Brookland Junior School
Computing Curriculum Overview

Intent

Computing at Brookland prepares all pupils to participate in a rapidly changing world in which work and other activities are increasingly transformed by access to varied and developing technology.

Pupils are able to use computational thinking and computational language with increasing confidence in order to become digitally literate and are able to make links to other subjects, understanding how different computer systems work and understand computing in a global context.

Computing at Brookland gives pupils skills to become active participants and valued individuals in the digital world. Pupils know how to use and search technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Effective use of computing improves access to the curriculum for pupils of all levels and enhances engagement with and enjoyment of learning. Computers, tablets, programmable robots, online learning platforms, digital and video cameras are a few of the many tools that can be used to acquire, organise, store, manipulate, interpret, communicate and present information.

Computing empowers pupils to become independent, creative and collaborative learners; able to solve problems; achieve goals and communicate effectively with others.

"Computing at Brookland develops you skills of determination and resilience. You have to be able to work together with others, be organised and able to think logically to solve problems."

At Brookland Junior School we recognise that pupils are entitled to quality hardware and software and a structured and progressive approach to the learning of the skills needed to enable them to use it effectively. At all times, our teaching will reflect a positive commitment to equal opportunities.

Implementation

Computing is a foundation subject taught weekly and incorporating a wide range of devices, platforms, apps and programs to create a rich, broad and challenging curriculum. Lessons are individually created for our school and pupils, built on the foundations provided by the Infant schools and from KS2 national curriculum. Unit plans are regularly updated and enhanced to meet the fast moving opportunity technology has to offer and highlight the key skills required. Alongside weekly lessons, Brookland computing is also highly cross curricular, organic and flexible and is utilised to enhance and improve teaching and learning in a range of subject (e.g. DT Lego Robot Fairground Rides in Y6) and extra curriculum groups. Further enrichment is developed through the celebration focus weeks such Hour of Code and Online Safety.

"We learn how to code and program and debug errors. We have to be able to use lots of different technology and programmes."

Online safety is an integral and fundamental thread in our computing and wider PSHE curriculum. There are progressive online safety units designed for our pupils and their needs. Core principles of the SMART rules are entrenched via our Acceptable Use Policy for pupils, which all pupils sign at the start of each year and discuss as class. Online Safety is supplemented via PSHE lessons, Thinking Book reflections and termly assemblies on online safety throughout the academic year. At Brookland, we celebrate Online Safety Week in February and invite expert external speakers from Education Child Protection to run workshops for children and parents. Our curriculum and whole school values encourage and support pupils to become responsible digital citizens and make informed, sensible choices when online, preparing them for a digital future.

"We know how to stay safe online and treat others with respect just as you would in real life."

A wider curriculum for computing is available through lunchtime clubs, homework clubs as well as a gifted and talented computing club. In addition, other clubs and groups may utilise computing platforms and tech to enhance their provision, for example the Brookland Magazine. Homework at Brookland Junior School uses a range of online platforms (MyMaths, EdShed, Dojo and Teams).

Brookland has a diverse and broad selection of devices, platforms programs and apps to widen pupils understanding and familiarity in preparation for secondary school, local and global uses and working world. We are fortunate to be extremely well resourced benefitting from an independent computing suite, 4 iPad sets (including SEN iPads), 3 laptop sets. These can be used for blended and remote learning, whole class teaching, groups, interventions or 1-1 support. 0365, Teams and Class Dojo provide pupils and the wider school community with secure platforms to learn, share and collaborate in a safe online environment. We identify and support all pupils who do not have access to technology and invite these pupils to resourced homework clubs weekly and are able to roll out technology in the event of lockdown or isolation due to Covid-19.

Brookland has worked collaboratively in partnership with Barnet as part of a highly successful action research project to promote the use of virtual visits to enhance cultural capital opportunities in history and other foundation subjects across the curriculum.

Pupil voice plays a large role at Brookland and pupils feedback each term on their learning in computing during whole school meetings, groups of pupils are also often selected to answer questions about the curriculum and their comments can lead to change or adjustments within planning.

Units have been mapped under 3 strand categories. Some units overlap into more than one strand.

- **Computer science (CS)** is the core of the computing curriculum and covers principles such as data representation, algorithms, data structures and programming.
- **Digital Literacy (DL)** is the knowledge and ability to use technology confidently, competently and in a safe way
- **Information Technology (IT)** knowledge of how computers are used within different sectors and describes the methods to create digital artefacts such as videos, animations or 3D models.

Impact

Thinking Books offer a space to show class thoughts and reflections on an online safety issue or focus week. In class teachers and pupils evaluate their learning each lesson through AfL questioning and activities. Identified key skills and knowledge in the planning are deep marked each term through our half termly assessments by each teacher for each child in computing. Class teachers provide a written report statement with an overall summative assessment in computing at the end of the academic year.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	**DL** Online Safety Identify how to use technology safely and respectfully, keeping personal information private **IT** Our network and presenting information on computers **Touch Typing BBC** Recognise familiar forms of input and output devices and how they are used	**CS** Coding: Whack a Witch **Scratch** Design, write and debug programs that control or simulate events Explain how some algorithms work using logical reasoning	**CS** Branching Databases **j2data** Select and present data and information	**DL** Text and graphics **O365** Identify and recognise that not all websites are as reliable as each other To select, collect and present data and information	**IT** Creating and sharing **MS Teams & PPT** Share data and information within a computing network	**IT** Exploring Simulations/Combining software **Loti Bots** With support select and use a variety of **software** to accomplish goals
Year 4	**DL** Online Safety Recognise that people sometimes behave differently online, including by pretending to be someone they are not.	**CS** Data Handling **Excel O365** Make efficient use of input and output devices	**CS/IT** Coding a Micro:bit **Micro:bits** Decompose programs into smaller parts Detect and correct errors in algorithms and programs	**IT** Animation **I Can Animate** With support select and use a variety of software on a range of digital **devices** to accomplish goals	**CS** Branching Databases **j2data** Recognise how the internet is a large network of computers and that information can be shared between computers via databases	**IT** Creating, designing and sharing presentations **O365 PPT/ MS Teams** DL Recognise and identify how results are selected and ranked by search engines
Year 5	**DL** Online Safety Evaluate online friendships and sources of information including awareness of the risks associated with people they have never met.	**CS** Smoking Cars **Scratch** Explore cause and effect algorithms where particular results occur following user actions	**CS IT** Databases **J2Data** Independently collect, design and create data and information to accomplish goals	**IT** Inputs and Outputs **Micro:bits** Collect and evaluate information collected by input devices such as light and sound sensors	**IT** How Computers and the Internet Work **Websites & MS Teams** Model and explain what servers are and how they provide services to a network	**IT/CS** Controlling Devices **Lego Robots** Design and write programs to accomplish goals, including control and simulating physical systems

					Utilise search technologies precisely to find exact content	
Year 6	**DL** Online Safety Identify a range of concerns about content and contact on a variety of mediums (including trolling, online bullying and harassment) and know how to report issues DL Filter searches effectively and be discerning when evaluating digital content	**IT** Collaborating, creating and designing Multi-Media Presentations **MS Teams, O365 PPT** Collaborate and communicate on computer networks	**CS** Spreadsheets – Theme Park Project **Excel O365** Collecting, analysing, evaluating and presenting data and information for a given audience	**CS** Coding Advanced **Scratch** Create variables, sequences, selection and repetition codes in programs to solve real life problems Detect and correct errors in algorithms to make programs more efficient	**CS** Animating Coasts collecting, analysing, evaluating and presenting data and information for a given audience	**IT** Controlling physical systems **Micro:bits** Create and design input and output devices, including sensors, to create physical simulations (robotics) which solve problems

The National Curriculum KS2

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 accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour

Key Skills Progression

Year 3						
COMPUTER SCIENCE		**INFORMATION TECHNOLOGY**			**DIGITAL LITERACY**	
Coding CS Designing, Writing and Debugging	Algorithms CS Explaining how algorithms work and detecting problems	Inputs and Outputs IT Sequencing, selecting and repeating inputs and outputs	Understanding computer networks IT Examine and analyse computing networks	Multi-media goals IT Selecting and applying a range of devices and software to accomplish goals	Online safety DL Identifying and applying how to be safe online **See PSHE**	Searching online DL Searching and selecting information effectively online
Design, write and debug programs that control or simulate events	Explain how some algorithms work using logical reasoning	Recognise familiar forms of input and output devices and how they are used	Share data and information within a computing network	With support select and use a variety of **software** to accomplish goals Select, collect, and present data and information	Identify how to use technology safely and respectfully, keeping personal information private Recognise acceptable and unacceptable behaviour online	Use simple search technologies Identify and recognise that not all websites are as reliable as each other

Year 4						
COMPUTER SCIENCE		**INFORMATION TECHNOLOGY**			**DIGITAL LITERACY**	
Coding CS Designing, Writing and Debugging	Algorithms CS Explaining how algorithms work and detecting problems	Inputs and Outputs IT Sequencing, selecting and repeating inputs and outputs	Understanding computer networks IT Understanding computing networks	Multi-media goals IT Using a range of devices and software to accomplish goals	Online safety DL Knowing how to be safe online **See PSHE**	Searching online DL Searching information effectively
Decompose programs into smaller parts Select, use and combine other software that accomplish given goals (use other programs when coding)	Detect and correct errors in algorithms and programs using logical reasoning	Make efficient use of input and output devices	Recognise how the internet is a large network of computers and that information can be shared between computers via databases	With support select and use a variety of software on a range of digital **devices** to accomplish goals Independently collect, design and create data and information to accomplish goals	Evaluate online friendships and sources of information including awareness of the risks associated with people they have never met. Know where to go for help and support about contact or content online or on other technologies	Recognise and identify how results are selected and ranked by search engines

Year 5						
COMPUTER SCIENCE		**INFORMATION TECHNOLOGY**			**DIGITAL LITERACY**	
Coding CS Designing, Writing and Debugging	Algorithms CS Explaining how algorithms work and detecting problems	Inputs and Outputs IT Sequencing, selecting and repeating inputs and outputs	Understanding computer networks IT Understanding computing networks	Multi-media goals IT Using a range of devices and software to accomplish goals	Online safety DL Knowing how to be safe online **See PSHE**	Searching online DL Searching information effectively
Design, input and test increasingly complex instructions or devices Design and write programs to accomplish goals, including control and simulating physical systems	Design, write and test increasingly complex instructions which can be repeated or looped Explore cause and effect algorithms where particular results occur following user actions Explain how complex algorithms can make a program more efficient	Collect and evaluate information collected by input devices such as light and sound sensors	Model and explain what servers are and how they provide services to a network Share and transfer data to a third party or another person	Independently select and use appropriate software for a given task Independently select, design and create content for an audience Collecting, analysing, evaluating and presenting data and information for a given audience	Evaluate online friendships and sources of information including awareness of the risks associated with people they have never met.	Filter while using search technologies Utilise search technologies precisely to find exact content

Year 6						
COMPUTER SCIENCE		**INFORMATION TECHNOLOGY**			**DIGITAL LITERACY**	
Coding CS Designing, Writing and Debugging	Algorithms CS Explaining how algorithms work and detecting problems	Inputs and Outputs IT Sequencing, selecting and repeating inputs and outputs	Understanding computer networks IT Understanding computing networks	Multi-media goals IT Using a range of devices and software to accomplish goals	Online safety DL Knowing how to be safe online **See PSHE**	Searching online DL Searching information effectively
create programs which use variables Create variables, sequences, selection and repetition codes in programs to solve real life problems Solve problem by decomposing	Explain increasingly complex algorithms Detect and correct errors in algorithms to make programs more efficient	Create and design input and output devices, including sensors, to create physical simulations (robotics) which solve problems	Collaborate and communicate on computer networks Begin to use internet services to share creations online or with a third party	Collecting, analysing, evaluating and presenting data and information for a given audience	Identify a range of concerns about content and contact on a variety of mediums (including trolling, online bullying and harassment) and know how to report issues	Filter searches effectively and be discerning when evaluating digital content

Online Safety Curriculum (in line with 2020 RSHE Guidance)

+ Online Safety Week in February (CEOP Ambassadors/ECP)
+ Termly Assemblies (Subject Leader)

Key outcomes - Online Safety Key Skills

Year 3
• that the same principles apply to online relationships as to face-to face relationships, including the importance of respect for others online including when we are anonymous. • that for most people the internet is an integral part of life and has many benefits • how to consider the effect of their online actions on others and know how to recognise and display respectful behaviour online and the importance of keeping personal information private. • where and how to report concerns and get support with issues online (SMART rules and report abuse button) **Also to include:** • To know the SMART rules
Year 4
• that people sometimes behave differently online, including by pretending to be someone they are not. • the rules and principles for keeping safe online, how to recognise risks, harmful content and contact, and how to report them. **Also to Include:** • Communicate respectfully and kindly online (including gaming) • Finding a balance with screen time and other activities
Year 5
• how to critically consider their online friendships and sources of information including awareness of the risks associated with people they have never met. • about the benefits of rationing time spent online, the risks of excessive time spent on electronic devices and the impact of positive and negative content online on their own and others' mental and physical wellbeing.

- why social media, some computer games and online gaming, for example, are age restricted. LINK TO GAMBLING YGAM

Also to Include:

- Communicate and speak kindly others online (including social media) (Be Internet Legends)
- Be aware of how sharing information online can be positive but also potentially damaging and have negative impacts (NSPCC)
- THINK before you type: Is it true, helpful, illegal, necessary, kind
- Behaving sensibly, respectfully and in moderation when using messaging services (WhatsApp)

Year 6

- that the internet can also be a negative place where online abuse, trolling, bullying and harassment can take place, which can have a negative impact on mental health.
- how to be a discerning consumer of information online including understanding that information, including that from search engines, is ranked, selected and targeted.

Also to include:

- Understand the importance of permission - seeking before posting images online (WhatsApp)
- Identify fake news and understand how propaganda can lead to radicalization and extremism
- Be aware of how sharing unhelpful content can be harmful (scare shares)
- Identify how potential grooming of young people can occur online and how to seek help