Kindness Teamwork Curiosity

At Bushfield Road Infant School, our ICT curriculum, delivered through the Teach Computing scheme from the National Centre for Computing Education, is designed to equip pupils with essential computing knowledge and skills grounded in the national curriculum's purpose of study. We aim to nurture pupils who are confident, responsible, and creative users of technology, ready to thrive in an increasingly digital world.

Our curriculum intent is deeply rooted in our core values:

- **Kindness:** We foster a safe and respectful digital environment where pupils learn to use technology responsibly and ethically. Pupils are taught to keep personal information private and to seek help when they encounter concerns online, promoting a culture of care and kindness in digital interactions.
- **Teamwork:** Computing activities encourage collaboration and communication, helping pupils develop teamwork skills through shared problem-solving and creative projects. Pupils learn to work together, share ideas, and support each other's learning in computing, mirroring the collaborative nature of the digital world.
- **Curiosity:** Our curriculum inspires curiosity by engaging pupils in exploring computational thinking, programming, and digital creativity. Pupils are encouraged to ask questions, experiment, and solve problems, developing a deep understanding of how technology works and how it can be used to innovate and improve the world around them.

By embedding these values, we ensure that pupils not only gain the technical skills required by the national curriculum such as understanding algorithms, creating and debugging simple programmes, and using technology purposefully but also develop the personal qualities and attitudes essential for lifelong learning and digital citizenship. Through this approach, we prepare pupils to be thoughtful, collaborative, and inquisitive participants in the digital age, reflecting our vision of Kindness, Teamwork, and Curiosity in all aspects of their learning.

Knowledge and Skills Progression in Computing

Substantive Knowledge	Definition
Computer Science	The technical design. The design of new software, the solution to computing problems and the development of different ways to use technology.
Information Technology	The technical knowledge. The design, use and understanding of hardware and software; computers and electronic systems for storing and using information.
Digital Literacy	The technical skills. The ability to use information and communication technologies to find, create, evaluate, and communicate information.

Disciplinary Skills	Definition
Code	Using, writing codes to produce instructions; to solve problems; to test and use logic and sequences against inputs and outputs.
Connect	Being able to safely, efficiently and confidently digitally connect with others.
Communicate	Being able to safely, efficiently and confidently use apps and information technology to communicate ideas.
Collect	Being able to safely, efficiently and confidently find, evaluate, store, sort and use appropriate data.

Computing in EYFS

In September 2021, the early learning goal (ELG) in technology was removed from the EYFS statutory framework. Our children begin to build readiness for KS1 computing through 'Computational Thinking', which is a set of problem solving skills that we can use in everyday life. The Early Learning Goals, Characteristics of Learning and Guiding Principles are peppered with Computational Thinking. Computational Thinking is at the heart of the computing curriculum and children will only be ready for this subject if we provide them with foundational experiences. The problem solving of Computational Thinking closely aligns with the Characteristics of Effective Learning. So by aligning EYFS provision to Computational Thinking, we use the same vocabulary as used by our colleagues in KS1, and ensure progression. Computational thinking is an unplugged approach to computing in EYFS.

EYFS Computational Thinking simple definitions

EYFS Computational Thinking Skills	Simple definitions
Tinkering	Playing and exploring
Making	Making things, checking and fixing things
Collaboration	Playing and working collaboratively
Persevering	Not giving up
Logic	Anticipating and explaining is logical reasoning
Pattern	Grouping things, comparing, spotting similarities and differences, working out rules
Abstraction	Naming and labelling, working out what is important, sticking to the main theme, ignoring what is not important, creating a summary
Algorithms and Decomposition	Responding to instructions, ordering things, sequencing things, introducing storylines, working out different ways to do things, breaking problems down into steps

Cross-reference of the EYFS Computational Thinking concepts to the Prime Areas of Learning

	Communication and Language			Physical development		Personal, Social and Emotional Development		
	Listening and attention	Understanding	Speaking	Moving and handling	Health and self-care	Self confidence and self awareness	Managing feelings and behaviour	Making relationships
Tinkering								
Making				✓				
Collaboration						✓	✓	✓
Persevering								
Logic	✓	✓	✓					
Pattern	✓	✓	✓					
Abstraction	✓	✓	✓					
Algorithms and decomposition	✓	✓	✓					

Cross-reference of the Early Years Computational Thinking concepts to the Specific Areas of Learning

	Literacy		Mathematics		Understanding the world			Expressive arts and design	
	Reading	**Writing**	**Numbers**	**Shape, space and measure**	**The World**	**People and communities**	**Technology**	**Exploring and using media and materials**	**Being imaginative**
Tinkering				✓				✓	✓
Making							✓	✓	✓
Collaboration						✓			
Persevering									
Logic	✓	✓	✓	✓	✓	✓		✓	
Pattern	✓	✓	✓	✓	✓	✓	✓	✓	
Abstraction	✓	✓	✓	✓	✓			✓	
Algorithms and decomposition	✓	✓	✓	✓	✓			✓	

Curriculum Coverage in KS1

National Curriculum Coverage – Years 1 and 2	1.1 Technology around us	1.2 Digital painting	1.3 Moving a robot	1.4 Grouping data	1.5 Digital writing	1.6 Programming animations	2.1 Information technology around us	2.2 Digital photography	2.3 Robot algorithms	2.4 Pictograms	2.5 Digital music	2.6 Programming quizzes
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 on the internet or other online technologies	✓			✓	✓		✓	✓	✓	✓		

Key Stage 1 National Curriculum

Pupils should be taught to:

Computer Science	Information Technology	Digital Literacy
• 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	• 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 • Recognise common uses of information technology beyond school

Year 1 Units

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Computing systems and networks - Technology around us	• I can explain that technology is something that can help us • I recognise that choices are made when using technology • I know a computer stores work in files	• I can identify examples of technology • I can recognise that a computer is an example of technology • I can describe what a keyboard is for	• I can explain why rules are needed when using technology
	• I can choose a piece of technology to do a job • I recognise that some technology can be used in different ways	• I can identify the main parts of a computer • I can use a keyboard to type my name on a computer • I can use the keyboard to edit text • Turn on the computer and log on with an aid • Use a mouse in different ways – click, select and drag	• I can show that I know how to use technology safely.

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Creating media – Digital painting		• I can explain what different freehand tools do • I can recognise computers can be used to create art • I recognise a tool can be adjusted to suit my need • I can decide when it is appropriate to use each tool • I can consider the impact of choices made	• I can compare painting using a computer with painting using brushes
		• I can create a picture using freehand tools • I can use shape and line tools when precision is needed • I can use a range of paint colours • I can use the fill tool to colour an enclosed area • I can use the undo button to correct a mistake • I can combine a range of tools to create a piece of artwork	

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Programming A – Moving a Robot	• I can recall words that can be enacted • I can explain what a command does • I can match a command to an outcome • I understand that program is a set of commands that a computer can run • I can recall that a series of instructions can be issued before they are enacted		
	• I can enact a given word • I can predict the outcome of a command on a device • I can list which commands can be used on a given device • I can choose a command for a given purpose • I can choose a series of words that can be enacted as a program • I can choose a series of commands that can be run as a program • I can build a sequence of commands in steps • I can combine commands in a program • I can run a program on a device • I can debug a program to correct errors		

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Data and information – Grouping data		• I can identify that objects can be counted • I recognise that information can be presented • I recognise that information can be presented in different ways	
		• I can identify some attributes of an object • I can collect simple data • I can show that collected data can be counted • I can describe the properties of an object • I can choose an attribute to group objects by • I can group objects to answer a question • I can explain that objects can be grouped by similarities (attributes) • I can describe a group of objects (based on commonality)	

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Creating media – digital writing		• I can recognise that keyboard is used to enter text into a computer • I recognise that the Shift key changes the output of a key • I recognise that text can be changed • I recognise that text can be edited • I recognise that the appearance of text can be changed	• I can consider the impact of choices made
		• I can use letter, number, and Space keys to enter text into a computer • I can use punctuation and special characters • I can use the Backspace key to remove text • I can position the text cursor in a chosen location • I can select text • I can choose options to achieve a desired effect • I can change the appearance of text on a computer • I can use undo	

Y1 Unit Title	Computer Science	Information Technology	Digital Literacy
Programming B – Programming animations	• I can enact a given word • I can recall words that can be enacted • I can predict the outcome of command on a device • I can list commands that can be used on a given device • I can explain what a given command does • I can match a command to an outcome • I can recognise how to run a command (press a button) • I can choose a command for a given purpose • I can understand that a program is a set of command a computer can run • I can explain what a sprite is • I can compare different programming blocks • I know that series of commands can be joined together to form a program		
	• I can choose a series of words that can be enacted as a program • I can predict the outcome of a command		

	• I can use the start command to initialise a program • I can run a program on a device • I can choose a series of commands that can be run as a program • I can debug a program • I can test a program created and evaluate how successful it has been		

Year 2 Units

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Computing systems and networks – IT around us		• I can recognise different types of computers used in school • I can identify that computer is a part of information technology • I can recognise the features of information technology • I can talk about uses of information technology • I can explain how information technology benefits us	• I can say how rules for using information technology can help us • I can recognise that choices are made when using information technology
		• I can describe some uses of computers • I can identify information technology in school • I can identify information technology beyond school	• I can show how to use information technology safely

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Creating media – Digital photography		• I can recognise that some digital devices can capture images using a camera • I can talk about how to take a photograph • I recognise that photographs can be saved and viewed later • I can make choices when composing my photograph • I recognise features of 'good' photographs • I can identify how a photograph could be improved • I can explain the effect of light on a photograph • I recognise that photographs can be changed after they have been taken • I recognise that some images are not accurate	
		• I can capture a digital image • I can take photographs in both landscape and portrait format • I can view photographs on a digital device • I can decide which photographs to	

		keep ● I can hold the camera still to take a clear photograph ● I can use zoom to change the composition of a photograph ● I can consider lighting before taking a photograph ● I use simple editing tools to change the appearance of a photograph ● I understand that I can improve a photograph by retaking it	

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Programming A – Robot algorithms	• I can describe how a series of instructions is a sequence • I can explain what happens when we change the order of instructions • I recognise that you can predict the outcome of a program • I can recall that series of instructions can be issued before they are enacted		
	• I can choose a series of words that can be enacted as a sequence • I can choose a series of instructions that can be run as a program • I can follow sequences of instructions including moving forwards and backwards, and turning left and right • I can plan a series of instructions for someone else to follow • I can plan a mat layout with several possible routes • I can create a program • I can trace a sequence to make a prediction • I can run a program on a device • I can debug a program that I have written as needed		

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Data and information - Pictograms		• I can use a tally chart to collect data • I can compare objects that have been groups by attributes • I can suggest appropriate headings for tally charts and pictograms • I can construct (complete) a given comparison question e.g. *Are there more ____ balls than ____ balls?* • I can use a computer program to present information in different ways • I can explain that we can present information when using a computer	• I can give simple examples of why some information should not be shared
		• I can enter data onto a computer • I recognise that people, animals and objects can be described by attributes • I can use a computer to view data in different formats • I can use pictograms to answer single-attribute questions • I can use a computer to answer comparison questions (graphs, tables)	

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Creating media – Digital music		• I can identify that computers can be used to play sounds of different instruments • I can identify that the same pattern can be represented in different ways • I can compare playing musical instruments with making music on a computer	
		• I can experiment with musical patterns on a computer • I can experiment with different sounds on a computer • I can use a computer to create a musical pattern • I can use a computer to compose a rhythm and a melody on a given theme • I can use a computer to play the same music in different ways (e.g. tempo) • I can evaluate a musical composition created on a computer • I can improve a musical composition created on a computer	

Y2 Unit Title	Computer Science	Information Technology	Digital Literacy
Programming B – Programming quizzes	• I can describe a series of instructions as a 'sequence' • I can recall that a series of instructions can be issued before they are enacted • I can use logical reasoning to predict the outcome of a program • I know that a sequence can be started using a variety of event blocks • I know the backgrounds can be changed through the programming blocks • I understand the role of the numbers on ScratchJr blocks		
	• I can choose a series of words that can be enacted as a sequence • I can explain what happens when we change the order of instructions • I can choose a series of commands that can be run as a program • I can write and run a simple program with a start block, and an end block which changes the background • I can adapt a given design to create a program with multiple sprites and backgrounds which uses the blocks in the example		

	• I can create and program a quiz with at least two backgrounds which switched based on an action • I can create and debug a program that I have written • I can trace a sequence to make a prediction • I can test a prediction by running the sequence • I can run a program on a device		