

Sir John O'Reilly FREng
Director General of Knowledge and Innovation
Department for Business, Innovation and Skills
1 Victoria Street
London
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From the Biological Secretary and Vice-President Sir John Skehel FRS

31 July 2014

Dear Sir John

Re. Science and Innovation strategy 2014

Further to the joint submission of the Academy of Medical Sciences, the British Academy, the Royal Academy of Engineering and the Royal Society, I would like to summarise the Royal Society's thoughts concerning the question in the consultation: *How to expand in the UK the number of people in science, technology, engineering and maths (STEM) disciplines at all levels of qualifications?*

Last month the Royal Society published a report outlining its *Vision for science and mathematics education*. The strategy we set out aims to raise the general level of mathematical and scientific knowledge and confidence in the population. Following this approach should result in an expansion in the number of people able to work in science, technology, engineering and mathematics disciplines at all levels. Such an expansion is essential given that within the strategy's timeline it is estimated the UK will need to produce one million engineers and technicians.¹

Firstly, we recommend baccalaureate-style frameworks should be introduced to ensure young people have a broad and balanced education through to age 18. Inspirational science and mathematics curricula should be placed at the heart of these frameworks, with their emphasis being on practical work and problem-solving. The new frameworks should encompass vocational and academic learning across a broad range of subjects to age 18. It will also be important for STEM careers awareness to be built into these frameworks.

Secondly, stability in the curriculum and its assessment is necessary to support excellent teaching and learning. We recommend the creation of new, independent expert bodies in England and Wales that would

¹ Royal Academy of Engineering 2012 *Jobs and growth: the importance of engineering skills in the economy*.

http://www.raeng.org.uk/news/publications/list/reports/Jobs_and_Growth.pdf



determine curricula and assessment in STEM subjects and draw on the expertise of the wider STEM professional community. Existing infrastructures in Northern Ireland and Scotland should be similarly supported. (This model could be applied to other curriculum subjects.)

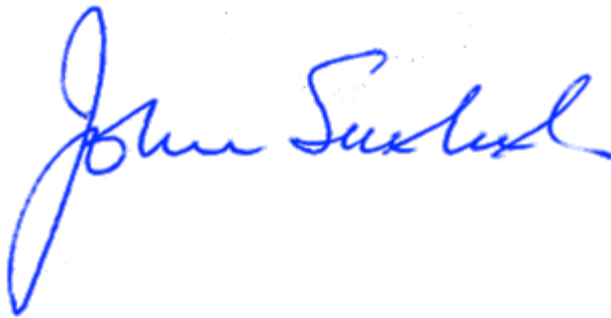
Thirdly, we recognise that many more inspiring teachers will be needed, and that a sustained effort is required to recognise teachers' professionalism. We believe that this approach would raise teachers' status and encourage more people into the profession. To keep up-to-date and maintain a passion for their subject, teachers will need time and resources to undertake subject-specific professional development, with this being linked to career progression.

Achieving the scale of the expansion in the STEM workforce we believe is needed will require a collective desire, imagination and determination to change. It will need to be backed by collaborative and supportive relationships between the education community, higher education, the STEM community, Government, employers and wider society.

This is an important time in education as countries worldwide recognise the importance of high-level skills and their impact on economic growth, well-being and prosperity. Mathematics and science must be placed at the heart of the UK's education systems. This will help underpin the future prosperity of the UK, ensure the UK maintains a globally competitive science and engineering base and support the development of a more informed and equitable society.

For further information please contact Alessandro Allegra on +44 (0)020 7451 2253 or by emailing alessandro.allegra@royalsociety.org

Yours sincerely



Sir John Skehel FRS
Vice-President

cc. Sir Paul Nurse PRS FMedSci, President of the Royal Society
cc. Dame Julia Higgins FRS FREng, Chair of the Royal Society's Education Committee