

Computing Curriculum at Langham Primary School

The National Curriculum

Our curriculum and scheme of work for computing meets the requirements of the [National Curriculum for computing](#). There is no specific content for technology in [Development Matters](#) or the [Early Learning Goals](#) for the end of Reception. However, our scheme of work identifies some key foundations for the computing curriculum covered in Reception.

We have divided our curriculum into three strands:

Using IT

This is all about securing skills in **using digital tools to learn, create and communicate ideas**. It includes learning how to save and organise work, create and edit documents and work with images. In Key Stage 2, children are also introduced to creating multimedia, databases and spreadsheets.

Digital Citizenship

This is all about the impact technology has on our lives, how computer systems work and **using digital technology safely and responsibly**. In Key Stage 2 we show children how digital technology can be used to communicate and collaborate through introducing them to Google Classroom. In planning and delivering our teaching of online safety, we are mindful of the advice in [Teaching online safety in schools - GOV.UK \(www.gov.uk\)](#) Digital safety is a dynamic area of the curriculum. New technologies present us with new challenges as well as opportunities. Artificial Intelligence is emerging as an increasingly influential area of our lives. Children are introduced to the debate about the dilemmas new technologies present to us.

Computer Science

This is about programming and key concepts to do with **creating effective and efficient code**. It promotes logical thinking and sequencing, experimenting and 'tinkering' and problem solving or 'debugging'. Children learn to create programs for physical systems such as robots as well as code which executes on screen. Throughout the curriculum, visual 'block' based programming languages are used, though in Upper Key Stage 2, children learn about text based coding languages.

Our scheme of work draws on the following teaching resources to support teachers in delivery:

- Espresso Coding (for computer strands)
- Rising Stars 'Learn to code'
- Plan IT (Twinkl scheme of work for computing)
- Oak Academy
- Barefoot Computing

	EYFS	KS1 (By the end of Year 2)	LKS2 (By the end of Year 4)	UKS2 (By the end of Year 6)
Multimedia (Text and Images)	<p>There is no specific content for technology in Development Matters or the Early Learning Goals for the end of Reception.</p> <p>To make sure that children in Reception are ready for the National Curriculum in Year 1, they use simple image software to produce pictures using a mouse, mousepad or touchscreen and enter numbers and letters using a keyboard (on screen or physical keyboard). This is part of their ongoing provision throughout their Reception year.</p>	<p><u>National Curriculum for Computing</u></p> <p>Essential Skills</p> <ul style="list-style-type: none"> Use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape. Use the fill tool on a drawing application; Add text boxes to images; Format text Save, retrieve and organise work. <p>Key Vocabulary Creating/ manipulating images: paint, line colour, fill colour, brush, size, Editing: undo, redo General: text, image, size, poster, launch, application (app), software, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, close, shut down</p> <p>Tools 2 Simple (only available on school laptops) Paintz untitled.png - Paintβ (paintz.app)</p>	<p><u>National Curriculum for Computing</u></p> <p>Essential Skills</p> <ul style="list-style-type: none"> Use a word processor to produce written material including different fonts, text sizes and using italics or bold for effect; Use select, copy and paste to duplicate images and make repeating patterns; Edit text by highlighting and overtyping, using copy, paste and delete as appropriate; Save work effectively and efficiently by choosing to 'save' or 'save as' as appropriate in an identified location; Insert a picture from the internet, from a saved file including own digital images. Format a document using text wrapping. <p>Key Vocabulary Creating/ manipulating images: draw, object, shape, line, line colour, fill colour, group, ungroup, Editing text: font (style/ colour/ size), text box, format, cut, copy, paste, spellcheck General: minimise, restore, move, file, folder, close, exit, search, print, screenshot, shift, undo, redo, menu, highlight, cursor, toolbar</p> <p>Tools Paintz untitled.png - Paintβ (paintz.app) Word processor (Word/ Googledocs)</p>	<p><u>National Curriculum for Computing</u></p> <p>Essential Skills</p> <ul style="list-style-type: none"> Format text by formatting columns, using bullet points and inserting tables; Use a wider range of image tools including basic photo editing technology; Save and retrieve their work to make amendments, organising and naming folders effectively; Insert a graph from data manipulation software (Excel/ Google Sheets) or a hyperlink from the internet into documents. Use text and images in presentation software (PowerPoint/ Google Slides) <p>Key Vocabulary heading, hyperlink, insert shape, insert object, insert line, measurement guide, wrap text, snipping tool, crop, hue, saturation</p> <p>Tools Photo editing software (Canva) Word processor (Word/ Googledocs) Presentation software (PowerPoint/ Google Slides)</p>

	EYFS	KS1 (By the end of Year 2)	LKS2 (By the end of Year 4)	UKS2 (By the end of Year 6)
Multimedia (Sound and Motion)			<p><u>National Curriculum for Computing</u></p> <p>Essential skills:</p> <ul style="list-style-type: none"> capture still images; record and edit sounds using digital media software; arrange sound clips and still images to create a short film; use stop frame animation techniques. <p>Key vocabulary audio, sound, video, movie, file format, animate, animation, still image, thaumatrope, zoetrope, flip book, frame, frame rate, stop frame</p> <p>Tools Movie Maker WeVideo Devices with camera Sound recording equipment</p>	<p><u>National Curriculum for Computing</u></p> <p>Essential skills:</p> <ul style="list-style-type: none"> capture sounds and video; trim, arrange and edit audio levels (for example fading sound in or out) to improve quality of finished piece; use a movie editing package to edit and refine (adding titles, credits and transition effects) <p>Key vocabulary backing track, voiceover, mute, fade, titles, credits, transitions</p> <p>Tools Movie Maker WeVideo Devices with camera Sound recording equipment</p>
Data Handling			<p><u>National Curriculum for Computing</u></p> <p>Essential skills:</p> <ul style="list-style-type: none"> Insert a table into a document and organise data; search a ready-made database to answer questions. <p>Key Vocabulary data,row, column, data base</p> <p>Tools Airtable (Google workspace) Word/ Google Docs</p>	<p><u>National Curriculum for Computing</u></p> <p>Essential skills:</p> <ul style="list-style-type: none"> input data on spreadsheets and create formulas; add data to an existing database; <p>Key Vocabulary spreadsheet, cell, row, column, formula/formulas, calculate, ascending, descending.</p> <p>Tools Airtable (Google workspace) Excel/ Google Sheets</p>

	EYFS	KS1 (By the end of Year 2)	LKS2 (By the end of Year 4)	UKS2 (By the end of Year 6)
Technology in Our Lives	<p>There is no specific content for technology in Development Matters or the Early Learning Goals for the end of Reception.</p> <p>Technology is part of children’s everyday lives during the foundation stage. This includes viewing and interacting with digital content, (including games and video content) and playing with programmable toys.</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Essential skills:</p> <ul style="list-style-type: none"> recognise different ways that technology is used in the home and community, e.g. taking photos, email, internet, social media and communication. use a search engine and links to websites to find information. <p>Key vocabulary email, virtual, text, video call, internet</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Essential skills:</p> <ul style="list-style-type: none"> explain ways to communicate with others online; describe the world wide web as the part of the internet that contains websites; use search tools to find and use an appropriate website and content; access shared documents and resources. <p>Key vocabulary search engine, email, subject, address, communicate, , internet, world wide web, server, social media.</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Essential skills:</p> <ul style="list-style-type: none"> search for information using appropriate websites and advanced search functions to refine results within Google; use strategies to check the reliability of information (cross-check with another source such as books); understand about ‘false information’ and how it is spread; understand the opportunities and the risks involved with artificial intelligence tell you about copyright and acknowledge the sources of information; access shared resources and post responses on platforms such as Google Classroom <p>Key vocabulary bias, authority, citation, plagiarism, source, https, , browser, address bar, artificial intelligence</p>

	EYFS	KS1 (By the end of Year 2)	LKS2 (By the end of Year 4)	UKS2 (By the end of Year 6)
Online Safety	<p>There is no specific content for technology in Development Matters or the Early Learning Goals for the end of Reception</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Key skills:</p> <ul style="list-style-type: none"> • identify what things count as personal information; • identify what is appropriate and inappropriate behaviour on the internet; • agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; • seek help from an adult when they see something that is unexpected or worrying; • explain how someone may act and look differently online and offline; • demonstrate how to safely open and close applications and log on and log off from websites. <p>Key vocabulary: safe, online, trusted adult, request</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Key skills:</p> <ul style="list-style-type: none"> • reflect on their own digital footprint and behaviour online; • identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying; • agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; • explain why people have different online/offline identities; • describe methods used to encourage people to buy things online including pop-ups and in-app purchases; • seek help from an adult when they see something that is unexpected or worrying; • demonstrate understanding of age-appropriate websites and adverts. <p>Key Vocabulary: cyberbullying; social media, age-appropriate; email, password, cyberbullying/bullying, account, private, public, personal, identity</p>	<p>National Curriculum for Computing Education for a connected world DfE Teaching Online Safety In Schools</p> <p>Key skills:</p> <ul style="list-style-type: none"> • protect their password and other personal information; • identify risks and benefits of aspects of life that are online including gaming, and use of social media; • identify respectful boundaries for sharing things online; • judge what sort of privacy settings might be relevant to reducing different risks; • make responsible choices about online identity; • identify methods used to influence and manipulate people online including clickbait; • describe ways in which technology can effect health and wellbeing both positively and negatively; • seek help from an adult when they see something that is unexpected or worrying and know how to report issues online. <p>Key Vocabulary: privacy, profiles, virus, scam, phishing, inbox, sender, subject, secure, safe, social media; influence, manipulation, fraud/fraudulent,</p>

	EYFS	KS1 (By the end of Year 2)	LKS2 (By the end of Year 4)	UKS2 (By the end of Year 6)
Coding and programming	<p>There is no specific content for technology in Development Matters or the Early Learning Goals for the end of Reception.</p> <p>Through using programmable toys such as Beebots, they sequence instructions and make changes through trial and error.</p>	<p>National Curriculum for Computing</p> <p>Essential skills:</p> <ul style="list-style-type: none"> • Construct clear instructions (algorithms) to make a simple program run (execute); • <i>Write a simple program which allows for the control of movement using keyboard input, pointer input and on-screen button input;</i> • Debug programs by following the code and identifying errors; <p>Key vocabulary algorithm, execute, bug, debug, input, output</p>	<p>National Curriculum for Computing</p> <p>Essential skills:</p> <ul style="list-style-type: none"> • Make animations and control physical systems using code that executes in a particular sequence; • Introduce a timer 'wait' command to control on-screen events; • Make events conditional using 'if' statements; • Test programs, identify problems and debug; • <i>Set and change variables to keep track of values such as 'score' and 'cost'.</i> • <i>Write code using loops and nested loops to do things over and over again</i> <p>Key Vocabulary wait, sequence, control, if/then, conditional event, variable, repeat, loop.</p>	<p>National Curriculum for Computing</p> <p>Essential skills:</p> <ul style="list-style-type: none"> • Work with variables for speed, direction and position (coordinates); • Use randomly generated values to make game play unpredictable; • <i>Perform calculations with variables and Boolean expressions (whether certain conditions are true or false)</i> • Detect and broadcast parameters in games and animations • <i>Control physical systems including robotics.</i> • <i>Write a program using a text based programming language (python)</i> <p>Key Vocabulary Coordinates, random, Boolean expression, parameter, broadcast</p>

Cycle A

	KS1	Lower KS2	Upper KS2
Autumn term	Construct and execute simple programs including those which require simple input to control movement Espresso Coding Level 1 On the Move <i>Under the Sea/Royal Chase</i> Level 1 Simple Inputs <i>Burst the Bubbles/Magic Castle</i>	Make programs and animations that execute in a particular sequence including a 'wait' command and conditional 'if' blocks. Espresso Coding Level 3 Sequence and animation <i>Stepping through space/Snail vs Spider</i> Level 3 Conditional events <i>Space maze/ Self-driving car</i>	Work with variables for speed, direction and position and use randomly generated variables to make gameplay unpredictable. (Detect and broadcast variables in cycle 2) Espresso Coding Level 5 Speed, direction and coordinates <i>Faster and slower/ Sailing the seas</i> Level 5 Random Numbers and simulations <i>Racing at random/ Caterpillar catcher</i>
	Use various tools, such as brushes, pens, eraser, stamps and shapes , and set the size, colour and shape . Use the fill tool on a drawing application. Creating a self-portrait (Plan IT)	Use a word processor and combine text and images using text wrapping to format the document.	Trim, arrange and edit audio levels (for example fading sound in or out) to improve quality of finished piece. Radio Station (Plan IT)
	Online Safety CEOP Jessie and friends	Online Safety CEOP Band runner	Online safety CEOP Connect
Spring term	Understand the term ' algorithm '. Construct and execute simple programs including those which require simple input to control Beebot toys Programming toys (Plan IT)	Control physical systems using code that executes in a particular sequence . Lego WeDo	Control physical systems including robotics . Construction and control: Lego Mindstorms
	Recognise different ways that technology is used in the home and community, e.g. taking photos, email, internet, social media and communication. Technology around us (Plan IT)	Describe the world wide web as the part of the internet that contains websites; use search tools to find and use an appropriate website and content. Online searchers and surfers (Plan IT)	Use advanced search options and learn to be discerning consumers of online information. Strategic searching online (Plan IT)
Summer term	Construct and execute simple programs including those which require different sorts of input to control simple movement Espresso Coding Level 2 Different Sorts of Inputs <i>Red Riding Hood/Key to the race</i> Level 2 Buttons and Instructions <i>Fly a helicopter/Slug Hunt</i>	Use variables to keep track of values such as score and use loops to repeat sections of code. Espresso Coding Level 4 Introduction to variables <i>Pop game/Catch the coconuts</i> Level 4 Repetition and loops <i>Bugs in the garden/Driving me loopy</i>	<i>Perform calculations with variables and Boolean expressions and detect and broadcast parameters in games and animations</i> Espresso coding Level 6 More complex variables <i>Shape-shifting/ Pop challenge</i> Level 6 Object properties <i>Football fun/ Sheepdog</i>
	Add text boxes to images; Save , retrieve and organise work. Adding text to an image: Great Fire of London project	Sound and vision editing; arrange sound clips and still images to create a short film .	Input data on spreadsheets and create formulas . Dice Throws (Learn to Code book 1)

Cycle B

	KS1	Lower KS2	Upper KS2
Autumn term	Construct and execute simple programs including those which require simple input to control movement Espresso Coding Level 1 On the Move <i>Transport on the Go/Another Planet</i> Level 1 Simple Inputs <i>Catch the Fish/Emergency</i>	Make programs and animations that execute in a particular sequence including a 'wait' command and conditional 'if' blocks. Espresso Coding Level 3 Sequence and animation <i>Alien Space Race/Traffic lights</i> Level 3 Conditional events <i>Hungry snake/Pufferfish pop</i>	Work with variables for speed, direction and position and use randomly generated variables to make gameplay unpredictable. (Detect and broadcast variables in cycle 2) Espresso Coding Level 5 Speed, direction and coordinates <i>Parachuting cows/ Going off road</i> Level 5 Random Numbers and simulations <i>Ping-Pong/ Pinball</i>
	Use various tools, such as brushes, pens, eraser, stamps and shapes , and set the size, colour and shape . Use the fill tool on a drawing application. Digital artists (Plan IT)	Use a word processor and combine text and images using text wrapping to format the document.	Combine audio and picture or video files and use a movie editing package to edit and refine (adding titles, credits and transition effects) Film Making (Plan IT)
	Online Safety CEOP Jessie and friends	Online Safety CEOP Band runner	Online safety CEOP Connect
Spring term	Format text Word Processing Skills (Plan IT)	Use stop frame animation techniques. Animation (Plan IT)	Control physical systems and program devices to interact with their environment (sensing) Sensing/ BBC Microbits (Oak Academy)
	Use a search engine and links to websites to find information. Using the Internet (Plan IT)	Describe the world wide web as the part of the internet that contains websites; use search tools to find and use an appropriate website and content.	Fake news and cyber crime Phisherman and You're the expert (Barefoot)
Summer term	Construct and execute simple programs including those which require different sorts of input to control simple movement Espresso Coding Level 2 Different Sorts of Inputs <i>Shark Attack/Up in the air/Snow White</i> Level 2 Buttons and Instructions <i>Find My Cat/Hungry Migbod</i>	Use variables to keep track of values such as score and use loops to repeat sections of code. Espresso Coding Level 4 Introduction to variables <i>Healthy eating/ Tablet till/ Pirate Gold</i> Level 4 Repetition and loops <i>Astronaut orbit/ Hot air balloon show</i>	Write programs using a text based language (python). Espresso coding Level 6 Introduction to Python Level 6 Python graphics
		Insert a table into a document and organise data; search a ready-made database to answer questions. Word Processing Y4 (Plan IT) Branching databases (Plan IT)	Search records and add data to an existing database. Flat file databases (Oak Academy)