



# Preparing to deliver a world-class computing education

# Aims

- Why Computing?
- Highlighting support that is out there?
- What next?

**Why computing?**

# Employer demand

82% , (7,716,503), of all job adverts requiring digital skills.

83% (3,873,377 ), of high skill job adverts require digital skills.

77% (1,629,017 ), of low skilled job adverts require digital skills.

The wider economy – helping every British business become a digital business”, Policy Paper, 2017, Department of Digital Culture, Media and Sport. [No Longer Optional: Employer Demand for Digital Skills June](#) 2019

Figure 1: Annual Salary by Skill Level

## Digital Salary Differential



# Ofsted: Quality of education measures

**Intent – Implementation - Impact**

# Intent

- **leaders take on or construct a curriculum that is ambitious and designed to give all learners**, particularly the most disadvantaged and those with special educational needs and/or disabilities (SEND) or high needs, the knowledge and cultural capital they need to succeed in life
- the provider's **curriculum is coherently planned and sequenced** towards cumulatively sufficient knowledge and skills for future learning and employment
- **the provider has the same academic, technical or vocational ambitions for almost all learners**. Where this is not practical for example, for some learners with high levels of SEND – its curriculum is designed to be ambitious and to meet their needs
- **learners study the full curriculum**. Providers ensure this by teaching a full range of subjects for as long as possible, 'specialising' only when necessary

# Implementation

- **teachers have good knowledge of the subject(s) and courses they teach.** Leaders provide effective support for those teaching outside their main areas of expertise
- teachers present subject matter clearly, promoting appropriate discussion about the subject matter they are teaching. **They check learners' understanding systematically,** identify misconceptions accurately and provide clear, direct feedback. In doing so, they respond and adapt their teaching as necessary, without unnecessarily elaborate or differentiated approaches
- over the course of study, **teaching is designed to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts**
- **teachers and leaders use assessment well,** for example to help learners embed and use knowledge fluently or to check understanding and inform teaching. Leaders understand the limitations of assessment and do not use it in a way that creates unnecessary burdens for staff or learners
- teachers create an environment that allows the learner to focus on learning. The resources and materials that teachers select – in a way that does not create unnecessary workload for staff – reflect the provider's ambitious intentions for the course of study and clearly support the intent of a coherently planned curriculum, **sequenced towards cumulatively sufficient knowledge and skills for future learning and employment**

# Impact

- learners develop detailed knowledge and skills across the curriculum and, as a result, achieve well. Where relevant, this is reflected in results from national tests and examinations that meet government expectations, or in the qualifications obtained
- learners are ready for the next stage of education, employment or training. Where relevant, they gain qualifications that allow them to go on to destinations that meet their interests, aspirations and the intention of their course of study. They read widely and often, with fluency and comprehension.



# Ofsted: Inspection handbook

179. Inspectors will explore:

how carefully leaders have thought about what **end points the curriculum is building towards**, what pupils will be able to know and do at those endpoints, and how leaders have planned the curriculum accordingly. **This includes considering how the intended curriculum will address social disadvantage by addressing gaps in pupils' knowledge and skills.**

# Computing National Curriculum 2013

Purpose of study:  
A high-quality computing  
education equips pupils to use  
computational thinking and  
creativity to **understand and  
change the world.**

[DfE Computing National Curriculum 2013](#)



## Computing programmes of study: key stages 1 and 2

### National curriculum in England

#### Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and assess themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

#### Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

#### Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Schools are not required by law to teach the example content in [square brackets].

Published: September 2013

National  
Centre for  
Computing  
Education

Vision:

**Every child** in every school in  
England to have a **world-  
leading computing education.**

# 2017 Royal Society Report

- Address gender imbalance
- Improve the update of computing by 14 -16 year olds
- Support teachers
- Improve teaching of education through research to inform curriculum and pedagogy

## After the reboot: computing education in UK schools

SUMMARY



THE  
ROYAL  
SOCIETY

**Support**

# National Centre for Computing Education Consortium formed 2018

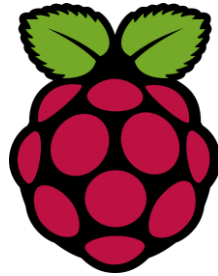
National  
Centre for  
Computing  
Education

## Teacher CPD in computing + teaching resources



[Computer hubs](#)

[Teach computing London & Berkshire](#)



[Raspberry Pi Foundation](#)  
& [FutureLearn](#)

Research + CPD + Curriculum



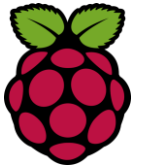
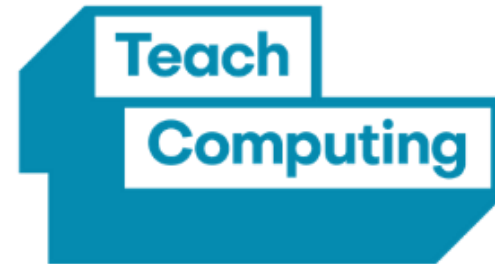
[British computing society](#)

Certification

# Teach Computing: One of NCCE programs

## Primary Toolkit

- [Certificates](#)
- [Courses](#) -Bursary: £65 to book: Your school: £220  
<https://teachcomputing.org/bursary>

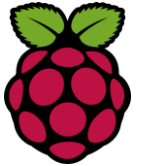
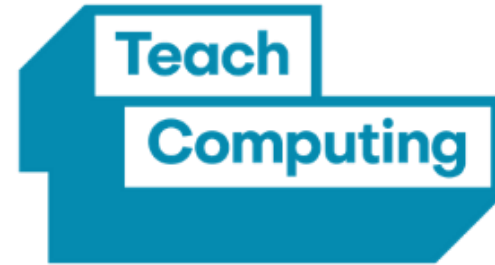


# Teach Computing: Curriculum resource

## Primary Toolkit

## Curriculum resource

- [Teach Computing curriculum](#) Open source
- [Example](#): Y2 Creating Digital Media

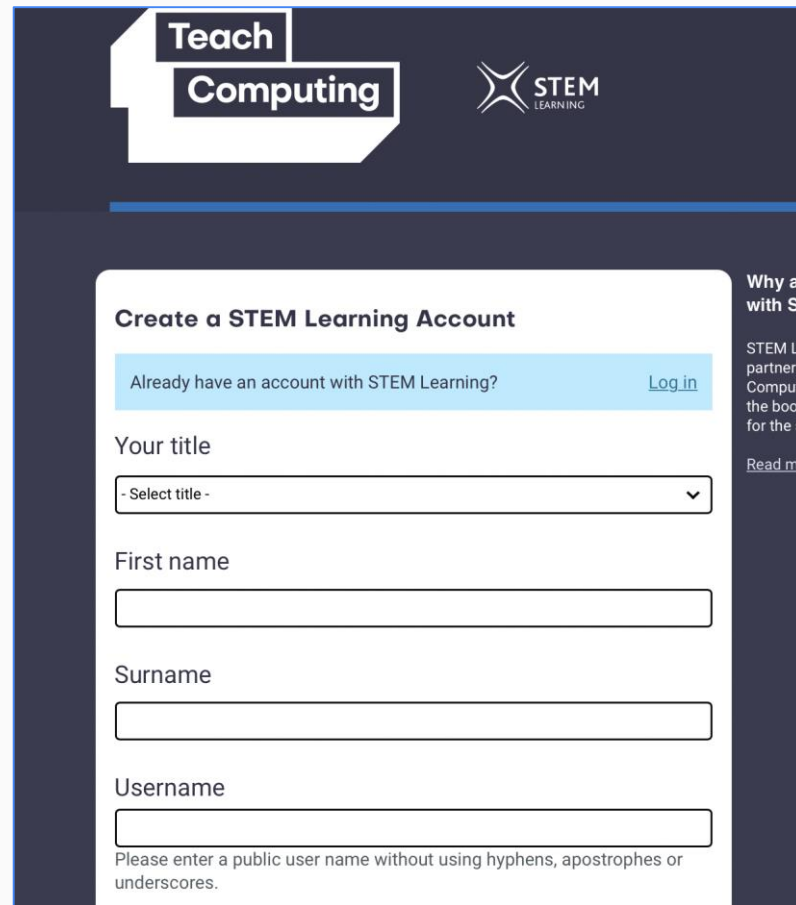




# Teach computing

## Sign-up

Curriculum  
Courses  
Certificate



The image shows a sign-up form for a STEM Learning account on the Teach Computing website. The page has a dark blue header with the 'Teach Computing' logo on the left and the 'STEM LEARNING' logo on the right. The main content area is white and contains the following elements:

- Create a STEM Learning Account**: The title of the form.
- Already have an account with STEM Learning?**: A light blue button with the text 'Log in' in a smaller font to its right.
- Your title**: A dropdown menu with the placeholder text '- Select title -' and a downward arrow.
- First name**: A text input field.
- Surname**: A text input field.
- Username**: A text input field.
- Instructions**: Below the username field, it says 'Please enter a public user name without using hyphens, apostrophes or underscores.'

On the right side of the page, there is a sidebar with the text 'Why are we here with STEM Learning?' and 'STEM Learning partners with the book for the school. Read more'.

[Link: Teach computing sign-up](#)

# Diversity and inclusion



## Diversity and inclusion

We believe that every individual, and group of individuals, should feel included and encouraged when engaging with computing education. We make sure that diversity and inclusion is integral to our planning, our programmes and materials, the way we work and how we behave. Within a culture that champions diversity and promotes inclusion, we know we are better able to advance our vision.

# Contributing partners

[Barefoot](#)

[Code Club](#)

[STEM](#)

[Ambassadors](#)

## Contributing partners

Our educational [partners](#) offer complementary programmes that enrich and enhance the curriculum, bringing computing and computer science to life.



### Barefoot

Deliver the computing curriculum brilliantly, with free workshops, helpful online guides and engaging lesson plans and resources. Barefoot makes computing easy to teach and fun to learn, with or without a computer.

[Discover Barefoot](#)



### Code Club

An extracurricular club for young people aged 9 to 13. Clubs are organised by teachers and volunteers, and supported by free projects and resources from Code Club.

[Start or join a club](#)



### STEM Ambassadors

Relatable professionals who support learning, raise aspirations and illuminate careers - including those in computing and the digital sector - face to face or virtually, free of charge.

[Engage with STEM Ambassadors](#)

The NCCE  
Computing  
Quality  
Framework  
for Schools  
SLT



<https://360bcs.swgfl.co.uk/>

# CAS communities

[New look launched this month.](#)

[Sign up for free](#)

[@CompAtSch](#)

[CASTV on YouTube](#)

[CAS Facebook](#)



**YouTube**



**Next steps**

# Identify priorities : Needs analysis

In delivering the computing curriculum what are the priorities in your school? :

- What are your staff CPD needs?
- Computing lead - What are your personal CPD,
- What resources do you need?
- What resource CPD do you need?

# Book a free half day curriculum review

- Toolkit to identify need and support.
- Establishing an action plan
- Highlighting relevant CPD



# Computing hub support form

- Complete form
- Will email to arrange time



## Computer Hub Support - Langley Grammar School

We can offer support with your computing curriculum and teaching so please complete this short form to request support.



\* Required

1. Name \*

Enter your answer



2. School \*

Enter your answer

[Link: Computing hub support form request](#)

3. Role \*

- Class teacher
- Computing lead
- Member of SLT
- Other

# Courses:

## Computing - London & Home Counties

- Concepts
- Skills
- Pedagogy

## Combination

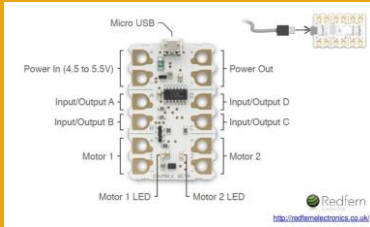
The screenshot shows the FutureLearn website interface. At the top left is the 'Teach Computing' logo. On the top right, there are links for 'Create an account' and 'Log in'. Below the logo is a navigation menu with dropdown arrows for 'Primary school', 'Secondary school', 'Training and support', 'Teaching resources', and 'About us'. A central announcement box contains text about 'Education recovery' and 'Online courses' with links to 'curated collection of CPD resources and support' and 'You may need to take action'. A large blue banner features the title 'Computing courses for teachers'. Below this, there is a descriptive paragraph about professional development courses. To the right, a section titled 'Bursary support' explains that bursaries are offered to teachers in state-funded education in England, with a link to 'Bursary information'. A light blue bar indicates that the search results are filtered by 'Computing - London and Home Counties' and includes a 'show all results' link. Below this, it says 'Showing 7 results'. The first result is titled 'An introduction to computer systems, networking and security in computer science - remote' with the code 'CP438'. The description for this result is 'Learn about the different components of computer hardware, including'. To the right of the result is a 'Filter courses' section with a 'Key Stage:' label and a dropdown menu currently set to 'Any level'.

[Link: London & Home Counties computer courses](#)

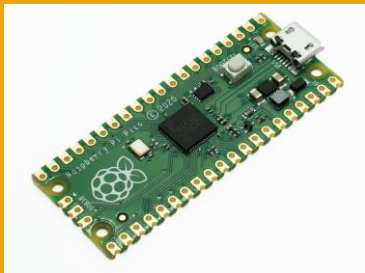
# Loaning Kit



Microbit



Crumble  
Controller



Pico  
boards

## Physical Kits Loan Request

We can provide your school with hardware help with the teaching of coding and computer-related subjects. We have class sets available of the following devices with all of the peripherals you will need to teach a unit from the teach computing curriculum for loan.

- Crumbles
- Micro:bits
- Raspberry Pi Picos

We can also provide CPD on how to use the physical kits.

This kits can be borrowed for 1 to 4 weeks per request and we will try to meet the needs of when you are planning to use the devices for a club or to match your curriculum plan.

Please submit your request into the form below, along with anything else you would like to know related to the request.

\* Required

1. First name \*

2. Surname \*

3. Role in school \*

[Link: Physical loan kits request form](#)

# Introductory courses for all teachers

- [Get Started Teaching Computing in Primary Schools: Preparing to teach 5 - 11 year olds](#) - 2 hours
- [Introduction to primary computing](#) - 1 day

# Courses for all teachers

- Primary programming and algorithms
- Programming Pedagogy in Primary Schools: Developing Computing Teaching
- Assessment of primary computing
- Assessing computational thinking in primary schools
- Teaching Computing Systems and Networks to 5- to 11-year-olds
- Teaching Physical Computing to 5-11 year olds
- Teaching Programming to 5 - 11 year olds
- Creating an Inclusive Classroom: Approaches to Supporting Learners with SEND in Computing

- Teaching key stage 1 computing Module 1
- Teaching key stage 1 computing Module 2

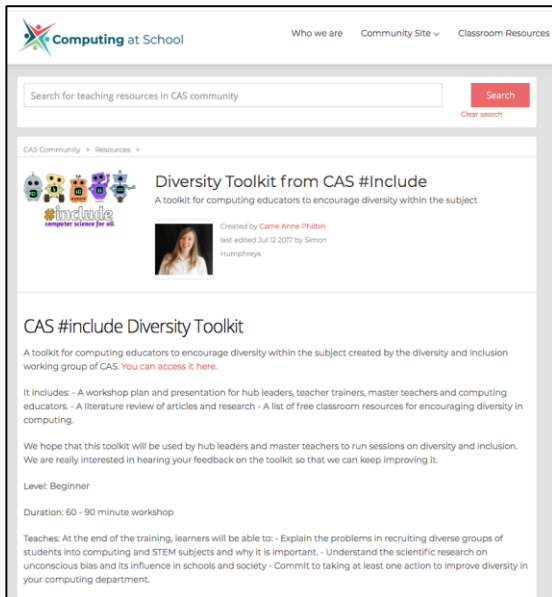
- Teaching key stage 2 computing Module 1
- Teaching key stage 2 computing Module 2
- Getting started in year 3
- Getting started in year 5

# Computer leaders

- Leading primary computing
- Authentic contexts for primary computing
- Computing on a budget
- Improving Computing Classroom Practice Through Action Research
- Outstanding computing for all
- Creating an Inclusive Classroom: Approaches to Supporting Learners with SEND in Computing
- Assessment of primary computing
- Assessing computational thinking in primary schools



# Addressing unconscious bias. Diversity Toolkit



Computing at School Who we are Community Site Classroom Resources

Search for teaching resources in CAS community Search

CAS Community Resources

### Diversity Toolkit from CAS #Include

A toolkit for computing educators to encourage diversity within the subject

Created by Carrie Anna Pihlin  
last edited Jul 12 2017 by Simon Humphreys

#### CAS #include Diversity Toolkit

A toolkit for computing educators to encourage diversity within the subject created by the diversity and inclusion working group of CAS. [You can access it here.](#)

It includes: - A workshop plan and presentation for hub leaders, teacher trainers, master teachers and computing educators. - A literature review of articles and research - A list of free classroom resources for encouraging diversity in computing.

We hope that this toolkit will be used by hub leaders and master teachers to run sessions on diversity and inclusion. We are really interested in hearing your feedback on the toolkit so that we can keep improving it.

Level: Beginner

Duration: 60 - 90 minute workshop

Teaches: At the end of the training, learners will be able to: - Explain the problems in recruiting diverse groups of students into computing and STEM subjects and why it is important. - Understand the scientific research on unconscious bias and its influence in schools and society - Commit to taking at least one action to improve diversity in your computing department.

[Link: CAS Diversity Toolkit](#)

## Gender Balance in computing project

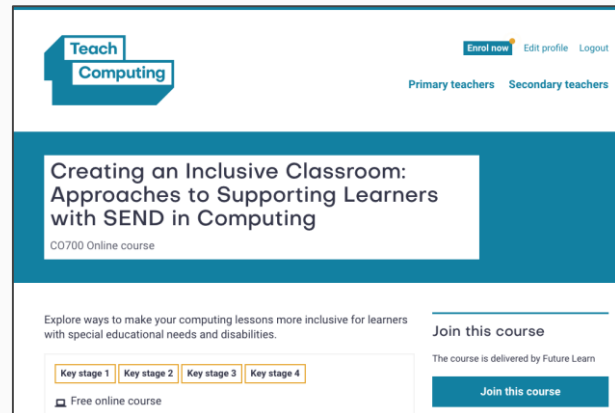


### New 'Gender Balance in Computing' project announced

30 April 2019



## Supporting Learners with SEND in Computing



Teach Computing Enrol now Edit profile Logout

Primary teachers Secondary teachers

### Creating an Inclusive Classroom: Approaches to Supporting Learners with SEND in Computing

C0700 Online course

Explore ways to make your computing lessons more inclusive for learners with special educational needs and disabilities.

Join this course

The course is delivered by Future Learn

Key stage 1 Key stage 2 Key stage 3 Key stage 4

Free online course

Join this course

[Link: Creating an Inclusive Classroom: Approaches to Supporting Learners with SEND in Computing](#)

# Outstanding primary computing for all

The screenshot shows the Teach Computing website interface. At the top left is the 'Teach Computing' logo. On the top right are links for 'Create an account' and 'Log in'. Below the logo is a navigation menu with dropdown arrows for 'Primary school', 'Secondary school', 'Training and support', 'Teaching resources', and 'About us'. A central announcement box contains the text: 'ANNOUNCEMENT Education recovery: We've developed a special curated collection of CPD, resources and wider support to inspire your teaching, improve your knowledge, inform your assessment and save you time whilst you address lost learning.' Below this is a large blue banner with the title 'Outstanding primary computing for all - face to face' and the subtitle 'CP005 Face to face course'. The main content area features a paragraph: 'Computing is for every child, and the school curriculum must allow for all children to succeed. Computing subject leaders can make inclusive, effective curriculum implementation happen, leading to success for all.' To the right of this paragraph is a 'Book this course' section with the text 'You need to be logged in to start the course.' and a blue button labeled 'Login to book this course'. Below the button is the text 'Not got a STEM Learning account? Create an account'. On the left side of the main content area, there are filters for 'Key stage 1' and 'Key stage 2', a location pin icon for 'Face to face course', a clock icon for '1 day', and a dropdown menu for 'View locations and dates'. At the bottom of the main content area is a paragraph: 'Some children seem to naturally flourish in computing, while others need more support to reach their potential. This CPD aims to give every child an outstanding computing education in primary school, opening up future study and employment routes and closing attainment gaps while building a

[Link: Outstanding primary computing for all](#)

# Book courses coming up this half term ...

Teaching key stage 1 computing - Module 2 - remote CE451

22 & 25 November 13:00-15:30

<https://ncce.stem.org.uk/cpdredirect/b9fc9cbd-5033-ec11-b6e6-000d3a871225>

Leading Primary computing – remote CE456

30 November 9:00-15:00 & 7 December 9:00-14:30

<https://ncce.stem.org.uk/cpdredirect/7c8c3dfe-eb3b-ec11-8c62-0022481ad37e>

Teaching key stage 2 computing - Module 2 –remote CE453

6 December 13:00-15:40 & 9 December 13:00-15:30

<https://ncce.stem.org.uk/cpdredirect/9caa1598-f73b-ec11-8c62-0022481adfc5>

Primary Deep Dive Webinar – remote (free)

14 December 16:00-17:30

<https://ncce.stem.org.uk/cpdredirect/d47ed3b4-0b30-ec11-b6e6-000d3a8719b6>

# Questions

# Recap

- The importance of computing for all.
- Where to find support.
- What to do next.

## To do ...

- Needs analysis sign up.
- Curriculum action plan
- Course sign up / request.

# Next sessions

- 17 March 22
- 24 May 22

What would like to have in the next session?

# Evaluation

Please could you complete the evaluation form before you sign off as this will give HEP valuable feedback.



[HEP Primary Subject Network Evaluation](#)



# Contacts

Stacey Jenkins: [staceyjenkins@lgs.slough.sch.uk](mailto:staceyjenkins@lgs.slough.sch.uk)

Louise Wade : [l.wade@stem.org.uk](mailto:l.wade@stem.org.uk)

Contact us via: [teachcomputing@lgs.slough.sch.uk](mailto:teachcomputing@lgs.slough.sch.uk)

Follow us on Twitter: [@CompHubLGS](https://twitter.com/CompHubLGS)

Web page: [LGS Computing Hub](#)

**Thank you**

