

Non GCSE Action Plan Support **Guide**

Computer Science not seen as appropriate

Overview

Dispel the notion that CS is “not for our students”. There can be a misconception that Computer Science/Computing is purely about computers and programming, but there is much more than simply that to the subject. Computational Thinking is the key which is about logical analysis and problem-solving, transferable skills applicable to any subject thus strengthening school-wide performance. Students are likely to have experienced some computing in primary schools so those that wish to take the subject further would likely seek the opportunity to do so at secondary school. Thus a non-computing curriculum might be a reason for not enrolling at a school with a lacklustre approach to CS. A high proportion of PP/SEND/lower ability students might suggest an unwillingness to engage with computing, but as GCSE CS is a 9-1 qualification it is designed for a wide continuum of ability. The National Curriculum prescribes a requirement to deliver computing at both KS3 and KS4 and not doing so might be judged as ‘narrowing the curriculum’. High dependence on non-specialists to deliver CS at KS3 might indicate that the school is not assured of reaching potential GCSE grades. The Teach Secondary Computing Certificate has pathways for teachers to support subject knowledge and pedagogy enhancement. The school can raise demand for CS by offering links with outside agencies through STEM Ambassadors and arrange in-school visits and workshops, complete the I Belong programme to increase equity in computer science, and engage in competitions that occur nationally and internationally to raise the profile of the subject and thus generate demand in pupils who feel disenfranchised.

Subject Matter Expert Support

Suggested Support

- Support on how to design a curriculum aimed at 1-3 Students and 7-9 Students, including differentiation
- Support on upskilling teachers to give them subject confidence to inspire students
- Support to design and develop an inclusive and engaging KS3 curriculum
- Guidance on courses available that have PDEs about stretch, challenge and support.
- Guidance with the adoption of the Teach Computing Curriculum
- Introduction to NCCE/STEM Communities for teacher peer support
- Support in arranging inspirational visits.
- Support in using STEM Ambassadors.
- Support linking with local computing hub to link with primary schools.
- Support in arranging competitions.
- Support in educating parents/carers/students of career pathways that involve CS and why it is a crucial subject.

Suggested Actions

- Register the school for the CQF and complete sections on Leadership and Vision, Impact on Outcomes, and Curriculum and Qualifications and particularly Equity, Diversity, Inclusion and SEND to indicate next moves for the school.
- Utilise [ISAAC Computer Science](#) online environment for GCSE
- Use the documentation supporting the [TeachComputing Curriculum](#).
- Encourage enrolment on the [I Belong programme](#).
- Encourage teachers to enrol on the [Secondary Certificate](#).
- [Register for STEM Ambassador links](#)
- [Register for a Code Club](#)
- Visit the [TeachComputing Subsidies page](#) to see what the school is eligible for.
- Set up KS3 and KS4 [code clubs](#)

CPD and Professional Learning

Courses

CSA

[Supporting GCSE computer science students at grades 1-3](#)

Online Courses

[Creating an Inclusive Classroom: Approaches to Supporting Learners with SEND in Computing Improving Computing Classroom Practice Through Action Research](#)

[Impact of Technology: How To Lead Classroom Discussions](#)

[Programming Pedagogy in Secondary Schools: Inspiring Computing Teaching](#)

F2F/Remote Course

[Adapted teaching and effective learning interventions in secondary computing](#)

[Behaviour for learning in a computing environment - short course](#)

Pathways

CSA Pathways:

Our CSA learning pathways are designed for teachers at different levels and provide a set of recommended courses to help you get started with the [Computer Science Accelerator programme](#):

[New to computing](#)

[New to algorithms and programming](#)

[New to computer systems](#)

[Secondary Computing Certificate](#) to increase opportunities for local networking and sharing ideas with other Heads of Department through [STEM communities](#).

[Creative digital media projects](#)
[Encouraging girls into GCSE computer science - remote - short course](#)
[Programming Pedagogy in Secondary Schools: Inspiring Computing Teaching](#)
[Solving computational problems in KS3 computing](#)
[Computing for specialist teachers of autistic students](#)

Reading

[Why waste years? Let's inspire careers!](#)
[Introducing the Teach Computing Curriculum](#)
[Approaches to developing progression for teaching computing](#)
[National Careers week](#)
[What helps girls enjoy their first steps in coding?](#)
[Why do girls choose computing?](#)
[What real-world problems do girls want to solve using computing?](#)
[How do girls choose their computing role models?](#)
 Careers information as blogs about adults as computer scientists and their pathways:

- A [Knowledge Engineer](#) from Alexa at Amazon
- A [Radiotherapy Research Physicist](#) and their impact on health and treating cancer patients
- A [researcher at the British Antarctic Survey](#) using machine learning to tackle climate change
- A [Transformation Programme IT Executive](#) at Manchester Airport Group

Pedagogy Quick Reads:
[Using PRIMM](#) to structure programming lessons
[Using observation techniques](#) to record student behaviour for research or evaluation
[Using semantic waves to improve explanations and learning activities in computing](#)
[Cognitive Load Theory](#)

Podcasts:
[Teach Computing Curriculum](#)
[Peer instruction](#) in Computing
[Supporting all students](#)
[Cognitive Load Theory](#) in Computing

Resources

Teach Computing Curriculum

Everything you need to teach computing at key stages 1 to 4. Resources include lesson plans, slides, activity sheets, homework, and assessments

Isaac Computer Science

The free online platform for students and teachers. Use it in the classroom. Use it for homework. Use it for revision.

Pedagogy Resources

Effective pedagogy is at the heart of good teaching and learning; successful computing teachers combine their knowledge of the subject with evidence-based teaching practices.

Knowledge Banks

Developed by the National Centre for Computing Education, this collection contains quality-assured question banks which can be used with Key Stage 3 computing and GCSE computer science students. The collection includes a series of 10 topics, covering areas across the computing curriculum. Each topic area includes two sets of questions, both setup as both Google and Microsoft Forms, allowing you to duplicate into your Google / Microsoft accounts to use with your students.

Wider offer - STEM Learning

STEM Ambassadors

A STEM Ambassador is a voluntary role undertaken by someone who has a passion and/or professional knowledge of STEM subjects.

How it could work with this challenge

Ambassadors could support in helping senior leaders and students that CS is appropriate for everyone and is essential part of the curriculum and explain the careers calling out for computing experts

STEM Community

A community of over 20,000 teachers; technicians; TA's and governors, all involved in the STEM education of young people supporting and collaborating with each other to improve outcomes

How it could work with this Challenge

Come and see how other teachers deal with teaching computing to under represented groups, children living with disadvantage, SEND or low expected grades.

Enrichment

There are plenty of ways you can deliver enrichment activities and find volunteers to support you. Encourage young people to develop important life skills through enrichment and engage with the wider community in practical, enjoyable, and meaningful ways.

How it could work with this challenge

In KS3 if students were to be part of code clubs, regional and national competitions they would gain a love and passion for the subject. This will support them in KS4 no matter who they are.