National Centre for Computing Education

Teacher Guide

Key Stage 2

A guide to the Teach Computing Curriculum

Funded by
Department for Education

Structure of the units of work

Every unit of work in the Teach Computing Curriculum contains: a unit overview; a learning graph, to show the progression of skills and concepts in a unit; lesson content —including a detailed lesson plan, slides for learners, and all the resources you will need; and formative and summative assessment opportunities.

Teach Computing Curriculum overview

	Computing Systems and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 3	Connecting computers (3.1)*	Stop-frame animation (3.2)	Sequencing sounds (3.3)	Branching databases (3.4)	Desktop publishing (3.5)	Events and actions in programs (3.6)
Year 4	The Internet (4.1)	Audio production (4.2)	Repetition in shapes (4.3)	Data logging (4.4)	Photo editing (4.5)	Repetition in games (4.6)
Year 5	Systems and searching (5.1)	Video production (5.2)	Selection in physical computing (5.3)	Flat-file databases (5.4)	Introduction to vector graphics (5.5)	Selection in quizzes (5.6)
Year 6	Communication and collaboration (6.1)	Web page creation (6.2)	Variables in games (6.3)	Spreadsheets (6.4)	3D modelling (6.5)	Sensing movement (6.6)

*The numbers in brackets are a 'quick code' reference for each unit, e.g. 1.3 refers the to the third year one unit in the recommended teaching order.

Unit summaries

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 3	**Connecting computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks	**Stop-frame animation** Capturing and editing digital still images to produce a stop frame animation that tells a story	**Sequencing sounds** Creating sequences in a block-based programming language to make music.	**Branching databases** Building and using branching databases to group objects using yes/no questions.	**Desktop publishing** Creating documents and modifying text, images and page layouts for a specific purpose.	**Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions.
Year 4	**The internet** Recognising that the internet is a network of networks including the WWW, and why we should evaluate online content.	**Audio production** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation,	**Photo editing** Manipulating digital images, and reflecting on the impact of the changes and whether the required purpose is fulfilled,	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.

Unit summaries

	Computing systems and networks	Creating media	Programming A	Data and information	Creating media	Programming B
Year 5	**Systems and searching** Recognising IT systems in the world and how some can enable searching on the internet.	**Video production** Planning, capturing, and editing video to produce a short film.	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller.	**Flat-file databases** Using a database to order data and create charts to answer questions.	**Introduction to vector graphics** Creating images in a drawing program by using layers and groups of objects.	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Communication and collaboration** Exploring how data is transferred by working collaboratively online.	**Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics and navigation.	**Variables in games** Exploring variables when designing and coding a game.	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**3D modelling** Planning, developing, and evaluation 3D computer models of physical objects.	**Sensing movement** Designing and coding a project that captures inputs from physical devices.

National Curriculum Coverage – Years 3 and 4	3.1 Connecting computers	3.2 Stop-frame animation	3.3 Sequencing sounds	3.4 Branching databases	3.5 Desktop publishing	3.6 Events and actions in programs	4.1 The internet	4.2 Audio production	4.3 Repetition in shapes	4.4 Data logging	4.5 Photo editing	4.6 Repetition in games
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 design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		✓		✓			✓	✓			✓	

National Curriculum Coverage – Years 5 and 6	5.1 systems and searching	5.2 Video production	5.3 Selection in physical computing	5.4 Flat-file database	5.5 Introduction to vector graphics	5.6 Selection in quizzes	6.1 Communication and collaboration	6.2 Webpage creation	6.3 Variables in games	6.4 Introduction to spreadsheets	6.5 3D modelling	6.6 Sensing movement
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 design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	✓	✓						✓	✓		✓	

Progression

Progression through the taxonomy

Within the Teach Computing Curriculum, every year group learns through units within the same four themes, which combine the ten strands of the National Centre for Computing Education's taxonomy (see table, right). All learning objectives have been mapped to the strands, which ensures that units build on each other from one key stage to the next.

Teaching order

The order in which to teach units within a school year is not prescribed, other than for the two 'Programming' units for each year group, which build on each other. It is recommended that the 'Programming' and 'Creating media' units be revisited in two different terms within the school year, so that the concepts and skills can be revisited and consolidated. Otherwise, schools can choose the order in which they teach the units, based on the needs of their pupils and other topics or events that are happening throughout the school year, to make use of cross-curricular links wherever possible.

Primary themes	Computing systems and networks	Programming	Data and information	Creating media
Taxonomy strands	Computer systems Computer networks	Programming Algorithms Design and development	Data and information	Creating media Design and development
	Effective use of tools			
	Impact of technology			
	Safety and security			

Software and hardware overview

Requirements for pupils - below ✓ Reflected in the unit screenshots ◆ Alternative software available

	Desktop or laptop	Chromebook	Tablet	Software or hardware
3.1 Connecting computers	✓	◆	◆	Painting program (any)
3.2 Stop-frame animation	◆	◆	✓	iMotion
3.3 Sequencing sounds	✓	✓	◆	Scratch
3.4 Branching databases	✓	✓	◆	J2data Branch and Pictogram
3.5 Desktop publishing	✓	✓	✓	Canva
3.6 Events and actions in programs	✓	✓	◆	Scratch
4.1 The internet	✓	✓	✓	Various websites
4.2 Audio production	✓	◆	◆	Audacity
4.3 Repetition in shapes	✓	◆	◆	FMS Logo
4.4 Data logging	✓	✓	✓	Data logger and associated software
4.5 Photo editing	✓	◆	◆	Paint.NET
4.6 Repetition in games	✓	✓	◆	Scratch

Software and hardware overview

Requirements for pupils - below ✓ Reflected in the unit screenshots ◆ Alternative software available

	Desktop or laptop	Chromebook	Tablet	Software or hardware
5.1 Systems and searching	✓	✓	◆	Google slides
5.2 Video production	✓	◆	◆	Any video editing software e.g iMovie or Canva
5.3 Selection in physical computing	✓	✓		Crumble controller starter kit + motors
5.4 Flat-file databases	✓	✓	◆	J2data Database
5.5 Introduction to vector graphics	✓	✓	◆	Google drawings or Microsoft PowerPoint
5.6 Selection in quizzes	✓	✓	◆	Scratch
6.1 Communication and collaboration	✓	✓	◆	Google Slides
6.2 Webpage creation	✓	✓	◆	Google Sites
6.3 Variables in games	✓	✓	◆	Scratch
6.4 Introduction to spreadsheets	✓	✓	◆	Google Sheets or Microsoft Excel
6.5 3D modelling	✓	✓	◆	TinkerCAD
6.6 Sensing movement	✓	✓	◆	Micro:bit and Microsoft MakeCode