WEMBLEY PRIMARY SCHOOL

Computing Curriculum

Technology surrounds us and is developing at an ever-increasing pace therefore developing computing skills is essential in order that children can access the modern world. At Wembley Primary School, we aim to equip our children with the skills and understanding to be confident, creative and independent users of technology.

Aims

At Wembley Primary School we aim 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 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.

Intent

Technology surrounds us and is developing at an ever-increasing pace therefore developing computing skills is essential in order that children can access the modern world. The curriculum at Wembley Primary School combines hands on experience with a variety of devices and programmes alongside the development of thinking skills that are used in Computing and beyond. We aim to equip our children with the skills and understanding to be confident,

creative and independent users of technology. Pupils leave primary school as confident, capable and creative users of digital technology, with a secure understanding of the fundamental principles of computer science and as safe, responsible and discerning digital citizens.

Implementation

The curriculum at Wembley Primary School combines hands on experience with a variety of devices and programmes alongside the development of thinking skills that are used in Computing and beyond.

The scheme of work is adapted from the Teach Computing Curriculum. This computing curriculum can be divided into 4 areas:

- Computing systems and networks - children learn about the technology that surrounds them. They will learn what computers are, how we use them, what the internet is and how we can use the internet to communicate and share.
- Creating media - children learn how they can use computers to be creative and . Over the course of their time at Wembley children will create with videos, pictures, audio and text.
- Data and information - children learn how they can use computers to collect, organise, analyse and present data. This area of Computing has strong cross curricular links with Maths and Science.
- Programming - children learn how to create simple computer programmes starting with beebots and ending Year 6 with the knowledge and skills to create games using Scratch.

Online safety and being a responsible digital citizen are taught discretely at the beginning of each year and as an integral part of all units. There are elements of digital citizenship woven into other units as well as specific lessons covering topics such as password safety, personal information, online gaming and fake news.

At Wembley Primary School, Computing is taught by the same teacher to all year groups ensuring consistency and progression across the school.

Impact

Within Computing, we encourage a creative and collaborative environment in which children can learn to express and challenge themselves. We encourage children to understand the why as well as the how of what they are doing and to be able to reflect on their learning. Children at Wembley will be creators as well as consumers of digital content equipped with the knowledge to use technology effectively and safely.

EYFS	Understanding the World – Using devices as part of roleplay Use devices for creating art and taking pictures Use devices to play simple games		
	Areas		
Year 1	**Programming**	**Information Technology**	**Digital Literacy**
Year 1	Moving a robot – Beebots Programming animations – Scratch Jr	Digital drawing Digital writing	What is technology Staying safe online
Year 2	**Programming**	**Information Technology**	**Digital Literacy**
Year 2	Robot algorithms - Beebots Programming quizzes – Scratch Jr	Photography Data collection and representation – graphs	Information technology around us Staying safe online
Year 3	**Programming**	**Information Technology**	**Digital Literacy**
Year 3	Sequencing in Scratch Events and actions in programs	Presenting information Branching databases	Connecting computers Online safety
Year 4	**Programming**	**Information Technology**	**Digital Literacy**
Year 4	Repetition in shapes Repetition in games	Photo editing	The internet Online safety
Year 5	**Programming**	**Information Technology**	**Digital Literacy**
Year 5	Selection in quizzes Introduction to variables	Vector drawing Databases	Systems and searching Online safety
Year 6	**Programming**	**Information Technology**	**Digital Literacy**
Year 6	Variables in games Sensing movement	Creating a website Spreadsheets	Communication and collaboration Online safety

Year 1		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Introduction to programming – Beebots • *Know that algorithms are a set of clear, precise, ordered instructions* • Which commands can be used with a beebot • How to enact commands on a beebot (buttons) • How to choose commands for a given purpose • How to combine commands **Programming animations – Scratch Jr** • Which commands can be used on the device • What the commands used do • How to run a command • That a series of instructions can be issued before being enacted • That a program is a set of commands a computer can run	Children can create a simple algorithm to make a Beebot travel a specific path Children can follow an algorithm to make a Beebot move Making an animation using 2 or more sprites	Algorithm Debug Code Program Run Action Command Outcome Start event Block Join Sequence
Information technology (using and creating/data)		
Digital drawing - Busythings • How use a mouse or touchpad to control what happens on the computer • How to choose the best tool	Digital artifacts - use of tools – shape, lines, colour, fill	Cursor Pen tool Paint brush tool Spray tool

• How to use shape and line tools • How to remove a mistake using undo **Digital writing – J2E and Busythings** • Become familiar with the layout of the keyboard • How to use the keyboard to write text • Know how to add spaces to their writing • How to remove text • The appearance of text can be changed Know the differences between using a computer to write and draw and using paper.	Digital artifact – typed sentence including use of spaces, and capital letters	Shape tool Line tool Undo Keys Keyboard Type Space bar Enter key Backspace Shift
Digital literacy		
Technology around us • Technology is made by people to help perform tasks. • How technology is used to help us • The basic parts of a computer (screen, mouse/touchpad, keyboard) **Online safety** • How to use information technology safely • What to do if something makes them feel uncomfortable online. • Who their trusted adults are • When and why they need to take breaks from devices • We have rules to keep us safe online	Identify technology in the home and school	Technology Mouse Keyboard Screen Touchpad Tower unit Personal information Trusted adult

Year 2		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Continuing programming – Beebots • A series of instructions is a sequence • The order of instructions matter when programming • How to follow a sequence • How to predict the movement of a robot from an algorithm • How to create an algorithm to move the beebot from a given start to given end **Programming quizzes – Scratch Jr** • A sequence of commands has a start • How to run a program • Different sequences of commands can have the same outcome • How to choose commands to give a specified outcome • How to build a sequence of commands	Making predictions Created algorithms Create a quiz showing knowledge of start events, sequencing events and outcomes	Algorithm Sequence Program Commands Run Start Debug Input Output
Information technology (using and creating/data)		
Photography - iPads • Some digital devices can capture images using a camera • How to hold a device safely and responsibly • How to take photos • Recognise the differences between landscape and portrait • How to improve photographs	Photos	Landscape Portrait Focus Lighting Framing Composition Pictogram Tally chart

• Recognise the features of a good photograph **Data - J2E** • Know how to record data in a tally chart • Know how to use a computer to create simple charts and graphs • Know that we can use a computer to present data in different ways • Know that we can use attributes to describe things	Create pictograph relating to data collected in the classroom	Labels Attribute
Digital literacy		
Information technology around us • Information technology is anything that is a computer or has a computer connected • Identify information technology in the home and at school • Identify information technology in the wider world • Understand how we use information technology to help us **Online safety** • Appropriate behaviour is online • Know what to do if confronted with rudeness online • Technology can make us feel positive and negative emotions • Know what to do if technology makes us feel uncomfortable or unsafe	Identify information technology in and outside the home.	Information technology Computer Input Output Uncomfortable Block Report

Year 3		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Sequence in Scratch - Scratch • A sequence of commands can have an order • Commands in Scratch are represented by blocks • How to create a sequence of commands **Events and actions in programs - Scratch** • Programs start because of an input • Understand the relationship between an event and an action • How to make a character move • The order of commands can affect a program's output • How to create a sequence of commands to produce a given output	Create a joke in scratch showing understanding of sequence and use of wait block	Algorithm Program Commands Sprite Backdrop Sequence Event Action Debug Output
Information technology (using and creating/data)		
Presenting information: • Why we use a mixture of text and images to communicate information • How to modify text for different uses • How to add pictures to a document • How to change layout **Branching databases - J2E** • Ask yes and no questions • Identify attributes needed to collect data about an object	Presentation: Text appearance changed to suit purpose Images added and arranged	Text Images Font Property Placeholder Layout Attribute Branching database

• Group objects by attributes • Use a branching database to identify an object	Plan and create a branching database	
Digital literacy		
Connecting networks • Computers can be connected • Understand inputs and outputs and be able to identify them • Know what a network is • How switches are used in a local network **Online safety** • Identify information that should not be shared online • Understand that what you share online affects what people think about you • What online bullying is • How best to react to online bullying • When and why we put devices away	Network drawing including: Switch Computers Wireless access point Server Summative assessment	Connection Network Switch Wireless access point Network cable Server Input Output Process Personal information Private Identity

Year 4		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Repetition in shapes – Logo **Repetition in games - Scratch** • What repeat means • How to recognise repetition in common tasks	Using loops to draw 2D shapes Using loops to create animations	Algorithm Program Text-based language Block-based language Sequence Repetition Loop Count-controlled

• We can use a loop command in a program to repeat instructions • Understand the difference between count-controlled and indefinite loops • Where to use different loops in a program • Understand the importance of instruction order in loops		Indefinite Nesting Procedure
Information technology (using and creating/data)		
Photo editing - Pixlr • Why we edit images • How to use crop tool • How to adjust colours and effects in an image • How to combine images to create a new image • How to add additional elements to an image	Create a new image by combining images	Cropping Layers Filter Composite Retouching
Digital literacy		
The internet: • The internet is a global network of networks • Routers are used to connect networks together • Submarine cables are part of the internet • The World Wide Web is part of the internet • Web browsers are used to view webpages **Online safety** • How to deal with meanness online • What is and what is not ok online	Create a diagram of the internet (routers, local networks, connections)	Internet Router Web browser Submarine cable World Wide Web Web sites Webpages

• Not everything online can be trusted • Strategies to identify false information • Images and videos can be edited • Pictures of people can be retouched to make them look better than reality • Why we need passwords		

Year 5		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Selection in scratch - Scratch • What selection in programming is • How selection is used in computer programs • Identify condition and outcomes in 'if... then... else...' statements • How to use 'if... then... else...' statements to direct the flow of a program • How to incorporate user input to a program **Introduction to variables - Scratch** • What a variable is • Examples of what a variable can be used for – score, timer • How to change a variable under specific conditions while a program is run • How to set a variable to a specific number	Creation of a quiz using conditions that give different outcomes if the answer is right or wrong	Conditional If Then Else Variable Value

• Variables have a name and a value		
Information technology (using and creating/data)		
Vector drawing – Google Drawing • How to use shapes and line tools to create simple vector drawings. • How to modify shapes to add detail • How to work with layers • How to use copy and paste **Flat file databases - J2E** • What data and databases are • Identify records and fields • How to sort the database to answer questions • How to use the search tools (including AND and OR) to answer questions • How to create graphs and charts to answer questions • Know how databases are used in real life	Created vector drawing show the techniques learnt Able to answer questions about a database using searching, sorting and charting	Layer Group Alignment Handles Data Database Field
Digital literacy		
Searching the web • What a search engine is • What a search term is • What a search index is and how it is created • How to modify search terms to help find better results • Search results are ranked • Recognise some of the ways search results can be influenced		Search engine Web crawler Search term Search index Copyright Website Webpage

Online safety • Identify online bullying • How to look after themselves and others online • Information is left behind as they use the internet • How to manage the information about themselves that they share • Different interactions in online gaming • How to keep their interactions positive • How to deal with negative interactions		

Year 6		
Knowledge end points **What knowledge do children need to remember**	**Assessment** **Impact**	**Vocabulary**
Programming		
Variables in games - Scratch • Expand knowledge of variables – know that a variable can be used to store a user input for later • Use variables in games to keep score **Sensing movement - Microbits** • Where conditions are used in the real world • How to use variables and selection to control the flow of a program • How to affect a variable using physical inputs • How to compare a variable to a value	Create a game in Scratch using variables and selection Make a *step counter* using a Microbit	Variable Boolean Detect Object Parameter Property Loop Infinite Nesting Repeat Microbit Connect Algorithm

		Condition Loop Input Output
Information technology (using and creating/data)		
Creating websites – Google Sites • What a website is and what they contain • Understand the function of a homepage • Add content to a website (using Google Sites) • Create a navigation path • Find and add images to a website while respecting copyright • Create links in a website **Spreadsheets – Google Sheets** • What spreadsheets can be used for • Use simple formatting in a spreadsheet (bold, underline, cell borders) • Format cells for different kinds of data (number, currency, duration, date) • Use formulae in spreadsheets • Use simple functions (SUM and AVERAGE)	Website created: Layout objects Images Subpages Internal and external links Party planning spreadsheet – showing use of cell references, formulae and functions	Web page Web site Home page Layout Internal links External links Copyright Breadcrumbs Navigation path Cells Cell reference Formulae Format Functions AVERAGE SUM
Digital literacy		
Communication and collaboration • How information gets to the right place online • Computers use addresses to access websites	Summative assessment at end of unit	Address Packet Transfer Collaboration Communication

• Different communication platforms have different uses • Computers can be used to work collaboratively **Online safety:** • How to use safe search • Adverts can appear in search results and how to identify them • Search results are ranked and targeted • Know the difference between joking, meanness, and bullying • What to do if they see online bullying • Why we need to be careful when we link to external websites • Different methods of online communication • Identify the risks and benefits of online only friendships • How to manage these risks		