Computing

Intent

At Butler's Hill Infant and Nursery School, our computing curriculum is designed around the four key areas, as outlined in the National Curriculum. These are **computer science, information technology, digital literacy and online safety.**

Our aim is to deliver a high quality, progressive computing curriculum to thrive within a technology dominated world. The computing curriculum is designed to ensure that pupils become digitally literate at a level suitable to prepare them for the next stage in their education, the future workplace, and as active participants in a digital world.

Online safety is at the heart of the computing curriculum, ensuring that pupils are equipped with strategies that enable them to make confident and safe judgements about their online activity at school and home.

Implementation

At Butler's Hill Infant and Nursery School our children begin their journey with technology in the Early Years, with access to a range of technological devices and programmes e.g. IPads, Beebots, remote control cars, talking postcards, torches, metal detectors, interactive whiteboards, 2simple, MiniMash etc. Teachers facilitate children's curiosity with challenge and model how to use the equipment carefully and safely.

In KS1 computing is taught in discrete computing lessons. Teachers use the 'Purple Mash' scheme, published by 2Simple. Every lesson in the scheme has an individual plan to ensure it meets the needs of all pupils. The scheme has been closely referenced against the 2014 National Curriculum attainment targets, in order to ensure progression and coverage. Having discrete lessons means that the children are able to develop depth in their knowledge and skills over the duration of each

of their computing topics. Where appropriate, meaningful links are made between the computing curriculum and the wider curriculum. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught.

EYFS Curriculum	Key Stage One National Curriculum
Pupils should be taught to: Recognise a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	Pupils should be taught to: - 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.

<u>Aims and Values</u> <u>Caring, creative & Confident</u> <u>Values</u> • Fairness • Respect • Perseverance • Acceptance • Co-operation • Responsibility	<u>Enrichment opportunities</u> <u>Whole School</u> Safer Internet Day to continue raising awareness of online safety <u>EYFS</u> Trip to 'The Old Barn' exploring technology on a working vegetable farm e.g. tractor, combine harvester, mill grinder <u>Year 1</u> Trip to Mansfield museum exploring technology in the past <u>Year 2</u> TTRockstars day with Juniors	<u>Assessment/sticky knowledge</u> Planning is progressive and builds upon the skills taught in the previous year. Children have the opportunity to show recall the skills learnt and teachers use ongoing AfL to adapt planning and teaching. Assessment grid to know % of children that are meeting ARE – subject leader to identify any areas where a large % of children have gaps.
<u>Concepts</u> Safety Creating Coding	<u>Local community links</u> EYFS – Visit to local supermarket (e.g. Tesco)	<u>Cross Curricular Links</u> <u>Maths</u> – 2calculate, 2Go (coding) 2code

	YR 1 – Trip to Mansfield Museum (recycling) YR 2– Visit to Hucknall Library YR 2 – Trip to cinema (Arc)	English – Writing templates, 2create a story Art & D&T – Paint Project, 2Paint a picture Music – 2Explore, 2Sequence

Key Knowledge

Digital Literacy

EYFS - Recognise technology that is used at home and in school. Understand what a computer is and the different uses of computers i.e. learning, communicating, finding information, playing games etc.

YR 1 - Recognise that devices can be connected. Understand the ways devices are used in the classroom and at home. Use a search engine to find information.

YR 2 - Recognise that devices can be connected via networks. Understand the ways devices are used in the workplace and the wider world. Use key words in a search engine to find information.

Information Technology

EYFS - Manage a device by correctly closing websites or apps and safely turning on and off. Input commands on a tablet or iPad using finger control or buttons on a remote control device e.g. Bee Bot. Experience simple apps and software and use these to present ideas.

YR 1 - Save work when the saving location has been set by an adult. Manage a device by logging in, logging out. Input commands with increasing fluency using the space bar, backspace, enter, caps lock, letters, numbers and common symbols/punctuation on a keyboard on any device (including on a tablet).
Input commands with increasing fluency using finger control to interact with a tablet or iPad (double tap, swipe) Experience a range of simple apps and software and use these to create and present ideas. Evaluate their work by saying what is good about it.

YR 2 - Save and retrieve work using an appropriate file name. Manage a device by navigating a range of software and using simple passwords. Input commands by using both hands on a keyboard on any device (including on a tablet), understanding where home keys are and using a wide range of letters, numbers and symbols. Input commands using finger control to interact with a tablet or iPad (double tap, swipe, pinch zoom). Experience a wide range of apps and software and use these to create and present ideas. Evaluate what is good about work and how it could be improved.

Computer Science

EYFS - Give commands/instructions e.g. forward, backwards, go, stop, when using simple software/hardware. Make choices about the buttons/icons to press, touch or click on when using simple software/hardware.

YR 1 - Predict what will happen for a simple sequence of instructions (algorithm) Investigate how algorithms work Make an algorithm/program to achieve a simple outcome Improve a simple algorithm by identifying basic errors (bugs) and correcting (debugging)

YR 2 - Predict what will happen in an algorithm using logical reasoning. Investigate the way algorithms need precise, unambiguous instructions to work Make algorithms that solve a problem, using simple drawings or diagrams to plan the solution Improve algorithms, using debugging skills such as checking back through their plan and algorithm.

Year 1

	Unit 1.1	Unit 1.2	Unit 1.3	Unit 1.4	Unit 1.5	Unit 1.6	Unit 1.7	Unit 1.8	Unit 1.9
	Online Safety & Exploring Purple Mash	Grouping & Sorting	Pictograms	Lego Builders	Maze Explorers	Animated Story Books	Coding	Spreadsheets	Technology outside school
Number of lessons	4	2	3	3	3	5	6	3	2
Main tool			2Count		2Go	2Create A Story	2Code	2Calculate	

Year 2

	Unit 2.1	Unit 2.2	Unit 2.3	Unit 2.4	Unit 2.5	Unit 2.6	Unit 2.7	Unit 2.8
	Coding	Online Safety	Spreadsheets	Questioning	Effective Searching	Creating Pictures	Making Music	Presenting Ideas
Number of lessons	6	3	4	5	3	5	3	4
Main tool	2Code		2Calculate	2Question 2Investigate		2Paint A Picture	2Sequence	

	Knowledge Progression- Digital Literacy 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.
EYFS	▪ Is aware that we need passwords to protect our work and will use them with an adult eg: for teachers to log onto their computers, a passcode for the iPads or Purple Mash logins.
Year 1	▪ 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.
Year 2	▪ 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.
Year 3	▪ 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.

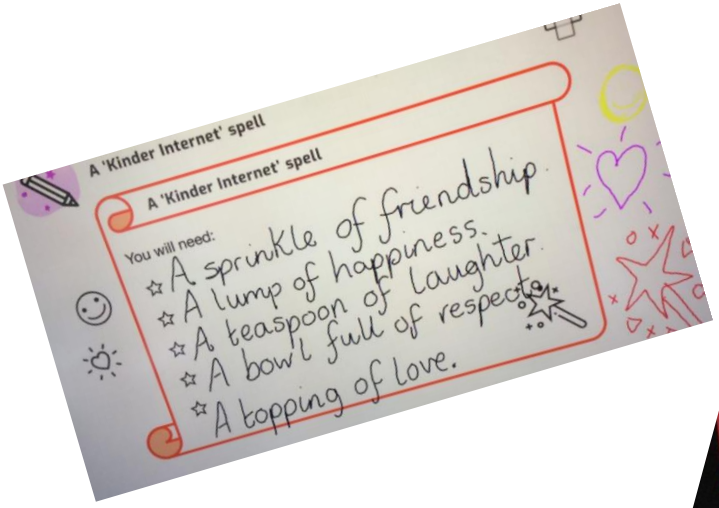
	Knowledge Progression- Digital Literacy Recognise common uses of information technology beyond school.
EYFS	▪ Knows what buttons and switches do and what their purpose is e.g. light switch turns on the light. A button turns the washing machine on. ▪ Can talk about what technology they have at home e.g. I play on my tablet. I watch Peppa Pig on the TV. ▪ Able to sort different pieces of technology that they may find at school and what they may find at home e.g. A washing machine in the kitchen, not in the classroom.
Year 1	▪ 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.
Year 2	▪ 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 technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.
Year 3	▪ 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.

	Knowledge Progression- Information Technology Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
EYFS	▪ To be able to use remote controls to make toys move and begin to understand that some technology needs to be turned on and off- switches. ▪ To begin to understand that there is lots of different types of technology all around us, lights, remotes, phones, computers, iPads etc.

	▪ To understand how to give instructions to make things move eg: bee bots to make them move to a certain location.
Year 1	▪ Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.
Year 2	▪ 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 are able to 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.
Year 3	▪ 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.

	Knowledge Progression- Computer Science Understand what algorithms are; how they are implemented as programs on digital devices; that programs execute by following precise and unambiguous instructions.
EYFS	▪ To be able to follow a 1 part instruction ▪ To be able to follow a 2 part instruction. ▪ To begin to follow instructions in the correct order.
Year 1	▪ 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.
Year 2	▪ 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.
Year 3	▪ 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.

	Knowledge Progression- Computer Science Create and debug simple programs.
EYFS	▪ Can understand that instructions need to go in the correct order. If you mix them up then the task will not be completed correctly. Eg: making toast- you can't butter the bread and then put it into the toaster.
Year 1	▪ 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.
Year 2	▪ 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.
Year 3	▪ 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.



	Knowledge Progression- Computer Science Use logical reasoning to predict the behaviour of simple programs.
EYFS	▪ Explores toys that can move in different directions. ▪ Explores games on Mini Mash that move forwards, backwards, left and right.
Year 1	▪ 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.
Year 2	▪ 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.
Year 3	▪ 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, repetition and use of timers. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. e.g. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.

Subject Specific Vocabulary

EYFS	Login Username Password Switch Button On Off Technology iPad Tablet Television Computer Laptop Phone Washing Machine Toaster Microwave Kettle Remote controls Instructions Directions Forwards Backwards Left Right
Year 1	Login Username Password Log out My Work Avatar Notification Topics Tools Save Sort Criteria Pictogram Data Collate Instruction Algorithm Computer Program Debug Direction Challenge Arrow Undo Rewind Forward Backwards Right turn Left turn

	Animation E-Book Font File Sound effect Display board Action Background Command Event Execute Input Output Object Run Scale Scene Arrow keys Backspace key Cursor Columns Cells Clipart Count tool Delete key Image toolbox Rows Spreadsheet Technology
Year 2	Action Algorithm Background Button Collision detection Debug/debugging Design mode Event Key pressed Nesting Object Predict Scale Run Properties Scene Sound Test When clicked/swiped Sequence Text Timer Search Display Board Internet Sharing Email Attachment Digital Footprint Backspace Copy and paste Columns Cells Count tool Delete Key Equals tool Image toolbox Lock tool Move cells Rows Speak tool Spreadsheet Pictogram Question Data Collate Binary tree Avatar Database Internet Search Search engine Impressionism Pallet Pointillism Share Surrealism Template BPM Composition Digitally Instrument Music Sound effects Soundtrack Tempo Volume Concept map Quiz Presentation Node Animated Non-Fiction Narrative Audience

Impact

Assessment is ongoing throughout the year through teacher observations during pupil tasks, contribution to class and peer discussions. Teachers also use an assessment document for each end of unit to assess the final outcome of each unit. Evidence is collated in a number of ways. Work is collected in named school files on the server where pupils save their work, classroom displays/ portfolios and learning walks. The computing lead monitors the evidence through work scrutiny, learning walks, discussions with teachers regarding observations and pupil interviews/questionnaires. The computing lead also tracks the progress using the assessment documents to identify how many children are WT or ARE and any gaps in learning.