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**By email**

From the Physical Secretary and Vice-President Sir John Pethica FEng, FRS

19 September 2014

Dear Mr Smith

**'Reformed GCSE and A level subject content consultation': computer science GCSE**

The joint Royal Society–Royal Academy of Engineering report, *Shut down or restart? The way forward for computing in UK schools*<sup>1</sup> was instrumental in the Government's decision to embed Computing within the new National Curriculum. Drawing upon the report and the advice of Fellows, we make the following points for the above consultation.

- (i) The description of the proposed content of the new Computer Science GCSE is consistent with the Computing Programme of Study. However, as we recommended in the above-mentioned report, we would expect the new GCSE to be complemented by a wider review and revision of the titles and content of all other existing qualifications in this area. For instance, the new Computer Science GCSE should be complemented by an Information Technology GCSE focusing in particular on the use of computer systems in business and commerce and covering some aspects of computer science (such as some spreadsheet or database programming). Further, the Department for Education (or Ofqual) should review the core content of the ICT GCSE. Ofqual stated in June 2014 it was considering doing this (ref. Ofqual/14/5466, p. 22).
- (ii) Given that computer science is a rigorous discipline with significant practical applications, it would be appropriate for the new GCSE to include a practical component to test students' computational skills. This should involve, for instance, designing, writing, testing, explaining and debugging programmes, which would enable students to demonstrate their creativity and problem-solving ability using logical thinking and through close attention to detail.

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<sup>1</sup> See <https://royalsociety.org/-/media/education/computing-in-schools/2012-01-12-computing-in-schools.pdf>



- (iii) Computing should also be assessed in ways that enable students to gain a deeper understanding of the Mathematics, Science, and Design and Technology Programmes of Study. Some aspect of its assessment should align with these subjects' curricula and their expected learning outcomes. This will help to ensure that there is coherence in how the National Curriculum is taught and assessed, and enable students to appreciate that, like mathematics, computing is part of the language and practice of science.
- (iv) The Government should, through sustained funding, maintain its drive to recruit more Computer Science and Information Technology specialist teachers, and enhance the skills of existing teachers through professional development and resources to teach these subjects. As a newly introduced subject, this continued investment is essential in nurturing Computing and ensuring it is a subject that all schools offer.

Yours faithfully

A handwritten signature in black ink, appearing to read 'John Pethica', with a long horizontal flourish extending to the right.

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