

# COMPUTING

## Overview

### The Curriculum

The Teach Computing Curriculum (nccce.io/tcc) is a comprehensive collection of materials produced to support 500 hours of teaching, facilitating the delivery of the entire English computing curriculum from key stage 1 to 4 (5- to 16-year-olds). The Teach Computing Curriculum was created by the Raspberry Pi Foundation on behalf of the National Centre for Computing Education (NCCE). All content is free, and editable under the Open Government Licence (OGL — nccce.io/ogl), ensuring that the resources can be tailored to each individual teacher and school setting. The materials are suitable for all pupils irrespective of their skills, background, and additional needs.

The units for Key Stages 1 and 2 are based on a spiral curriculum. This means that each of the themes are revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years.

The technology strand has been removed from the EYFS curriculum and therefore is not taught explicitly. Computing is largely cross curricular with links to the EYFS areas of learning. The emphasis is on allowing the children to explore technology in a child-led way to develop their familiarity with equipment and vocabulary.

### Online safety

The unit overviews for each unit show the links between the content of the lessons and the national curriculum and Education for a Connected World framework (nccce.io/efacw). These references have been provided to show where aspects relating to online safety, or digital citizenship, are covered within the Teach Computing Curriculum. Not all of the objectives in the Education for a Connected World framework are covered in the Teach Computing Curriculum, as some are better suited to personal, social, health, and economic (PSHE) education; spiritual, moral, social, and cultural (SMSC) development; and citizenship. However, the coverage required for the computing national curriculum is provided. Online Safety is also explicitly taught at least once every half term as a focus in assembly and carried through to activities into the classroom. Safer Internet Day is celebrated yearly.

## Software or Hardware

paintz.app, Microsoft Paint or similar, Bee-Bot, Blue-Bot, or other fixed-movement floor robot, Google Slides or Microsoft PowerPoint, Google Docs or Microsoft Word, ScratchJr, Digital camera, j2data Branch & Pictogram, Chrome Music Lab, iMotion, Scratch, Adobe Spark, Audacity, FMSLogo, Data Logger and associated software, Paint.net, Crumble controller + starter kit + model, Google drawings, Google Sheets or Microsoft Excel, Tinkercard, micro:bit and Microsoft MakeCode

## Skills

<b>EYFS</b>	The computing scheme for the EYFS is centred on play-based, exploratory activities that focus on building children’s communication and language, personal, social and emotional development, physical development, literacy skills, mathematics skills, understanding of the world and expression of arts and design.					
	Technology in the Early Years can mean:					
	<ul style="list-style-type: none"> <li>• taking a photograph with a camera or tablet</li> <li>• searching for information on the internet</li> <li>• playing games on the interactive whiteboard</li> <li>• interacting with age appropriate software e.g. purple mash, paint etc.</li> <li>• exploring an old typewriter or other mechanical toys</li> <li>• using a Beebot</li> <li>• watching a video clip</li> <li>• listening to music</li> </ul>					
	<b>Computing Systems</b>	<b>Creating Media</b>	<b>Creating Media</b>	<b>Data &amp; Information</b>	<b>Programming A</b>	<b>Programming B</b>
<b>YEAR 1</b>	<b>Technology around us -</b> Recognising technology in school and using it responsibly.	<b>Digital painting -</b> Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally	<b>Digital writing -</b> Using a computer to create and format text, before comparing to writing non-digitally.	<b>Grouping data -</b> Exploring object labels, then using them to sort and group objects by properties.	<b>Moving a robot -</b> Writing short algorithms and programs for floor robots, and predicting program outcomes.	<b>Introduction to animation -</b> Designing and programming the movement of a character on screen to tell stories
<b>YEAR 2</b>	<b>IT around us -</b> Identifying IT and how its responsible use improves our world in school and beyond.	<b>Digital photography -</b> Capturing and changing digital photographs for different purposes.	<b>Making music -</b> Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	<b>Pictograms -</b> Collecting data in tally charts and using attributes to organise and present data on a computer.	<b>Robot algorithms -</b> Creating and debugging programs, and using logical reasoning to make predictions.	<b>An introduction to quizzes –</b> Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.
<b>YEAR 3</b>	<b>Connecting Computers -</b> Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	<b>Animation -</b> Capturing and editing digital still images to produce a stop-frame animation that tells a story.	<b>Desktop Publishing –</b> Creating documents by modifying text images, and page layouts for a specified purpose.	<b>Branching Databases -</b> Building and using branching databases to group objects using yes/no questions	<b>Sequence in music –</b> Creating sequences in a block-based programming language to make music.	<b>Events &amp; Actions -</b> Writing algorithms and programs that use a range of events to trigger sequences of actions.
<b>YEAR 4</b>	<b>The Internet -</b> Recognising the internet as a network of networks including the WWW, and why	<b>Audio Editing -</b> Capturing and editing audio to produce a podcast, ensuring	<b>Photo Editing –</b> Manipulating digital images, and reflecting on the impact of changes	<b>Data Logging -</b> Recognising how and why data is collected over time,	<b>Repetition in shapes -</b> Using a text-based Programming language to	<b>Repetition in games -</b> Using a block-based Programming language to explore

		we should evaluate online content.	that copyright is considered.	and whether the required purpose is fulfilled.	before using data loggers to carry out an investigation.	explore count-controlled loops when drawing shapes	count-controlled and infinite loops when creating a game
<b>YEAR 5</b>	<b>Sharing information -</b> Recognising IT systems around us and how they allow us to search the internet.	<b>Vector drawing -</b> Creating images in a drawing program by using layers and groups of objects.	<b>Video editing -</b> Planning, capturing, and editing video to produce a short film.	<b>Flat-file databases -</b> Using a database to order data and create charts to answer questions.	<b>Selection in physical computing –</b> Exploring conditions and selection using a programmable microcontroller.	<b>Selection in quizzes –</b> Exploring selection in programming to design and code an interactive quiz.	
<b>YEAR 6</b>	<b>Communication -</b> Identifying and exploring how data is transferred and information is shared online.	<b>3D modelling -</b> Planning, developing, and evaluating 3D computer models of physical objects.	<b>Web page creation -</b> Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	<b>Spreadsheets –</b> Answering questions by using spreadsheets to organise and calculate data.	<b>Variables in games –</b> Exploring variables when designing and coding a game	<b>Sensing -</b> Designing and coding a project that captures inputs from a physical device.	

**Key Vocabulary**  
(new vocabulary in bold underlined)

**E-SAFETY:** choices, internet, website, rules, online, private information, email, age appropriate/ inappropriate sites, **cyber-bullying**, **digital footprint**, keyword searching, e-safety rules, **SMART**, secure passwords, report abuse button, gaming, blogs, **digital citizen**, responsible online communication, **informed choices**, **virus**/threats, messaging, social media, online sharing

**COMPUTING SYSTEMS:** technology, share, create, internet, purpose, online tools, communicate, information resources, **browsers**, **hubs**, **hardware**, **software**, **applications** (apps), **content**, **network**, **data collection**, **reliability**, devices, computers parts, **collaborate**, search tools, owner, connecting, audiences, **strategies**, search result, rankings, screen, mouse. Touchpad, touchscreen, keyboard & keys, speakers, sound system, signal

**CREATING MEDIA:** videos, digital pictures, **camera stills**, sounds, **audio**, image bank, word bank, paint effects, templates, **animation**, documents, **touch typing**/ finger typing, enter/**return**, **caps lock**, backspace, space bar, multimedia, presentations, **alignment**, **justification**, brush size, word art, repeats, reflections, **pictograms**, **manipulation**, **green screen**, **amend**, copy, paste, create, **modify**, **shortcuts**, bullet points, **imagery**, effects, **SmartArt**, spell check, **hyperlinks**, **refining**, **structure**, **layers**, **copyright**,

**DATA INFORMATION:** collect, count, organise, media, **data**, **digital**, **capture**, magnified, collection, **graphs**, charts, save, **retrieve**, questioning, **database**, **construct**, **contribute**, record, log, present, **handle**, spreadsheets, **complex searches (and/or: </>)**, **analyse**, question, **interpret**, generate, process, **plausibility**, **interrogate**, information, investigate, store

**PROGRAMMING: HTML/ coding**, equipment, buttons, movement, instructions, robots, patterns, **programme**, forward, backward, right-angle turn, clockwise, anti-clockwise, **algorithm**, **sequence**, **debug**, predict, sequence, test & improve, **commands**, edit, sensors, **open-ended problems**, **bugs in programmes**, **complex programming**, **procedures**, **variable**, **hardware/software control**, **input**, **output**

**Learning Objectives**

Further information on unit and lesson overviews and learning objectives, by year group, can be found: <https://teachcomputing.org/curriculum>