

Vision

for science and
maths education

Progress update 2017

THE
ROYAL
SOCIETY

**One million new science, engineering
and technology professionals will be
required in the UK by 2020.**

Royal Academy of Engineering.

The Royal Society's ambition for the next 20 years of science, computing and mathematics education is that it should enable people to make informed choices, empower them to shape scientific and technological developments, and equip them to work in an advanced economy.

We set out our proposals for achieving this ambition in the report, *Vision for science and mathematics education*. This aimed to raise the general level of mathematical and scientific knowledge and provide confidence in the population and the skills employers need. This progress update provides a summary of the key activities and developments since the publication of *Vision*.

For more information, visit [**royalsociety.org/education**](https://royalsociety.org/education)

OUR VISION

All young people study mathematics and science up to the age of 18.

Curricula and assessment are stabilised and support excellent teaching and learning.

Teachers have high professional status and there is a strong supply of science, computing and mathematics specialists.

The Society's work

The Advisory Committee on Mathematics Education (ACME) has been building alliances to support Core Maths.

Working with Microsoft and Google to develop support for teachers on computer science and to help improve the computing curriculum.

Ongoing support for investigative projects through our Partnership Grants funding.

Commissioning research to assess the features and benefits of science and maths to 18.

Commissioned UCL Institute of Education to provide evidence from international comparisons on curriculum development.

Science on Stage provides a European platform for science and maths teachers to exchange teaching concepts and to share ideas.

Our Associate Schools and Colleges and Science on Stage networks bring together teachers to develop scientific expertise and raise aspirations.

The Advisory Committee on Mathematics Education (ACME) has produced guidance on Initial Teacher Education and professional development for maths teachers.

Led the science community's response to the Migration Advisory Committee's consultation on teacher shortages.

Key developments

A new Core Maths qualification at level 3 for those not studying AS or A Level Maths.

The Government's post-16 skills plan takes up recommendations for strengthening English, maths and digital skills in college courses.

An independent review led by Sir Adrian Smith on the feasibility of maths study to 18.

Following consultation on teacher workload, the Government committed to a minimum lead-in-time for significant changes to accountability, curriculum and qualifications.

Major curriculum reform in Wales, including a Digital Competence Framework and a new STEM curriculum plan for schools.

Increase in teacher training entrants from science backgrounds, but still shortages in physics and computing.

£67 million of government funding to address shortages in maths and physics teachers.

College of Teaching set up to improve career pathways and professional status of teachers.

Paid teaching internships for maths and physics undergraduates, and £25k bursaries for maths, physics, chemistry and computing graduates entering teacher training.

Students understand the significance of science, technology, engineering and mathematics (STEM) through better careers awareness and guidance.

Our Associate Schools and Colleges programme improves schools' access to scientists from industry and academia.

Our industry-schools toolkit created with the CBI offers guidance to assist and encourage employers to work with schools and colleges.

Over 100 schools a year visit the Summer Science Exhibition and meet scientists from across the UK.

Our Partnership Grants partner schools with scientists so pupils can see what a career in science really involves.

The Wellcome Trust's 2016 Science Education Tracker found 43% of young people are interested in a science-related career.

The Government published statutory guidance for schools on careers guidance in 2015.

A new Careers and Enterprise Company was set up in 2014 to support collaboration between schools, colleges and employers on careers guidance.

The success of students, teachers and education systems is judged through broadly based assessment and accountability measures.

Worked with Ofqual and awarding bodies to ensure experimental science remains core to science teaching in light of GCSE reforms and A-level practical science assessment.

Published guidance for higher education institutions on how to treat the new A-level practical science assessment.

Organised an international conference about experimental science assessment, leading to new funding for research in this area.

Pupils assessed on practical skills in GCSE exams. A-level science pupils are awarded a practical endorsement alongside their grade.

Some Local Authorities are developing school-led improvement systems for collaboration and shared accountability.

New regional schools commissioners to tackle underperformance in schools.

Changes to Ofsted inspections in 2015, such as shorter inspections for "good" schools and a common inspection framework for early years.

Education policy and practice are better informed by evidence.

Working in partnership with the British Academy to investigate how education policy and practice can be better informed by education research.

Partnering with the Education Endowment Foundation on research into the relationship between economic disadvantage and educational attainment.

The National Foundation for Education Research and the Education Endowment Foundation continue to lead on the use of research and evidence by teachers.

The 2016 education White Paper Educational Excellence Everywhere promoted a more evidence-based approach to teaching.

The new Chartered College of Teaching aims to connect teachers with rigorous research and evidence.

The Royal Society

The Royal Society is a self-governing Fellowship of many of the world's most distinguished scientists drawn from all areas of science, engineering, and medicine. The Society's fundamental purpose, reflected in its founding Charters of the 1660s, is to recognise, promote, and support excellence in science and to encourage the development and use of science for the benefit of humanity.

The Society's strategic priorities are:

- Promoting science and its benefits
- Recognising excellence in science
- Supporting outstanding science
- Providing scientific advice for policy
- Fostering international and global cooperation
- Education and public engagement

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Founded in 1660, the Royal Society is the independent scientific academy of the UK, dedicated to promoting excellence in science.

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