

Brockwell Junior School Computing Progression Map

'Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.' - Steve Jobs

NATIONAL CURRICULUM

Aims – The national curriculum for languages aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Key stage 2 – The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Pupils should be taught to:

- 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 concerns about content and contact.

At Brockwell we use the Teach Computing scheme of work as the backbone of our Computing curriculum. Teach Computing has been created by the National Centre for Computing Education (NCCE). The NCCE is funded by the Department for Education and supporting partners and marks a significant investment in improving the provision of computing education in England.

The Teach Computing curriculum is structured into units for each year group, and each unit is broken down into lessons. As the units can generally be taught in any order, they may be covered at different times of the year than is shown by this progression map.

We pride ourselves on having the ability to adapt units (where appropriate) to extend and engage children with new and exciting technologies. These are opportunities are shown in the Alternative and Cultural Capital sections

Year Group	Year 3			Year 4			Year 5			Year 6		
Term	Sep - Dec	Jan - Apr	May - July	Sep - Dec	Jan - Apr	May - July	Sep - Dec	Jan - Apr	May - July	Sep - Dec	Jan - Apr	May - July
Learning Challenges												
Programming A – Sequence in music	Creating media – Animation	Creating media – Desktop publishing	Programming A – Repetition in shapes	Data and information – Data logging	Creating media – Audio editing	Programming A – Selection in physical computing	Creating media – Video editing	Creating media – vector drawing	Programming A– Variables in games	Creating media – Web page creation	Creating media – 3D Modelling	
Software/Hardware												
www.scratch.mit.edu	Stop-frame app - iMotion	www.canva.com	turtleacademy.com	Vu+ data loggers	Audacity	TurtleStitch Embroidery Machine Crumble Crumble controller, playground, starter kit and motor	Microsoft Video Editor	Publisher	www.scratch.mit.edu	Google Sites	TinkerCAD 3D Printer	
Learning Challenges												
Computing Systems and networks – Connecting computers		Programming B – Events and actions	Computing systems and networks – The internet		Programming B – repetition in games	Computing systems and networks – Sharing information		Programming B – Selection in quizzes	Computing systems and networks - communication		Programming A - Sensing	
Software/Hardware												
Painting app - Seesaw		www.scratch.mit.edu	Chrome Music Lab		www.scratch.mit.edu	padlet.com		www.scratch.mit.edu				Mircobit
Subject Coverage												
<p>Explore the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners.</p> <p>Develop understanding of digital devices, with an initial focus on inputs, processes, and outputs.</p>	<p>Use a range of techniques to create a stop frame animation using tablets. Next, they will apply those skills to create a story-based animation.</p>	<p>Use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents.</p> <p>Explore the links between events and actions, whilst consolidating prior learning relating to sequencing.</p>	<p>Create programs by planning, modifying, and testing commands to create shapes and patterns.</p> <p>Apply knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure.</p>	<p>Collect data as well as access data captured over long periods of time. Look at data points, data sets, and logging intervals.</p>	<p>Examine devices capable of recording digital audio, which will include identifying the input device (microphone) and output devices (speaker or headphones) if available develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused.</p> <p>Explore the concept of repetition in programming using the Scratch environment. Look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition.</p>	<p>Explore the concept of selection in programming through the use of the TurtleStitch and/or Crumble programming environments.</p> <p>Develop their understanding of computer systems and how information is transferred between systems and devices.</p>	<p>Develop the skills of capturing, editing, and manipulating video.</p>	<p>Learn how to use the different drawing tools and how images are created in layers.</p> <p>Develop their knowledge of selection by revisiting how conditions can be used in programs and then learning how the If... Then... Else structure can be used to select different outcomes depending on whether a condition is true or false.</p>	<p>Explores the concept of variables in programming through games in Scratch.</p> <p>Explore the World Wide Web as a communication tool.</p>	<p>Introduce learners to the creation of websites for a chosen purpose.</p>	<p>Develop knowledge and understanding of using a computer to produce 3D models.</p> <p>Bring together elements of all the four programming constructs: sequence from year 3, repetition from year 4, selection from year 5 and variables, introduced in year 6, programming A.</p>	

Online Safety via Project Evolve

Self image and Identity	Online Reputation	Health, Well being and Lifestyle	Self image and Identity	Online Reputation	Health, Well being and Lifestyle	Self image and Identity	Online Reputation	Health, Well being and Lifestyle	Self image and Identity	Online Reputation	Health, Well being and Lifestyle
Online Relationships	Managing Online Information	Privacy and Security	Online Relationships	Managing Online Information	Privacy and Security	Online Relationships	Managing Online Information	Privacy and Security	Online Relationships	Managing Online Information	Privacy and Security
Online Bullying		Copyright and Ownership	Online Bullying		Copyright and Ownership	Online Bullying		Copyright and Ownership	Online Bullying		Copyright and Ownership

Skills and Key Concepts

<p>Computer networks 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</p> <p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>Digital Literacy 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.</p> <p>Computer Science Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs .</p> <p>Understand computer networks including the internet; 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Cultural Capital / Enrichment

		VEX GO Introduction 2022/2023	Ozobot Shapetracer Shapetracer2		TurtleStitch	TurtleStitch project Coventry Scarf 2021/2022 Chesterfield blanket 2022/2023 Haddon Hall proposed project 2023/2024		TurtleStitch				TurtleStitch Leavers T-Shirts
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Teach Computing Curriculum Journey

Key	AL Algorithms	ET Effective use of tools	GCSE CS: Programming
	CS Computing systems	IT Impact of technology	
	CM Creating media	NW Networks	GCSE CS: Theory
	DI Data & information	PG Programming	
	DD Design & development	SS Safety & security	

