Implementing the Teach Computing Curriculum

Session 2: Software and Equipment: Making it Work

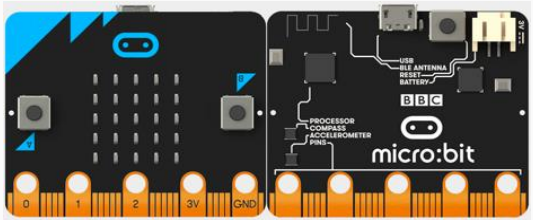
National Centre for Computing Education

Session 2: Software and Hardware

By the end of the session you will be able to:

- understand the software and hardware requirements of the Teach Computing Curriculum
- pre-empt issues that may occur with software and hardware
- identify alternative software that can be used to deliver the Teach Computing Curriculum
- deliver the Teach Computing Curriculum based on the technology within your school

What resources do you have in school?



Pre-Task Audit

Pre-Task: Technology Audit

Hardware

What technology have you got in school? iPads, laptops, Chromebooks, desktops? Have you got any physical computing kit?

Item:	Amount:	Notes: is it fit for purpose? Is it used effectively? Accessible?

What technology do you need to implement the Teach Computing Curriculum?

Pre-empting issues with technology

Task

Look at the requirements to implement the TCC and reflect upon your school's provision.

Consider:

Problems you may encounter

Possible solutions to ensure effective delivery

Requirements for pupils – below

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative

	Desktop or laptop	Chromebook	Tablet	Software or hardware
1.1 Technology around us	✓	●	●	paintz.app
1.2 Digital painting	✓	●	●	Microsoft Paint or similar
1.3 Moving a robot				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
1.4 Grouping data	✓	●		Google Slides or Microsoft PowerPoint
1.5 Digital writing	✓	●	●	Google Docs or Microsoft Word
1.6 Programming animations	●	●	✓	ScratchJr
2.1 Information technology around us	✓	●		Google Slides or Microsoft PowerPoint
2.2 Digital photography	✓		●	Digital camera
2.3 Robot algorithms				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
2.4 Pictograms	✓	●	●	j2data Pictogram
2.5 Making music	✓	●	●	Chrome Music Lab
2.6 Programming quizzes	●	●	✓	ScratchJr

Key Stage 1

Look at the requirements to implement the KS1 curriculum and reflect upon your school's provision:

What problems might you/your staff encounter

What solutions do you have to ensure it can be delivered effectively

Requirements for pupils – below ✓ Used for the unit – reflected in screenshots ● Could be used as an alternative

	Desktop or laptop	Chromebook	Tablet	Software or hardware
1.1 Technology around us	✓	●	●	paintz.app
1.2 Digital painting	✓	●	●	Microsoft Paint or similar
1.3 Moving a robot				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
1.4 Grouping data	✓	●		Google Slides or Microsoft PowerPoint
1.5 Digital writing	✓	●	●	Google Docs or Microsoft Word
1.6 Programming animations	●	●	✓	ScratchJr
2.1 Information technology around us	✓	●		Google Slides or Microsoft PowerPoint
2.2 Digital photography	✓		●	Digital camera
2.3 Robot algorithms				Bee-Bot, Blue-Bot, or other fixed-movement floor robot
2.4 Pictograms	✓	●	●	j2data Pictogram
2.5 Making music	✓	●	●	Chrome Music Lab
2.6 Programming quizzes	●	●	✓	ScratchJr

Lower Key Stage 2

Look at the requirements to implement the Lower Key Stage 2 curriculum and reflect upon your school's provision:

What problems might you/your staff encounter?

What solutions do you have to ensure it can be delivered effectively?

Requirements for pupils – below

	Desktop or laptop	Chromebook	Tablet	Software or hardware
3.1 Connecting computers	✓	●	●	Painting program (any)
3.2 Stop-frame animation	●	●	✓	iMotion (app for iOS)
3.3 Sequencing sounds	✓	●	●	Scratch
3.4 Branching databases	✓	●	●	j2data Branch and Pictogram
3.5 Desktop publishing	✓	●		Adobe Spark
3.6 Events and actions in programs	✓	●	●	Scratch
4.1 The internet	✓	●	●	Various websites
4.2 Audio editing	✓			Audacity
4.3 Repetition in shapes	✓	●	●	FMSLogo
4.4 Data logging	✓	+	+	Data logger
4.5 Photo editing	✓	●		Paint.NET (for Microsoft Windows)
4.6 Repetition in games	✓	●	●	Scratch

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative + Data loggers that work with Chromebooks or tablets are available. Check with suppliers.

Upper Key Stage 2

Look at the requirements to implement the Upper Key Stage 2 curriculum and reflect upon your school's provision:

What problems might you/your staff encounter?

What solutions do you have to ensure it can be delivered effectively?

Requirements for pupils – below

	Desktop or laptop	Chromebook	Tablet	Software or hardware
5.1 Sharing information	✓	●		Google Slides
5.2 Video editing	✓	●	●	Microsoft Photos (for Microsoft Windows 10)
5.3 Selection in physical computing	✓	●		Crumble controller + starter kit + motor
5.4 Flat-file databases	✓	●	●	j2data Database
5.5 Vector drawing	✓	●		Google Drawings
5.6 Selection in quizzes	✓	●		Scratch
6.1 Internet communication	✓	●		
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	✓	●	●	micro:bit and Microsoft MakeCode

✓ Used for the unit – reflected in screenshots ● Could be used as an alternative

Year 1 Units

Needs to be downloaded

Technology Around Us	Grouping Data	Moving a Robot	Introduction to animation	Digital Painting	Digital Writing
http://paintz.app	Google Docs	Beebots or floor turtles	Scratch Jr	http://paintz.app	Word Processor
Any other paint-based application or website	Can be delivered as an unplugged activity instead, or converted to Microsoft Word	Some activities can be unplugged with a printout version of a Beebot. Beebot emulator on a web browser: https://beebot.terrapinlogo.com/	No alternatives but can be downloaded on all devices: Apple app store Google Play Store Emulator for Windows or Mac	Any other paint-based application or website	Microsoft Word/Google Docs/Purple Mash

Year 2 Units

Needs to be downloaded

Information Technology Around Us	Pictograms	Robot algorithms	Quizzes	Digital Photographs	Making Music
Google Slides	J2E: https://www.j2e.com/jit5#pictogram	Beebots or floor turtles	Scratch Jr	Digital camera/photography device required https://pixlr.com/x/	Chrome Music Lab: https://musiclab.chromeexperiments.com/
Can be delivered as an unplugged activity instead, or converted to Microsoft PowerPoint	Will work on all devices	Some activities can be unplugged with a printout version of a Beebot. Beebot emulator on a web browser: https://beebot.terrapinlogo.com/	No alternatives but can be downloaded on all devices: Apple app store Google Play Store Emulator for Windows or Mac	Built in cameras on iPads/tablets iPad inbuilt photo manipulation (edit)	Will work on all devices

Being pro-active for KS1:

- shortcuts to websites or applications on: the desktops of computers, Teams/Google Classroom, the school website, etc,

- ensure required software/applications are downloaded on computers/iPads, e.g. Scratch Jr

- photo editing unit may be easier using an iPad, avoiding the issue of transferring images from a digital camera

Year 3 Units

Needs to be downloaded

Connecting Computers	Branching Databases	Sequence in music	Events and actions	Desktop Publishing	Stop Frame Animation
http://paintz.app	J2E: https://www.j2e.com/jit5#branch	Scratch Online: https://scratch.mit.edu/ Scratch Offline editor: https://scratch.mit.edu/download	Scratch Online: https://scratch.mit.edu/ Scratch Offline editor: https://scratch.mit.edu/download	Adobe Spark: https://spark.adobe.com/ Adobe Spark Post app: https://apps.apple.com/us/app/adobe-spark-post-design-maker/id1051937863	Tablets/iPads and the iMotion app: https://apps.apple.com/gb/app/imotion/id421365625
Any other paint-based application or website	Will work on all devices			Canva: https://www.canva.com/ Microsoft Publisher	Stop Motion Studio: https://apps.apple.com/gb/app/stop-motion-studio/id441651297 Or any other animation software/websites

Year 4 Units

Needs to be downloaded

The Internet	Data Logging	Repetition in shapes	Repetition in games	Audio Editing	Photo Editing
None required	TTS Log Boxes Data Loggers Software can be downloaded here: https://www.tts-group.co.uk/ICT_hub.html	Logo: https://fmslogo.sourceforge.io/	Scratch Online: https://scratch.mit.edu/ Scratch Offline editor: https://scratch.mit.edu/download	Audacity: https://www.audacityteam.org/download/	Paint.net: https://www.dotpdn.com/downloads/pdn.html
	Data collection applications (micro:bits can be used) Arduino Science Journal App: https://www.arduino.cc/education/science-journal	Turtle Academy (web based): https://turtleacademy.com/playground		Garageband on iPads Bandlab for Google Suite Any other recording and editing software	Other photo editing Software, e.g. PicCollage, Photoshop, etc

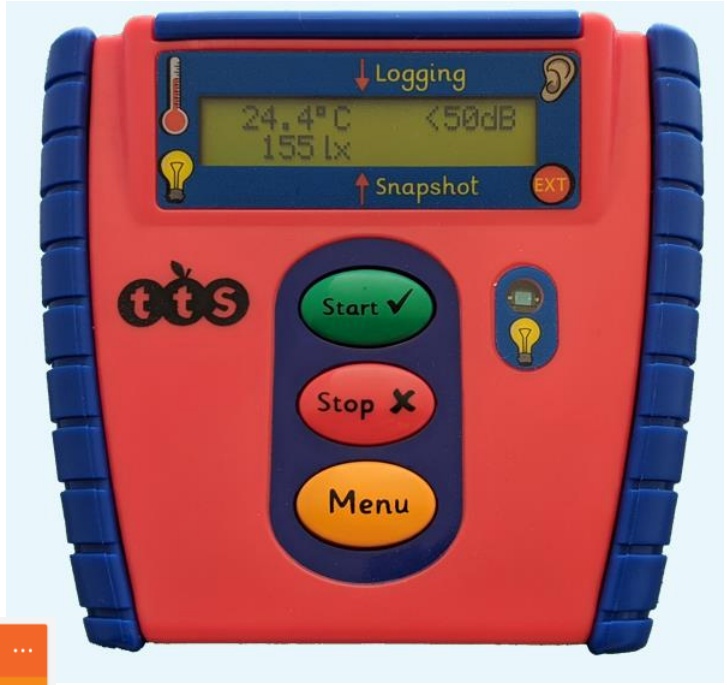
Data Loggers

Digital devices that can collect data over time and store it.

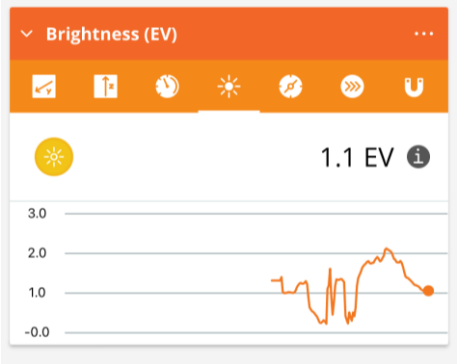
Built in sensors for light, temperature and sound.

[Arduino Science Journal]

[Phyphox]



Log-Box Data Logger



Being pro-active for LKS2:

- shortcuts to websites or applications on: the desktops of computers, Teams/Google Classroom, the school website, etc
- all required software/applications are downloaded on computers/iPads, e.g. Logo, Audacity Paint.net
- look into the way pupils are going to access Adobe Connect as it requires a login
- consider using the Stop Motion Studio free software for animation as it works on iPads, Chromebook, and laptop devices. This unit will work better with iPads if possible
- check if you have TTS Log Boxes/similar for data logging, or alternatively look into Arduino Science journal as an alternative
- consider the way Scratch is to be used in school (to be discussed)

Year 5 Units

Needs to be downloaded

Sharing Information	Flat-file Databases	Selection in physical computing	Selection in Quizzes	Vector Drawing	Video Editing
Google Slides	J2E: https://www.j2e.com/database/	*Crumbles, with kits including lights and motors* *Crumble Software:* https://redfernelectronics.co.uk/crumble-software/	*Scratch Online:* https://scratch.mit.edu/ *Scratch Offline editor:* https://scratch.mit.edu/download	*Google Drawing:* https://chrome.google.com/webstore/detail/google-drawings/mkaakpdehdafacodkgkpghoibnmamcme/related	*Recording device/iPad* *No specific video editing software advised*
Other collaborative editing software, e.g. using Microsoft PowerPoint online/Padlet/Jamboard, etc	Will work on all devices.	Can be hired from Computing Hubs (will work with laptops or Chromebooks)		Microsoft Word/Google Docs/Paint	Microsoft Movie Maker: https://www.microsoft.com/en-us/p/movie-maker-10-free/9mvfq4lmz5c9?activetab=pivot:overviewtab iMovie: https://www.apple.com/uk/imovie/ Adobe Spark Video: https://spark.adobe.com/make/video-maker/

Year 6 Units

Communication	Spreadsheets	Variables in games	Sensing	3D Modelling	Web Page Design
None required	Google Sheets	*Scratch Online:* *https://scratch.mit.edu/* *Scratch Offline editor:* *https://scratch.mit.edu/download*	Micro:bits and https://makecode.microbit.org/	*TinkerCAD:* *https://www.tinkercad.com/*	*Google Sites:* *https://sites.google.com*
	Documents can be saved in Microsoft Excel to share		Can be hired through the Computing Hubs (will work with laptops, Chromebooks or iPads)	*Other 3D design software*	Adobe Spark Page: https://spark.adobe.com/make/website-builder/ Microsoft Sway: https://sway.office.com/my Wix: https://www.wix.com/ Wordpress: https://wordpress.com/

The Computing Hub Kit model:

Kit

Content

Training

Crumble trays

Crumble tray
- 17 Crumble controllers - 34 sparkle LEDs - 17 switches - 17 light sensors - 17 buzzers - 17 micro USB cables - 17 battery packs for 3x AA batteries - 34 wheels and motors - 204 croc clip cables

Micro:bit trays

micro:bit tray
- 17 micro:bits - 17 battery packs for 2x AAA batteries - 17 USB cables - 40 croc clip cables

Physical computing kit - KS2 Crumble - short course

CP252 Face to face course

Many of our local hubs have gone
Which means less reliable sharing service.
Buy your own equipment

Being pro-active for UKS2:

Do you know how to make a shortcut?

- shortcuts to websites or applications on: the desktops of computers, Teams/Google Classroom, the school website, etc, for ease of access for the pupils
- all required software/applications are downloaded on computers/iPads, e.g. Crumble Software, Movie Maker
- check you have the means for sharing content online, e.g. for multiple pupils to work on the same document via Google or Microsoft, or Padlet/Jamboard (Sharing Information unit)
- J2E data does not require purchasing; the unit uses free examples
- contact your local hub and book out physical computing kit if needed
- support Year 5 teachers with the Video Editing unit, depending on staff confidence, as no software is suggested
- create a free teacher account on TinkerCAD so classes and pupils can be set up
- look into how pupils will access Google software, e.g. drawing and sites, if pupils do not have Google accounts. Consider the way Scratch is to be used in school (to be discussed)

Scratch!

Have your pupils used this before in a previous scheme?

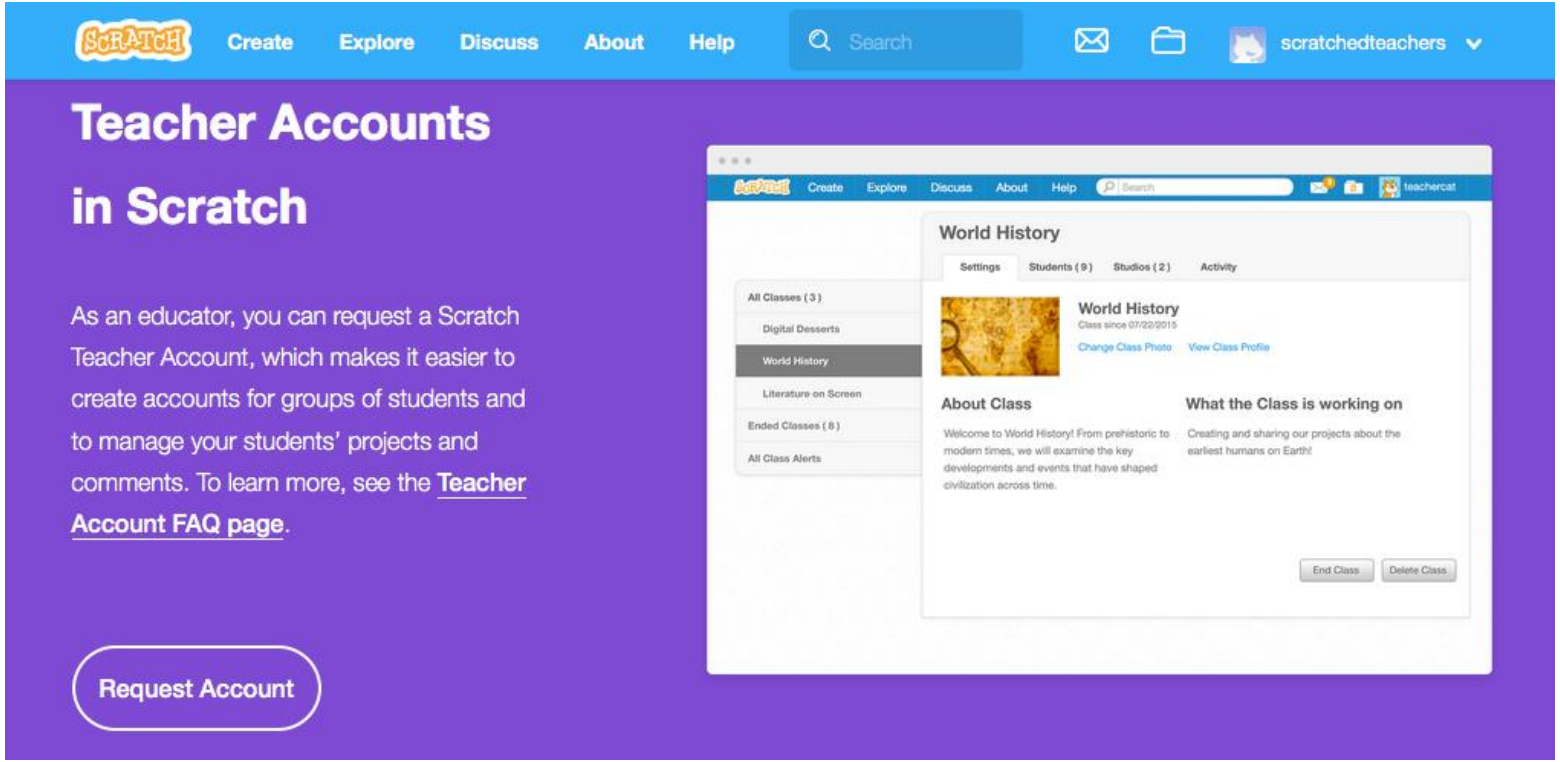
What's your knowledge/staff knowledge of Scratch?

Scratch Offline v Scratch Online

Scratch Offline

- does not need an internet connection
- only works on laptops/desktops
- can be downloaded onto devices

Scratch Online v Scratch Offline



Task: Software to explore

Pick a unit to explore and troubleshoot. Download the associated lessons plans, and explore the software:

Audacity: Year 4 Audio Editing
Paint.net: Year 4 Photo Editing
Adobe Spark: Year 3 Digital Publishing
Google Sites: Year 6 Web Page Creation
TinkerCAD: Year 6 3D Modelling
J2E- Pictograms (Y2), Branching databases (Y3) or J2data (Year 5)

Barrier to learning: Equipment

Do we need equipment for every lesson?

Task

In pairs, pick a unit for the year you teach.
Identify which lessons need devices or equipment.

Lesson	Devices?
Lesson 1	
Lesson 2	
Lesson 3	
Lesson 4	
Lesson 5	
Lesson 6	

Session 2: Software and Hardware

By the end of the session you will be able to:

- understand the software and hardware requirements of the Teach Computing Curriculum
- pre-empt issues that may occur with software and hardware
- identify alternative software that can be used to deliver the Teach Computing Curriculum
- deliver the Teach Computing Curriculum based on the technology within your school

Thanks