



Gladstone Road Primary School - Computing

Curriculum Planning

Intent

The National Curriculum provides a structure and skill development for the Computing curriculum being taught. This is linked to our Learning Missions to provide a creative approach tailored to our children's needs, which reflects a balanced programme of study.

- Pupils' computing education begins in the early years and builds year on year, developing pupils' expertise.
- Curriculum plans have been sequenced effectively to ensure that pupils know more, remember more and are able to do more. We do so via Launch, re Launch and Landing
- Golden Threads, based on the three key strands: Computer Science, Information Technology and Digital Literacy have been identified for each year group and underpin the key knowledge and concepts taught through our curriculum.
- The organisation of the curriculum builds knowledge so that pupils can draw on it in future learning.
- Vocabulary has been identified and outlined clearly so that this can be taught explicitly within lessons.
- Clearly defined end points have been identified to ensure that pupils build upon prior learning and develop their knowledge of key concepts.
- Pupils commit knowledge to their long-term memory through recalling and repeated practice outlined in plans.
- Curriculum plans ensure that pupils use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact.

Implementation

We provide a range of opportunities and implement a range of teaching methods to ensure that over the course of study, teaching is designed to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts.

- In EYFS, we implement technology through a wide range of technological toys. We use iPads to support reading, phonics and maths as well as teach children about the importance of keeping themselves safe when using electronic equipment and the internet.
- A well sequenced cycle of lessons carefully plans for progression and depth concentrating on the computing knowledge and skills suited to the age group.
- Lessons follow a consistent structure of: retrieval, explanation, application and assessment which may include such features as questioning, modelling, individual, partner, group or whole class activities.
- Learning Mission journeys reflect what is being taught, vocabulary, relevant diagrams, photos and knowledge organisers
- Learning mission books show a range of evidence and evidence high expectations.
- Our inclusive approach is demonstrated through the way in which tasks and activities are adapted to ensure that all pupils are able to access the curriculum.
- Through retrieval, teachers make sure that pupils can draw on what they already know so that they can remember more.
- Key vocabulary is explicitly taught to enable pupils to develop their range of geographical vocabulary and understanding.
- Assessment for learning strategies are used at the start, during and at the end of lessons to assess pupils' learning and identify any gaps or misconceptions.

Impact

Our Computing Curriculum is high quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:

- Pre and post unit assessments
- Assessment against 'End of Year Expectations' with clearly identified end points. These are then passed to the receiving teacher to ensure any gaps can be addressed when a key concept is revisited.
- Staff and volunteers are confident in online safety, identifying and responding to concerns.



GOLDEN THREADS	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	Technology has been removed from the Early Learning Goals. Uses ICT hardware to interact with age-appropriate computer software.	- Understand algorithms are a set of precise instructions. - Create and debug simple programs.	- 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.	- Can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. - Designs show that they are thinking of the desired task and how this translates into code. - Identify errors within their program that prevents it following the desired algorithm and then fix it. - The 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.	- Demonstrate the ability to design and code a program that follows a simple sequence. - Experiment with timers to achieve repetition effects in their programs. - Begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. - Understand how variables can be used to store information while a program is executing.	- 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. - Combine sequence, selection and repetition with other coding structures to achieve their algorithm design.	- 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. - 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.
Information Technology	Technology has been removed from the Early Learning Goals. Completes a simple program on electronic devices. Can create content such as a video recording, stories, and/or draw a picture on screen.	Use technology purposefully to create, store digital content. E.g. children can name, save and follow simple instructions to access online resources, design mode (manipulating backgrounds) or using pictogram software.	- Use technology purposefully to create, store and retrieve digital content. - Organise data using, for example, a database and can retrieve specific data for conducting simple searches. - Are able to edit more complex digital data such as music compositions.	- Carry out simple searches to retrieve digital content. - Understand that to do this, they are connecting to the internet and using a search engine. - Collect, analyse, evaluate and present data and information using a selection of software. - Consider what software is most	- Understand the function, features and layout of a search engine. - Appraise selected webpages for credibility and information at a basic level. - Make improvements to digital solutions based on feedback. - Make informed software choices when presenting information and data.	- Search with greater complexity for digital content when using a search engine. - Explain in some detail how credible a webpage is and the information it contains. - Make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution.	- Can readily apply filters when searching for digital content. - 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. - Use critical thinking skills in everyday use



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			• Are confident when creating, naming, saving and retrieving content. • Can use a range of media in their digital content including photos, text and sound.	appropriate for a given task.	• Share digital content within their community.	E.g. creating their own program to meet a design brief. • Review solutions from others. • Collaboratively create content and solutions using digital features within software such as collaborative mode. • Use several ways of sharing digital content.	of online communication
Digital Literacy	Technology has been removed from the Early Learning Goals. Develops digital literacy skills by being able to access, understand and interact with a range of technologies. Can use the internet with adult supervision to find and retrieve information of interest to them.	• Recognise common uses of information technology beyond school. • Use technology safely, keeping personal information private; identify where to go for help.	• 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.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify how to report concern about content and contact.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. • Know appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. • To recognise the value in preserving privacy when online for their own and other people's safety.



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KS1 Medium Term Plans	Autumn Term	Spring Term	Summer Term
Prior Knowledge (Retrieval)	Lower KS2/Y5 - To give advice for different scenarios around online safety. - To recall taught vocabulary for Coding. - To give examples of how spreadsheets can be used.	Lower KS2/Y5 - To name some of the ways information and ideas can be presented. - To name the tools that can be used in 2Create a Story and 2Code. - To recall the vocabulary associated with the internet and hardware. (Year 4)	Lower KS2/Y5 - To recall the different types of quizzes that can be created in 2Quiz. (Year 2) - To recall the vocabulary associated with databases. - To give some examples of what databases could be used for.
Y6	Knowledge and Skills to be developed: Autumn 1 - Coding - To design a playable game with a timer and a score. - To plan and use selection and variables. - To understand how the launch command works. - To use functions and understand why they are useful. - To understand how functions are created and called. - To use flowcharts to test and debug a program. - To create a simulation of a room in which devices can be controlled. - To understand the different options of generating user input in 2Code. - To understand how user input can be used in a program. - To understand how 2Code can be used to make a text-based adventure game. Autumn 2 - Online Safety - To identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. - To identify secure sites by looking for privacy seals of approval, e.g., https, padlock icon. - To identify the benefits and risks of giving personal information and device access to different software. - To have a clear idea of appropriate online behaviour and how this can protect themselves and others from	Knowledge and Skills to be developed: Spring 1 - Text Adventures - To find out what a text-based adventure game is and to explore an example made in 2Create a Story. - To use 2Connect to plan a 'Choose your own Adventure' type story. - To use 2Connect plans for a story adventure to make the adventure using 2Create a Story. - To introduce an alternative model for a text adventure which has a less sequential narrative. - To use written plans to code a map-based adventure in 2Code. Spring 2 - Spreadsheets - To use a spreadsheet to investigate the probability of the results of throwing many dice. - To use a spreadsheet to calculate the discount and final prices in a sale. Create a formula to help work out the prices of items in the sale.	Knowledge and Skills to be developed: Summer 1 - Binary - To examine how whole numbers are used as the basis for representing all types of data in digital systems. - To recognise that digital systems represent all types of data using number codes that ultimately are patterns of 1s and 0s (called binary digits, which is why they are called digital systems). - To understand that binary represents numbers using 1s and 0s and these represent the on and off electrical states respectively in hardware and robotics. - To examine how whole numbers are used as the basis for representing all types of data in digital systems. - To recognise that the numbers 0, 1, 2 and 3 could be represented by the patterns of two binary digits of 00, 01, 10 and 11 - To represent whole numbers in binary, for example counting in binary from zero to 15, or writing a friend's age in binary. - To examine how whole numbers are used as the basis for representing all types of data in digital systems. - To represent whole numbers in binary, for example counting in binary from zero to 15, or writing a friend's age in binary. - To explore how division by two can be used as a technique to determine the binary representation of any whole number by collecting remainder terms. - To examine how whole numbers are used as the basis for representing all types of data in digital systems.



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		possible online dangers, bullying and inappropriate behaviour. - To begin to understand how information online can persist and give away details of those who share or modify it. - To understand the importance of balancing game and screen time with other parts of their lives, e.g., explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effect this has on their health. - To identify the positive and negative influences of technology on health and the environment.		- To represent the state of an object in a game as active or inactive using the respective binary values of 1 or 0. Summer 2 - Networks - To discover what the children know about the Internet. - To find out what a LAN and WAN are. - To find out how we access the internet in school. - To research and find out about the age of the internet. - To think about what the future might hold.
Vocabulary	All	action, command, algorithm, debug, event, screen time, inappropriate, formula	blog, debugging, variables, sprite, web page, network, Wi-Fi	undo, redo, copy, paste, image, binary, value,
	Most	decomposition, launch command, function, phishing, expense, probability	selection, LAN, WAN, router	preview, bit, variable
	Some	concatenation, procedure,	data analysis, x and y properties,	integer, nibble, byte, kilobyte, megabyte, gigabyte, terabyte, nanotechnology, collaborative, hosting, ISP, hub/switch, WLAN
Quality Texts		Ant Clancy, Games Detective. Ruth Morgan	Why are there Different Computing Languages? Kirsty Holmes	
National Curriculum		Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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	Select, use and combine a variety of software (including internet services) to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.