June 2013

Dear Head Teacher,

The re-launch of the Computing curriculum

As you may well be aware, the ICT curriculum, now called "Computing", is in the midst of wholesale reform. It now seems certain that it will include a clearly-articulated strand of computer science (including programming) as the underlying subject discipline, alongside the use and application of digital technology. These changes represent a qualitative shift in the subject, not an incremental change, and one that will require your strategic attention and leadership.

In this letter we[1] summarise the background, and identify the key opportunities and challenges and that you now face, and describe the resources you can call on to meet them.   We urge you to take a strategic view of the draft Computing curriculum, thinking of it as a foundational subject discipline, and one that is of huge educational and economic importance to your students.

We also invite you to come to a **one-day conference on the Computing curriculum**[2], on 14 November, run by the Association of School and College Leaders (ASCL), and designed to help you understand the changes in the new Computing curriculum, and position your school to take advantage of them.

Background

In his BETT speech in January, 2012, Michael Gove described his intention to establish Computer Science as a new foundational element of the school curriculum: *"We are encouraging rigorous Computer Science courses… Although individual technologies change day by day, they are underpinned by foundational concepts and principles that have endured for decades. Long after today's pupils leave school and enter the workplace – long after the technologies they used at school are obsolete – the principles learnt in Computer Science will still hold true."*

Since then Mr Gove has substantiated this intent:

- In February 2013 the DfE published a proposed National Curriculum Programme of Study for Computing[3]. The new title, "Computing" is intended to embrace the existing strengths of digital literacy and information technology in the current ICT programme of study, alongside a new strand of computer science.

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[1] Who is "we"? See the end of the letter.
[2] www.ascl.org.uk/computing-in-the-curriculum
[3] http://media.education.gov.uk/assets/files/pdf/c/computing%2004-02-13_001.pdf

The final version of this curriculum will become statutory in September 2014, at all four key stages KS1-4. Although academies are not bound by the National Curriculum, good schools will pay careful attention to the new Computing curriculum.

- The new strand of computer science begins at primary school, and continues right through KS4. The Aims of the draft POS state that all pupils should

  o *Understand and apply fundamental principles and concepts of computer science, including abstraction, logic, algorithms, and data representation;*

  o *Be able to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve them;*

  o *Can critically evaluate and apply information technology, including new or unfamiliar technologies, to solve problems;*

  o *Are responsible, competent, confident, and creative users of information and communication technology.*

  The first two aims establish computer science, for the first time, as a foundational component of a Computing education.

- The KS4 statement in the draft POS states that *"All pupils **must have the opportunity** to study aspects of information technology and computer science, at sufficient depth to allow them to take qualifications supporting progression to higher levels of study or to a professional career".* All good schools should offer a GCSE in Computer Science, alongside other ICT qualifications.

- All the major awarding bodies have launched new GCSEs in Computer Science in the last two years. (Prior to 2010 there simply weren't any.) In January 2013, Michael Gove announced that Computer Science GCSEs are included as part of the EBacc suite of subjects[4], and Computer Science will certainly also contribute to the new "best-8" measure.

These changes affect primary schools as well as secondary schools. Much more background, including a description of what Computer Science is, and its role as a foundational subject, can be found in the Royal Society report[5] "Shut down or restart: the way forward for computing in schools", and in the strategic information pack[6] that we sent to (secondary) heads last year.

Challenges

Change brings both challenges and opportunities.

- ***Clarifying the future for ICT:*** In the same January 2012 speech, Mr Gove also announced that the DfE would disapply the ICT Programme of Study[7]. Some schools have taken this statement in isolation, and have taken steps to begin disbanding the discrete provision of ICT at KS3, reducing their ICT-qualified staff, and attempting to deliver ICT in a cross-curricular way.

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[4] http://www.education.gov.uk/inthenews/inthenews/a00221085/ebacccompsci
[5] http://royalsociety.org/education/policy/computing-in-schools/report
[6] http://www.computingatschool.org.uk/index.php?id=headteachers
[7] http://www.education.gov.uk/inthenews/speeches/a00201868/michael-gove-speech-at-the-bett-show-2012

Such changes are deeply damaging, and move in exactly the opposite direction to the grain of government policy. Far from treating ICT as unimportant, the DfE is effectively re-branding and re-launching the entire subject. Instead of withdrawing from the subject, good schools should be considering *increasing* the curriculum time they give to Computing from the typical one lesson/week at KS3 to at least two.

- *Training and equipping your teachers:* The new Computing curriculum embodies computer science, a subject that will be new to many schools, especially at primary level. This is nothing to be afraid of, but it does imply a serious need to equip and support teachers to deliver the new material. Supporting your colleagues in undertaking this training will need the support of heads and governors.

- *Programming is not everything:* There has been much talk in the media about "coding for kids". But computer science is not the same as programming, and there is a real danger that we will slide from "death by Powerpoint" to "death by Scratch[8]". The opportunity is to establish, right from the start, a clear vision of computational thinking that is animated by, but not limited to, programming.

Opportunities

The Computing at School Working Group[9] (CAS) is a grass-roots organisation of over four thousand members, including school teachers, governors, computing professionals, university academics, examiners and parents. CAS's main mission is to establish Computer Science as a respected school subject discipline. The CAS curriculum[10] was highlighted in the current DfE consultation as one of the helpful resources available to schools, and was also referred to by Michael Gove in his speech at BETT.

Computing At School, in partnership with BCS[11] and with financial support from the DfE, have launched a national Network of Excellence for Teaching Computer Science[12]. The Network offers a wide range of CPD opportunities to support existing ICT teachers meet the challenges of the new curriculum. Here are some concrete things you can do to become involved:

- Encourage your Computing/ICT specialists to join CAS. Doing so is free, and gives access to

  o a community of 4,000+ passionate members, of whom over 2,000 are classroom Computing teachers, both primary and secondary.

  o hundreds of free classroom resources developed by teachers, for teachers

  o a network of over 60 CAS Hubs, which give teachers and opportunity to meet in person.

  You will find an issue of the CAS Newsletter enclosed with this letter. A quick glance will give you a sense of the vibrant, teacher-led, inspirational work being done in the CAS community.

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[8] http://scratch.mit.edu: Scratch is a very popular programming language aimed pupils from age 6 onwards.
[9] http://www.computingatschool.org.uk
[10] http://www.computingatschool.org.uk/data/uploads/ComputingCurric.pdf
[11] http://www.bcs.org: BCS, the Chartered Institute for IT, is the UK's leading professional body for computing.
[12] http://www.computingatschool.org.uk/index.php?id=noe

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In collaboration with BCS, The Chartered Institute for IT

Department for Education

- Invite your governors Teaching & Learning committee to hold a strategic discussion with you and your Head of Computing, about your school's response to the new opportunities.

- Encourage your Computing/ICT specialists to participate in some of the CPD training opportunities that the Network of Excellence offers, taught by other teachers or local universities.

- Register your school for the Network of Excellence and consider becoming a Lead School in the Network, where you share.your excellence with neighbouring schools.

The ASCL conference

The Association of School and College Leaders, in partnership with Microsoft and CAS, is running a one-day conference for head teachers, on responding strategically to the opportunities of the new Computing curriculum. You are warmly invited. The date is **14 November 2013 in London**. More details are here: http://www.ascl.org.uk/computing-in-the-curriculum.

In summary

The new Computing curriculum puts the subject on an entirely new footing, as the "fourth science". It offers new opportunities for professional development for your staff, better education for your students, and a much richer range of qualifications and employment opportunities. This is the moment to seize the opportunity!

Let us know if we can help. Contacts are:

- Mark Dorling, co-ordinator of the CAS Network of Excellence: mark.dorling@computingatschool.org.uk

- Simon Humphreys, co-ordinator of CAS:

  simon.humphreys@computingatschool.org.uk

CAS's home page is here: http;//wwww.computingatschool.org.uk

Yours sincerely

Simon Peyton Jones
Chair of CAS

Bill Mitchell
Director BCS Academy of Computing