CHEMICAL INDUSTRIES
ASSOCIATION

Science Education

Britain's next deficit?

Science education today

Not everyone wants to be a science expert or work in the scientific field. That is how it should be. Some understanding of science, though, can help all of us in our lives through the choices we make and the things we buy. It can also help us understand the great challenges of today, like climate change and the safety of chemical in the things we use and wear every day.

Science education has been neglected for decades in the UK. We have some of the most talented teachers, lecturers and pupils with real potential. Yet we have no meaningful and properly implemented policy. Science education can exemplify progressive learning. STEM (Science, Technology, Engineering and Mathematics) subjects are essential for UK growth.

Schools and higher education establishments are an important part of making sure we understand essential science. The media and companies whose roots are in science and technology both have a role to play, too.

A failure to make sure we all have some understanding of science will harm the UK's competitiveness on the world stage, and our ability to make the right decisions in respect of action on the environment and society at large.

Today in Britain...

16% of children leave school with no qualification.

More than **9%** of 16-18 year olds are not in employment, education or training. In the 16-24 age group, this figure increases to more than **15%**.

Pupil/teacher ratios are higher than nearly all of our major European competitors.

Despite increases, the percentage of pupils taking single science GCSEs is low (**2.3%** chemistry, **2.2%** physics, **2.4%** biology).

There is no national higher education strategy with identified resources for teaching science in the UK.

A recent study of 400 engineering and technology firms found the number of school leavers being recruited had **fallen by half** – as a percentage of total recruitment.

More than **80%** of business leaders believe science learning is essential for UK competitiveness.

There is a predicted shortfall of **40,000** key workers at technical and operational level across our sector and related industries.

Our proposals

Government, political parties, academics, trade unions, NGOs, other stakeholders and industry should meet to try and agree a national science strategy for our country. This would cover many areas of science in our lives. At its heart should be education and progressive science learning with teachers and lecturers of the highest standards. This should be reflected in their employment status, their performance management and their reward package.

At school

Every school should have a science discovery area and laboratory that is fit for purpose.

Every school for 5-14 year olds should have at least one teacher who is science qualified and trained. The 14-19 age group should be offered revamped vocational education, built on the provision of specialised STEM qualified teachers and specialised diploma based qualifications. New academies should have science specialisms.

The continuing professional development of science teachers should be overhauled to meet the science needs of the 21st century.

Science should be kept as a core subject of the national curriculum for all ages.

Increase the school leaving age to 17, with an increasing participation in STEM subjects.

Pupil/teacher ratios should be brought in line with our major international competitors.

In higher education

Every town in the UK should have access to a local technical college and STEM subjects.

The barriers between further and higher education should be dismantled with the provision of flexible learning opportunities

– full-time, part-time, modular and credit-based learning opportunities.

University funding mechanisms should take account of the country's need to grow. This would deliver a smaller number of fully funded 'beacon' science and research teaching establishments, with 'feeder' centres that are linked and working on the same syllabus.

At work

Apprenticeship numbers should be boosted to more than 500,000 a year (2% of the UK workforce), with a focus on STEM areas.

Large organisations – businesses, public sector, trade unions and charities – should report on their use of and investment in science.

We need a simplified UK skills policy with fewer initiatives, a sectoral approach and political support.

We need a stable, unambiguous consensus between political parties on regulation that supports the low carbon economy, and builds on the UK's long tradition of science and engineering technology.

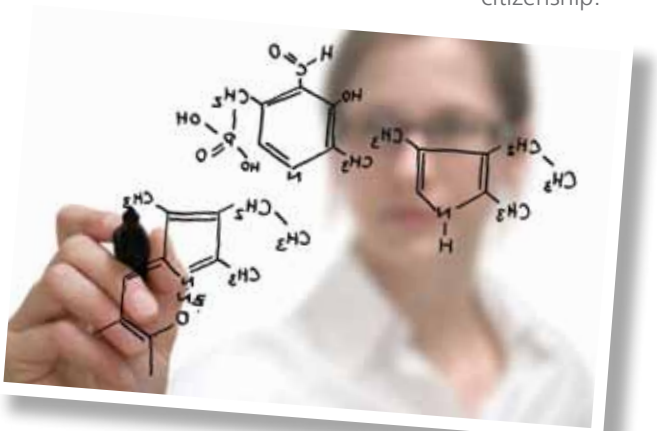
Every major employer should be encouraged to have a strong link to a local education establishment.

Science in society

Science should be part of a national lifelong learning policy with clear roles and responsibilities that is based on commitments from citizens, education facilities, workplaces and government. We need a policy that incorporates flexible, vocational, informal and community learning.

We need a universal careers advice network, where every town has a careers advice centre that is available for all ages, freed from benefit payment advice, linked to schools and built on a national industrial policy.

Science understanding should be promoted as an essential part of informed citizenship.



Chemical and pharmaceutical businesses in the UK

Chemical and pharmaceutical businesses in the UK are a **£60 billion** industry and are essential to advanced manufacturing.

Every working day, chemical and pharmaceutical business right across the UK add **£30 million** to our country's balance of trade.

In the same period, the rest of manufacturing achieved a **£300 million** daily loss.

The jobs of **600,000 workers** in the UK depend on chemical and pharmaceutical businesses.

Workers in chemical and pharmaceutical businesses earn on average **40% more** than other parts of manufacturing.

For every unit of greenhouse gas we emit in our work, the products we make enable **a saving of twice as much**.

Central to our sustainability commitment is **Responsible Care** – the world's leading health, safety and environment programme.

Our **sustainability commitment** will reflect the whole breadth of the environmental, social and economic activities our businesses carry out every day across the UK.

Responsible Care

The UK's number one manufacturing exporter

Britain's chemical and pharmaceutical businesses are delivering a safe, healthy and low carbon future for everyone.

To continue our contribution, we need strong and effective science learning in the UK. Without taking action in the areas we have proposed, there is a real risk science education could become Britain's next deficit with damaging economic, social and environmental consequences. We also believe greater scientific understanding can help build a better society.

2011 is the United Nations International Year of Chemistry. Let's make 2011 the start of a decade-long programme of UK Scientific Understanding, building on the success of the 2010 Commonwealth Year of Science and Technology.

You can back our campaign to lift the science understanding and appreciation of the UK chemical and pharmaceutical sector by emailing chemsuk@cia.org.uk.

Steve Elliott, Chief Executive, Chemical Industries Association
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