Teach Computing

National Centre for Computing Education

Funded by Department for Education

National Centre for Computing Education

Governors and Trustees

Supporting your schools computing provision

Shorifa Khanam
Subject Matter Expert

Teach Computing
NW London, West
Herts & Beds.

Sandringham School.

National Centre for Computing Education

GOVERNORS AND TRUSTEES

SUPPORTING YOUR SCHOOL'S COMPUTING PROVISION

The National Centre for Computing Education is DfE funded to support delivery of computing in state schools in England.

We will be hosting a webinar for both primary and secondary governors. Click here to register.

MONDAY 12TH JULY
16.00 - 17.00

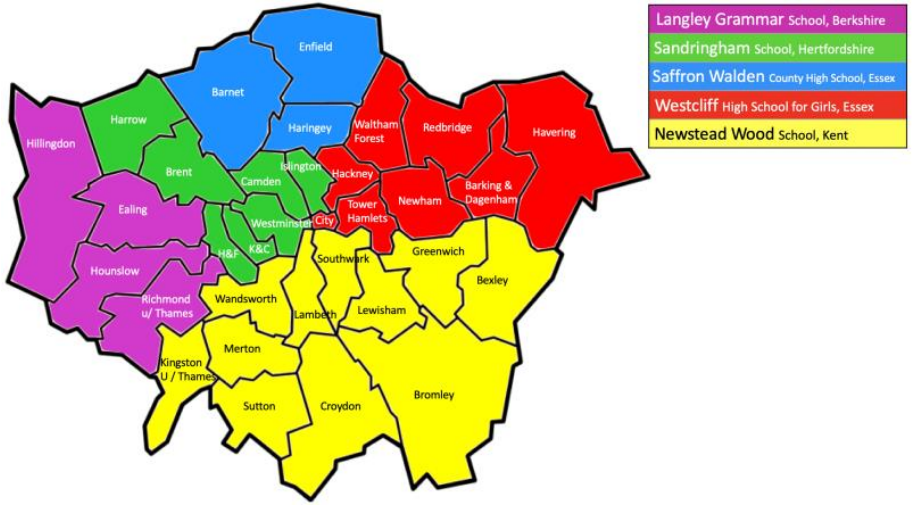
Teach Computing
London & Berkshire.

Langley Grammar School.

National Centre for Computing Education

Hertfordshire, Luton and Central Bedfordshire

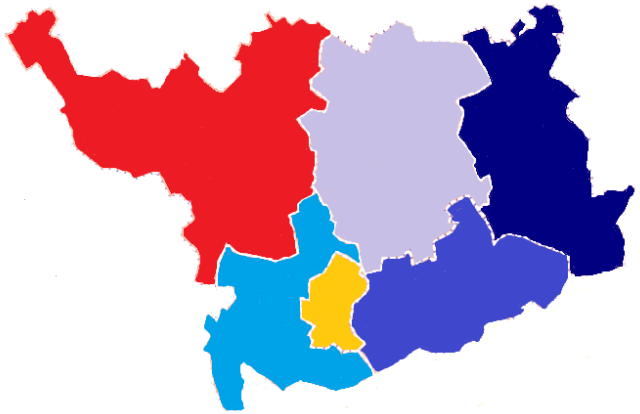
@ComputingHubSAC



Berkshire, Reading and Surrey

@CompHubLGS

Alban Teaching School Hub



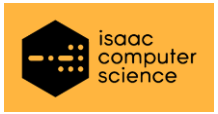
- Dacorum
- Hertsmere
- St Albans and Harpenden
- Three Rivers
- Watford
- Welwyn Hatfield

TSH BERKSHIRE

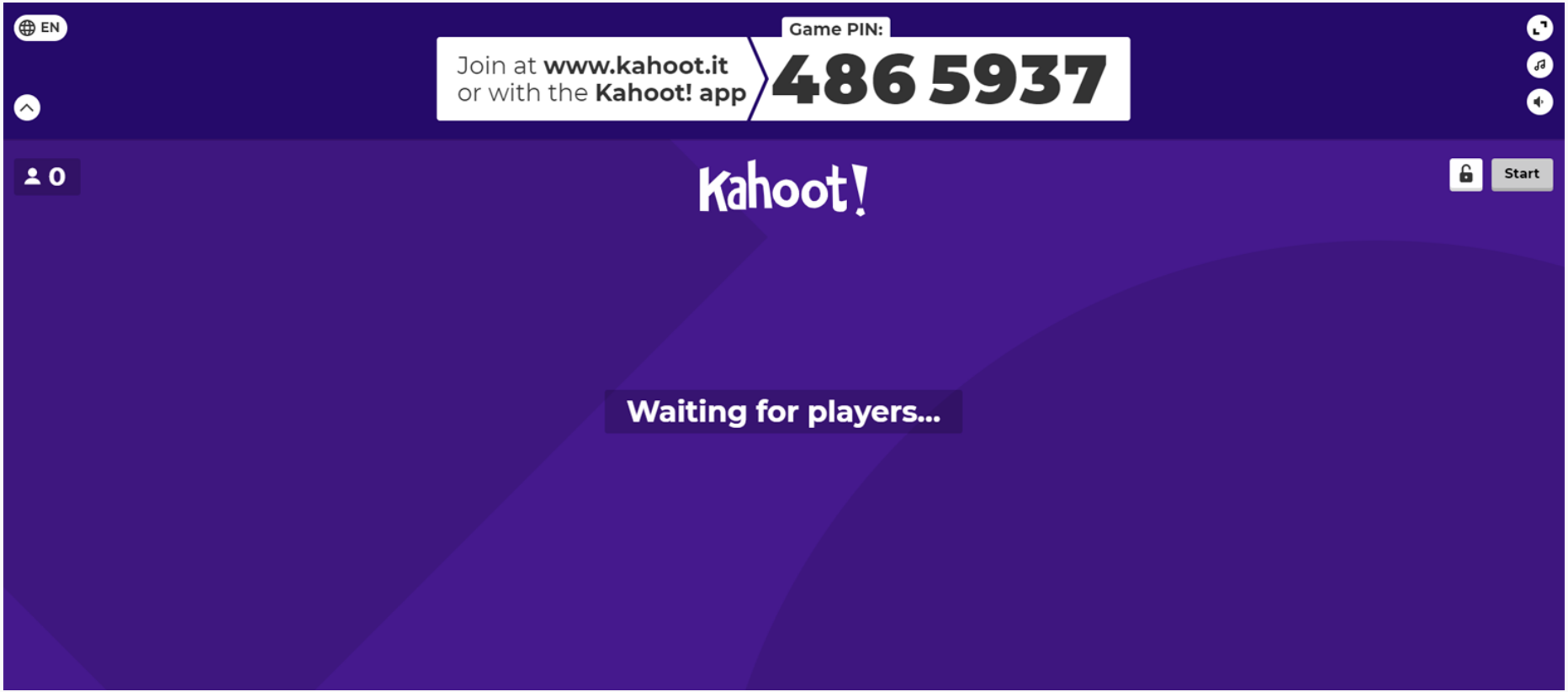
What is the NCCE?

National Centre for Computing Education

KS1-4



KS5



Join at www.kahoot.it

Game PIN: 4865937

Despite 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. No Longer Optional: Employer Demand for Digital Skills June 2019

“Our vision is for every child in every school in England to have a world-leading computing education”

Our Vision

NCCE Impact Report Nov 2020

The NCCE's first two years in numbers:

- 29,500 teachers engaged from 8,500 primary schools and 3,000 secondary schools.
- 1250 schools engaged with our Subject Matter Experts
- 7,600 teachers have accessed NCCE continuing professional development (CPD) courses.
- 2,000 teachers and 18,000 students using Isaac Computer Science to support A level Computer Science.
- 1,300 teachers have now completed the programme to teach Computer Science GCSE.
- 34 Computing Hubs in schools across England acting as local champions for Computer Science.
- 275 Computing at School (CAS) communities providing support and networking.
- 500 hours of learning materials in our Teach Computing Curriculum (TCC).
- 125,000 TCC units of work downloaded.

Why should computing be a priority for governors?

➔Computing is a foundation subject in Key Stages 1 to 4
➔Computing Provides skills for a digital world
➔Computing poses recruitment challenges

Computing is a foundation subject

Key Stage 4

All pupils must have the opportunity to study aspects of information technology and computer science at sufficient depth to allow them to progress to higher levels of study or to a professional career.

All pupils should be taught to:

develop their capability, creativity and knowledge in computer science, digital media and information technology
develop and apply their analytic, problem-solving, design, and computational thinking skills
understand how changes in technology affect safety, including new ways to protect their online privacy and identity, and how to report a range of concerns

https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study#key-stage-4

Deep Dives in computing are happening!

Leaders have introduced a new computing curriculum. However, the order of coverage is not yet fully planned and not all aspects of the subject are currently taught. Further work is needed to ensure that all aspects of the subject are planned and taught.

"…Leaders are in the process of improving the curriculum plans for subjects such as computing and art, where the sequence of knowledge and skills for pupils to learn successfully is not as securely in place."

Plans for learning in other subjects such as geography, computing and art are in place, but the knowledge and skills that pupils need to learn are not so clearly identified.

Some subjects within the curriculum are more developed than others. In computing, for example, the curriculum is well thought out. Teachers think of the order in which they teach lessons in this subject so that pupils achieve well.

Are you ready for a deep dive in computing?

- ➔ how does your curriculum meet the needs of all your students?
- ➔ how does your KS3 offering differ from the National Curriculum and why?
- ➔ what topics do you teach in each year group?
- ➔ why is your curriculum sequenced in this way?
- ➔ have you had access to CPD? What has the impact of this been on your workload?

How the NCCE can help

Teach Computing Curriculum

World-class lesson plans, unit guides and teacher guides to help you **teach computing**.

Our curriculum contains everything you need to teach computing at key stages 1 to 4, including lesson plans, slides, worksheets, homework and assessment.

All of the content

- ➔ Is completely free to access
- ➔ Is created by subject experts
- ➔ Is based on the latest pedagogical research and teacher feedback.
- ➔ Provides an innovative progression framework where computing content (concepts, knowledge, skills, and objectives) has been organised into interconnected networks we call learning graphs.

https://teachcomputing.org/curriculum

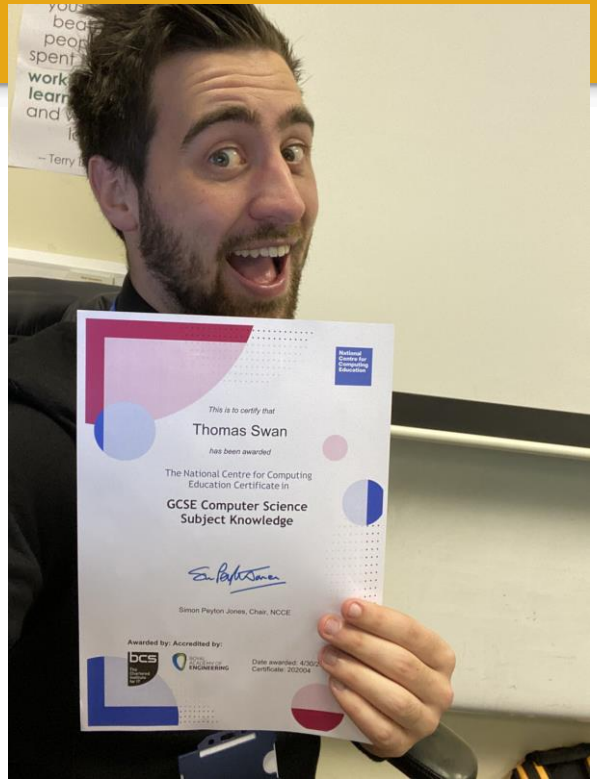
NCCE Teacher CPD

- ➔ Teachers have expert knowledge of the subjects that they teach. If they do not, they are **supported to address gaps in their knowledge so that pupils are not disadvantaged by ineffective teaching.**
- ➔ ***Leaders focus on improving teachers' subject, pedagogical and pedagogical content knowledge** in order to enhance the teaching of the curriculum and the appropriate use of assessment. The practice and subject knowledge of staff, including newly qualified teachers, build and improve over time.*

Ofsted Framework 2019

Computer Science Accelerator Programme

- ➔ Subject knowledge enhancement programme up to GCSE level
- ➔ Obtain a professionally-recognised training certificate, awarded by BCS, The Chartered Institute for IT
- ➔ Blended programme of online courses and face-to-face/remote CPD
- ➔ Graduates of the programme receive free access to all NCCE courses thereafter and can work towards the **Teach Secondary Computing Certificate** which develops leadership and pedagogy



Bursaries and fees

Funded by Department for Education

The Computer Science Accelerator is free to all teachers and trainee teachers in state maintained schools and colleges in England

- Practising teachers will receive generous bursaries of up to £1800:
  - £300 ring-fenced bursary (to support teacher's development) upon completion of two courses
  - £620 for completing the programme
  - £220 per day of face-to-face CPD or Remote CPD which takes place during the school day up to four days (£880)
- Schools can put as many teachers through the programme as they require

- Trainee teachers receive a deferred bursary once they gain employment

Funded consultancy with Computing Subject Matter Experts

Secondary

School Engagement Programme

- ➔ **Subject Matter Experts** engaging with schools and colleges that require support:
  - ‘Non-GCSE’ Schools*
  - Priority Schools (LAD 5 & 6)

*
- *Schools that do not offer GCSE computer Science*
- *schools who have dropped it recently*
- *Schools who are at risk of dropping GCSE*
- *Recent adopters (criteria to be met)*

Non-GCSE Schools could receive:

- ➔ Up to 2.5 days support (fully funded) from a **Subject Matter Expert**
- ➔ **Bursary of £1400**

Available Once an action plan has been created and agreed and one teacher is signed up to CSA or a course.

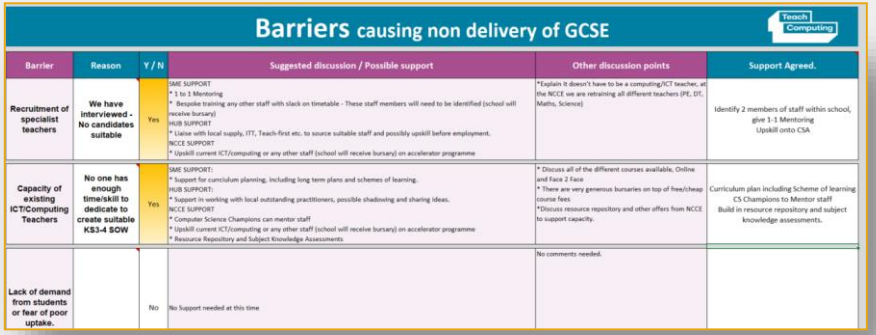
- ➔ **Bursary of £4000**

Available once a school commits to offering GCSE Computer Science

Non-GCSE School Support

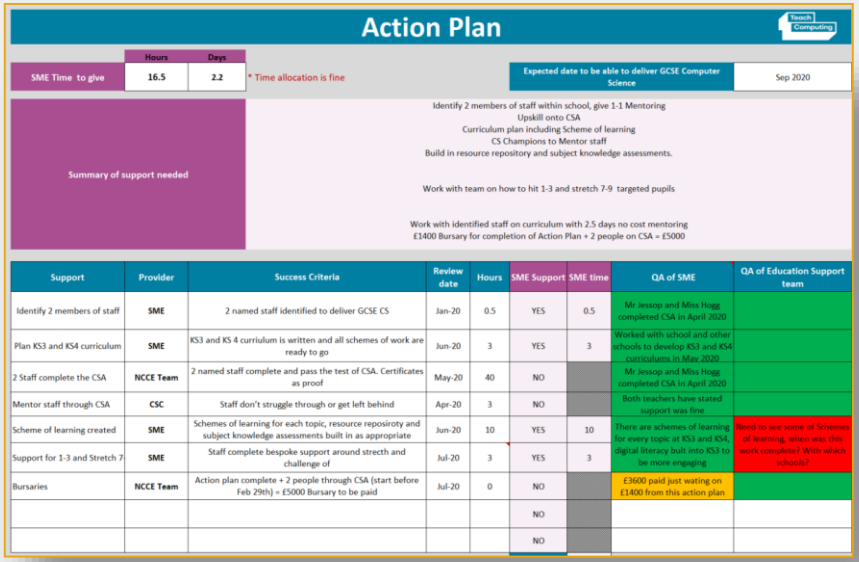
SMEs work with Senior Leaders and HOD, using a dedicated Toolkit to

- ➔ Analyse the reasons for not offering (barrier) - Discuss possible support to remove barriers
- ➔ Create an action plan
- ➔ Support school to achieve the action plan



Barriers causing non delivery of GCSE

Barrier	Reason	Y / N	Suggested discussion / Possible support	Other discussion points	Support Agreed.
Recruitment of specialist teachers	We have interviewed - No candidates suitable	Yes	SME SUPPORT * 1 to 1 Mentoring * Bespoke training any other staff with slack on timetable - These staff members will need to be identified (school will receive bursary) HUB SUPPORT * Liaise with local supply, ITT, Teach-first etc. to source suitable staff and possibly upskill before employment. NCCE SUPPORT * Upskill current ICT/computing or any other staff (school will receive bursary) on accelerator programme	*Explain it doesn't have to be a computing/ICT teacher, at the NCCE we are retraining all different teachers (PE, DT, Maths, Science)	Identify 2 members of staff within school, give 1-1 Mentoring Upskill onto CSA
Capacity of existing ICT/Computing Teachers	No one has enough time/skill to dedicate to create suitable KS3-4 SOW	Yes	SME SUPPORT: * Support for curriculum planning, including long term plans and schemes of learning. HUB SUPPORT: * Support in working with local outstanding practitioners, possible shadowing and sharing ideas. NCCE SUPPORT * Computer Science Champions can mentor staff * Upskill current ICT/computing or any other staff (school will receive bursary) on accelerator programme * Resource Repository and Subject Knowledge Assessments	* Discuss all of the different courses available, Online and Face 2 Face * There are very generous bursaries on top of free/cheap course fees *Discuss resource repository and other offers from NCCE to support capacity.	Curriculum plan including Scheme of learning CS Champions to Mentor staff Build in resource repository and subject knowledge assessments.
Lack of demand from students or fear of poor uptake.		No	No Support needed at this time	No comments needed.	



Action Plan

	Hours	Days			
SME Time to give	16.5	2.2	* Time allocation is fine	Expected date to be able to deliver GCSE Computer Science	Sep 2020

Summary of support needed

Identify 2 members of staff within school, give 1-1 Mentoring
Upskill onto CSA
Curriculum plan including Scheme of learning
CS Champions to Mentor staff
Build in resource repository and subject knowledge assessments.

Work with team on how to hit 1-3 and stretch 7-9 targeted pupils

Work with identified staff on curriculum with 2.5 days no cost mentoring
£1400 Bursary for completion of Action Plan + 2 people on CSA = £5000

Support	Provider	Success Criteria	Review date	Hours	SME Support	SME time	QA of SME	QA of Education Support team
Identify 2 members of staff	SME	2 named staff identified to deliver GCSE CS	Jan-20	0.5	YES	0.5	Mr Jessop and Miss Hogg completed CSA in April 2020	
Plan KS3 and KS4 curriculum	SME	KS3 and KS 4 curriculum is written and all schemes of work are ready to go	Jun-20	3	YES	3	Worked with school and other schools to develop KS3 and KS4 curriculums in May 2020	
2 Staff complete the CSA	NCCE Team	2 named staff complete and pass the test of CSA. Certificates as proof	May-20	40	NO		Mr Jessop and Miss Hogg completed CSA in April 2020	
Mentor staff through CSA	CSC	Staff don't struggle through or get left behind	Apr-20	3	NO		Both teachers have stated support was fine	
Scheme of learning created	SME	Schemes of learning for each topic, resource repository and subject knowledge assessments built in as appropriate	Jun-20	10	YES	10	There are schemes of learning for every topic at KS3 and KS4, digital literacy built into KS3 to be more engaging	Need to see some of Schemes of learning, when was this work complete? With which schools?
Support for 1-3 and Stretch 7	SME	Staff complete bespoke support around strecth and challenge of	Jul-20	3	YES	3		
Bursaries	NCCE Team	Action plan complete + 2 people through CSA (start before Feb 29th) = £5000 Bursary to be paid	Jul-20	0	NO		£3600 paid just wating on £1400 from this action plan	
					NO			
					NO			

Priority School Support

➔ Heads of Dept. and Teachers

Analyse the needs of the department

Discuss possible support over the coming years

➔ Create a department action plans

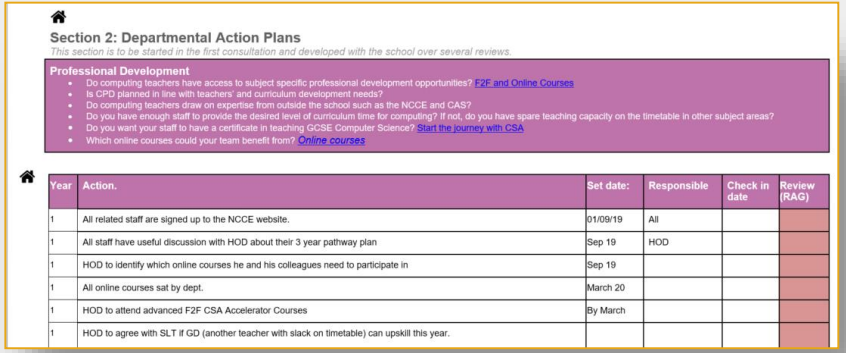
➔ Create teacher CPD plans

➔ Support school in the action plan

0.5 days

With other schools with similar need

➔ SME will support this year, department will have a 3 year plan.



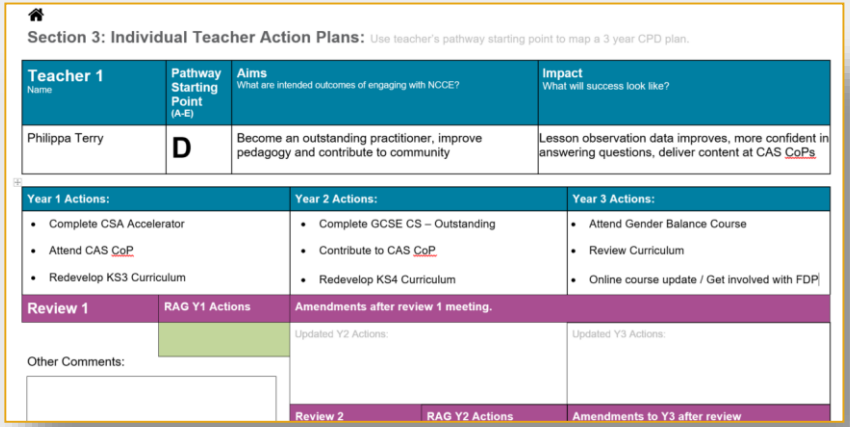
Section 2: Departmental Action Plans

This section is to be started in the first consultation and developed with the school over several reviews.

Professional Development

- Do computing teachers have access to subject specific professional development opportunities? F2F and Online Courses
- Is CPD planned in line with teachers' and curriculum development needs?
- Do computing teachers draw on expertise from outside the school such as the NCCE and CAS?
- Do you have enough staff to provide the desired level of curriculum time for computing? If not, do you have spare teaching capacity on the timetable in other subject areas?
- Do you want your staff to have a certificate in teaching GCSE Computer Science? Start the journey with CSA
- Which online courses could your team benefit from? *Online courses*

Year	Action.	Set date:	Responsible	Check in date	Review (RAG)
1	All related staff are signed up to the NCCE website.	01/09/19	All		
1	All staff have useful discussion with HOD about their 3 year pathway plan	Sep 19	HOD		
1	HOD to identify which online courses he and his colleagues need to participate in	Sep 19			
1	All online courses sat by dept.	March 20			
1	HOD to attend advanced F2F CSA Accelerator Courses	By March			
1	HOD to agree with SLT if GD (another teacher with slack on timetable) can upskill this year.				



Section 3: Individual Teacher Action Plans: Use teacher's pathway starting point to map a 3 year CPD plan.

Teacher 1 Name	Pathway Starting Point (A-E)	Aims What are intended outcomes of engaging with NCCE?	Impact What will success look like?
Philippa Terry	D	Become an outstanding practitioner, improve pedagogy and contribute to community	Lesson observation data improves, more confident in answering questions, deliver content at CAS CoPs

Year 1 Actions:	Year 2 Actions:	Year 3 Actions:
• Complete CSA Accelerator	• Complete GCSE CS – Outstanding	• Attend Gender Balance Course
• Attend CAS CoP	• Contribute to CAS CoP	• Review Curriculum
• Redevelop KS3 Curriculum	• Redevelop KS4 Curriculum	• Online course update / Get involved with FDP

Review 1	RAG Y1 Actions	Amendments after review 1 meeting.	
		Updated Y2 Actions:	Updated Y3 Actions:

Other Comments:

Review 2	RAG Y2 Actions	Amendments to Y3 after review

Primary Teach Computing Courses

Available now (Remote & F2F)

- Introduction to primary computing
- Primary programming and algorithms
- Teaching and leading key stage 2 computing - Module 1
- Teaching and leading key stage 1 computing - Module 2
- Teaching and leading key stage 1 computing - Module 1
- Teaching and leading key stage 2 computing - Module 2
- Leading Primary Computing
- Outstanding primary computing for all - Coming soon ~ Pilot
- Assessment of primary computing - Coming soon

Primary

Certification

Professional development programme designed to support teachers from all backgrounds wanting improve their computing knowledge

Complete

- ➔ One F2F course
- ➔ One online course
- ➔ Contribute to online discussion (CAS forum)

Plus 1 of:

- ➔ Host or attend Barefoot Workshop
- ➔ Attend CAS CoP meeting
- ➔ Review a resource on CAS

Plus 1 of:

- ➔ Lead a session at a regional/national conference
- ➔ Run an after school code club
- ➔ Lead a CAS CoP

teachcomputing.org/primary-certificate

Bursaries and fees

Funded by
Department for Education

We offer bursaries to state-funded schools to enable teachers to participate in remote and face-to-face courses during the school day. Bursaries are not available for sessions starting after 2:30pm.

One bursary per state-funded school can be claimed in a given academic year.

➔ Course fee: £35 per day
➔ Bursary (one teacher per school): £220 per day

Funded consultancy with Computing Subject Matter Experts

Primary

Priority School Support

➔ Heads of Dept. and Teachers

Analyse the needs of the department

Discuss possible support over the coming years

➔ Needs analysis

What is the starting point of the teachers and the maturity of the subject in school, how can we move both along

➔ Create an action plan

What support and CPD can be put in place

What actions does the school and its teachers need to take.

➔ Support school in the action plan

0.5 days equivalent of support, school can set actions over a 1-3 year period, depending on

NCCE Secondary Engagement Toolkit

Needs Analysis, Staff Development, Support and Action planning

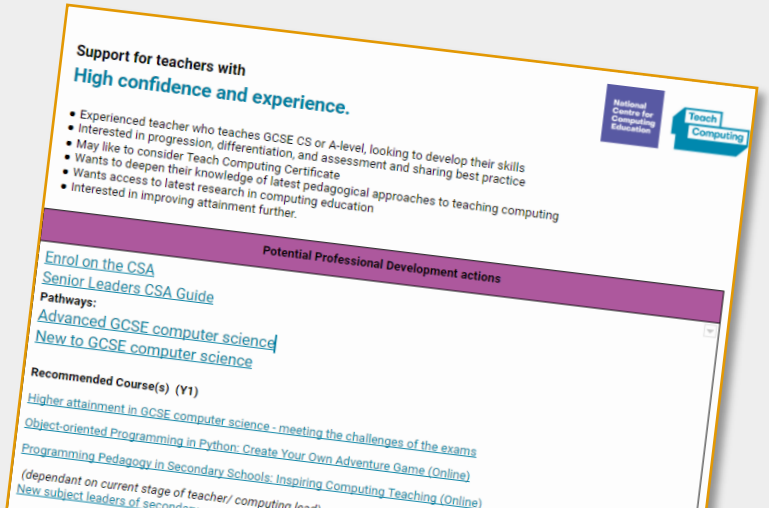
Pre-Consultation	Development of Staff	Action Planning
Compare Schools Secondary Page	Low confidence and low experience Some confidence and experience High confidence and experience	Curriculum Development Support Exemplar Action plan

Introduction

This toolkit is designed to help school leadership teams and computing leads to develop computing and non computing staff as well as the school's computing and computer science provision. Your subject matter expert will analyse your needs, direct you to suitable face to face/remote and online courses that will support staff development. They will look at what bespoke support they can offer you and work with you to develop actions to be complete over a 1 -3 year time period.

The toolkit will also help navigate your way through the training courses, teach computing curriculum, communities, bursaries, certification, and other support from the National Centre for Computing Education. Take a look at our impact report

School Name	MAT Name *If applicable*	Consultation Start Date
School Contact Name and Position	**SME Name**	**Local Computing Hub**
CS Champion Name If there is a need for CSA support		**Quality Assured** - *Name & Date* *to be complete by EdLead at NCCE*



Support for teachers with

High confidence and experience.

- Experienced teacher who teaches GCSE CS or A-level, looking to develop their skills
- Interested in progression, differentiation, and assessment and sharing best practice
- May like to consider Teach Computing Certificate
- Wants to deepen their knowledge of latest pedagogical approaches to teaching computing
- Wants access to latest research in computing education
- Interested in improving attainment further.

Potential Professional Development actions

Enrol on the CSA

Senior Leaders CSA Guide

Pathways:

Advanced GCSE computer science

New to GCSE computer science

Recommended Course(s) (Y1)

Higher attainment in GCSE computer science - meeting the challenges of the exams

Object-oriented Programming in Python: Create Your Own Adventure Game (Online)

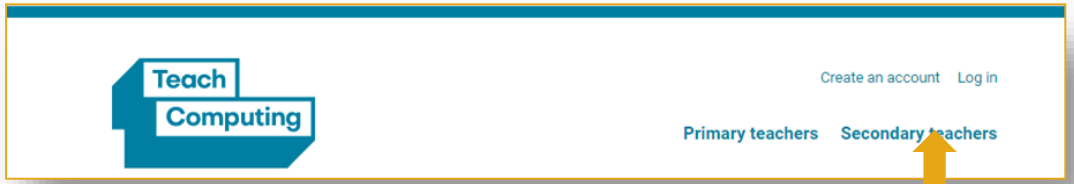
Programming Pedagogy in Secondary Schools: Inspiring Computing Teaching (Online)

(dependant on current stage of teacher/ computing lead)

New subject leaders of secondary

How do I request support?

➔ There is a form you can complete from https://teachcomputing.org/secondary-teachers



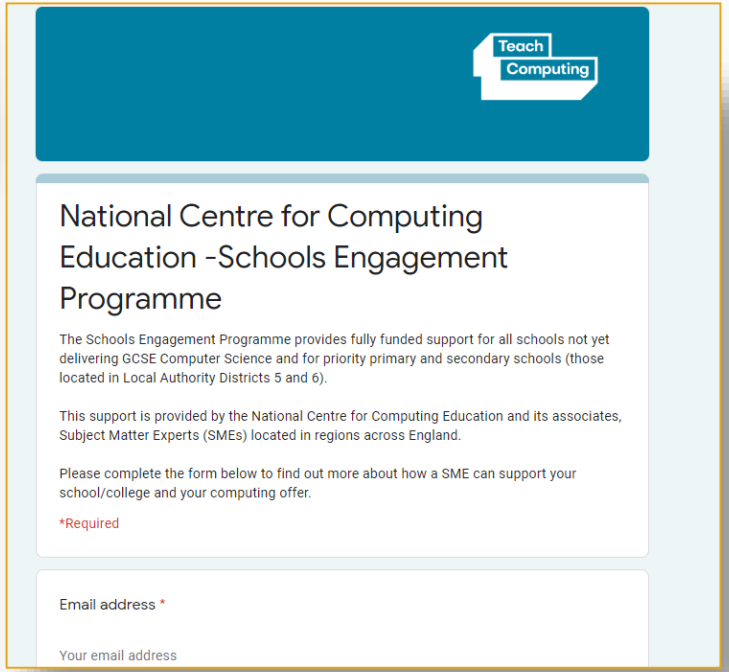
Your local computing community

Hubs

Computing Hubs provide local, responsive and tailored support to teachers across England. They are led by schools and colleges with an exceptional track record in teaching computing. Find your local hub.

Subject Matter Experts

Schools and colleges that are not currently offering GCSE computer science, or those which are based in Local Authority Districts 5 and 6, are eligible for fully-funded support from a subject expert to help improve their delivery of computing. Contact your local Subject Matter Expert.



Your Local Hub(s)

- ➔ Our network of Computing Hubs are led by schools and colleges across England with an exceptional track record in teaching computing.
- ➔ They deliver face-to-face courses and provide local support for teachers in primary and secondary schools in their area.
- ➔ We also have a number of Regional Delivery Partners that deliver courses locally and support our network of Computing Hubs.

https://teachcomputing.org/hubs

Questions for governors to ask school leaders

- ➔ How are computing subject leader and teachers supported to develop their subject knowledge?
- ➔ Is computing/computer science sustainable in the school?
- ➔ Are there teachers of other subjects with spare capacity, who could develop computing as a second subject?
- ➔ If we are not offering computer science at GCSE, how can we work towards this?
- ➔ Is the school benefiting from DfE funded training and bursaries available from the NCCE? (direct them to https://teachcomputing.org/secondary-senior-leaders)

https://teachcomputing.org/governors-and-trustees

Thank you

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