BCS Schools and Colleges Committee Workshop on policies to address the shortage of computing teachers across the UK

About this document

The BCS Schools and Colleges Committee brings together experts on education from across the UK with the specific aim of sharing and co-developing approaches to issues that challenge all four UK countries. While each part of the UK may face specific challenges in providing a world-leading computing education for all its young people, a number of key challenges are shared. This short paper was developed as a result of a workshop attended by members of the committee that focussed on the specific challenges around the recruitment and retention of computing teachers. The goal of this paper is to support policy discussions with relevant officials and policy makers in each UK nation to support.

The issues

All four UK countries are experiencing shortages of computing teachers, particularly in disadvantaged areas and this is restricting schools and colleges abilities to provide a high-quality computing education to all students. Countries have taken a variety of approaches to address the shortage of computing teachers, reflecting different policy environments, educational systems, and labour market constraints. The workshop discussed key strategies adopted by different nations. (see Annex) to identify possible UK approaches. While there are differences between the contexts in the four countries (for example in the qualification requirements for teachers and curriculum policies) the purpose of this workshop was to stand back and identify policy recommendations that could be made across the UK.

This workshop explored strategies to improve the recruitment and retention of computing teachers. Discussions considered professional development pathways, early engagement strategies, mentoring, financial incentives, and innovative career models to sustain a high-quality computing workforce.

Report of the discussion

Strategies to be explored

1. Specialist Pathways and Professional Development

- Development of a **specialist pathway** for computing teachers to strengthen subject expertise and career progression.

- Creation of **communities of practice** for sharing teaching strategies, resources, and peer support.

- Encouraging **school leadership role models** in computing to champion the subject and inspire colleagues.

- **"Master teachers"** (local experts) could provide weekly in-school support, reviving aspects

of the previous AST model.

• Explore **braided careers** and other innovative career models**.**

2. Early Engagement and Volunteering

• Encouraging **undergraduates and older students** to volunteer in schools to foster early interest in computing education.

• BCS could provide **certifications or recognition** for volunteers.

• **Face-to-face engagement** is preferred, not just online.

• Incentives for student volunteers, e.g., **highlighting experience on UCAS statements**.

3. Initial Teacher Training (ITT) and Mentoring

• Strengthening ITT by increasing **subject-specialist mentors** within schools.

• Closer collaboration between ITT providers and schools to ensure robust practical experience.

4. Financial Incentives and Retention Measures

• **Pay enhancements** to make computing teaching more competitive (e.g., England ECT starting salary £25k vs £29k)

• **Repayment clauses** for scholarships or bursaries if teachers leave before a minimum period. •

Student loan support to reduce financial barriers.

• **Bursaries and scholarships** for teacher education.

5. Communities of Practice

• Supporting retention through the positive experience of participating in a community of practice with peers. (For example Computing at School)

Summary and Recommendations

The workshop highlighted a multi-faceted approach to recruitment and retention in computing education:

Recruitment

• **Early Engagement:** Volunteering, face-to-face interaction, and role models encourage early

interest in computing teaching.

• **Financial Incentives:** Competitive pay, loan support, and bursary structures encourage

recruitment, linked to a commitment to spend time in the profession.

• **Practical Training:** ITT improvements and subject-specific mentoring ensure well-prepared
teachers.

Retention

• **Financial Incentives:** Competitive pay, loan support, and bursary structures encourage
retention.

• **Professional Development:** Specialist career pathways pathways, mentoring, master
teachers, and communities of practice support career progression. Train existing
computing teachers to be senior leaders

• **Communities of practice**: Support computing teachers who may become isolated
through communities of aligned professionals.

• **Innovative Career Models:** Part-time teaching combined with industry roles ("braided
careers") can broaden access and flexibility.

A combined strategy addressing professional growth, engagement, practical experience, financial
support, and flexible career pathways is likely to have the greatest impact on sustaining a high
quality computing teaching workforce.

Next steps

This summary of the workshop will now be circulated to the BCS groups which focus on the needs of
the individual countries to receive input. Following feedback from the individual countries' BCS
groups, a next version will be developed for those groups to use in policy discussions.

Annex: example approaches from other jurisdictions

1. Upskilling and Professional Development of Existing Teachers from other subjects to teach computing.

- **United Kingdom** (England) Established the *National Centre for Computing Education (NCCE)* to provide professional development and resources.

- **Australia**: Introduced teacher development initiatives like *Digital Technologies in Focus (DTiF* professional learning networks*)* to support teachers in regional and remote areas.

2. Financial incentives and Scholarships to attract new computing teachers.

- **United States**: Certain states offer *loan forgiveness*, *stipends*, or *higher starting salaries* for STEM and computer science teachers.

- **Singapore**: Provides scholarships and fast-track leadership roles for teachers in high demand subjects like computing.

- **England and Northern Ireland**: Bursaries of teacher training.

3. Alternative Certification and Fast-Track Pathways to bring in industry professionals.

- **United States**: Many states allow *alternative teacher licensure*, enabling professionals with CS backgrounds to enter teaching with limited pedagogical training initially.

- **Canada**: Some provinces have introduced *bridging programs* that allow STEM graduates to quickly gain teaching credentials with an emphasis on computing.

4. Partnerships with Industry and Higher Education to provide resources, training, and mentorship.

- **USA and elsewhere**: Engaging industry professionals to support non specialists: Programs like *Google's Educator PD Grants* and *Microsoft TEALS (Technology Education and Literacy in Schools)* pair professionals with teachers.

- **New Zealand**: Partnered with universities to deliver the *Digital Technologies | Hangarau Matihiko* curriculum. Developed online modules and a nationwide support program for teachers.

- **Germany**: Public-private partnerships like *Initiative D21* provide teacher training and

digital literacy tools in cooperation with tech firms.

5. Curriculum Simplification and Resource Provision, making computing curricula more accessible to reduce the burden on non-specialist teachers.

- **Finland**: Integrated digital competence across subjects rather than requiring a standalone computing subject, easing the need for specialized teachers.

- **Estonia**: Developed centralized, open-access resources and online platforms to support teachers and students in computing.

6. Retention strategies specifically aimed at keeping teachers in the profession

- **UK (England) Retention Payments**: **early-career retention payments** (e.g. £2,000 per year for up to 3 years) for computing teachers working in disadvantaged schools.

- **Singapore**: structured career ladder for teachers includes specialist, leadership, and master teaching tracks, helping retain skilled computing educators.

7. Centrally developed high-quality online computing resources designed to be used by non specialist teachers

- **Australia: Digital Technologies Hub (by Education Services Australia) r**eady-to teach units, activity guides, and assessment tools that require little or no computing background.