data and support budgeting decisions.	**Use databases to organise, search and analyse information.** • To know how to design and create a database. • To know how records and fields organise information within a database. • To know how to use queries, filters and sorting tools to find information. • To know how validation helps improve the accuracy of data.	**Select, use and combine a variety of software to create digital content.** • To know the features of successful digital games. • To know how to plan and design a game for a specific audience. • To know how to create and customise sprites and game environments. • To know how to evaluate and improve a game based on playability and feedback.	**Select, use and combine a variety of software to organise and present information.** • To know how concept maps can be used to organise and link ideas. • To know how to create concept maps using nodes and connecting lines. • To know how to structure information for a specific purpose. • To know how to present information effectively using a concept map.	**Select and use word processing tools to create effective documents.** • To know how to format and organise text within a document. • To know how to edit and improve documents using word processing tools. • To know how to insert, resize and position images appropriately. • To know how to use tables and page layout tools to present information effectively.	**Recognise how to be responsible digital citizens and the impact it has on others** • To know how images and digital technology can be presented as false reality online • To know how to apply online safety rules to real life scenarios • To know how to keep personal data safe online – eg strong passwords • To know the importance of thinking critically about online use
micro:bits	**Spreadsheets**	**Databases**	**Game Creator**	**Concept maps**	**Word Processing**	**Online safety**

Additional optional units: Coding, Quizzing

Commented [VM6]: Omitted coding because we have done Purple mash coding every year so far. Introducing microbits gives a different angle to coding progression and prepares children for Python/Binary/Networks in Y6.
Omitted Quizzing because skills are developed through other units.

Year 6

To code		To collect		To communicate		To connect	
Design, write and explain more complex programs that fulfil specific purposes independently. • To know that Python is a text-based programming language. • To know how to use variables, functions and mathematical operators within a program. • To know how to use loops to repeat instructions efficiently. • To know how to create and test simple programs using Python.	**Understand how computers represent and process information using binary.** • To know that computers represent data using binary digits (0s and 1s). • To know how to represent simple decimal numbers in binary format. • To know how binary values are used to show different states, such as on/off or true/false. • To know that all digital information is stored and processed using binary code.	**Use spreadsheets to organise, analyse and present data.** • To know how to use formatting tools to organise information in a spreadsheet. • To know how to use formulae and functions to perform calculations. • To know how to sort and filter data to answer questions. • To know how to create and format charts to present data effectively	**Use databases and data tools to answer questions and draw conclusions.** • To know how to use sorting and filtering tools to find information in a database. • To know how to use linked tables to combine information from multiple sources. To know how to create graphs from database information. • To know how to use database tools to answer questions and solve problems.	**Select, use and combine a variety of software to create content for an audience.** • To know the features and purpose of a blog. • To know how to plan, write and publish a blog post. • To know how to edit and improve content before publication. • To know how to comment responsibly and follow online etiquette.	**Select and use design software to create and evaluate digital models.** • To know how to create and edit 3D models using CAD software. • To know how changing points affects the shape of a model. • To know how to design a model that meets a design brief. • To know how to evaluate and refine a prototype design.	**Demonstrate being responsible digital citizens** • To know and identify the benefits and pitfalls of online relationships, location sharing services, social media • To know and identify cyber bullying and strategies to be able to deal with this • To understand (as a Year 6 child) how and why age restrictions apply	**Recognise the component parts and purpose of computer networks.** • To know the difference between a LAN and a WAN. • To know the difference between the internet and the World Wide Web. • To know how routers and Wi-Fi enable devices to communicate across networks. • To know how networks support communication, collaboration and safe access to information.
Introduction to Python	**Binary**	**Spreadsheets with Excel**	**Data Detectives**	**Blogging**	**3D Modelling**	**Unit 6.2 Online safety**	**Networks**

Additional optional units: Graphing, Coding

Commented [VM7]: Omitted graphing because some skills overlap with Spreadsheets unit this year. Omitted Coding because we have covered lots of PM coding already and Binary/Python set children up better for progression to KS3.