

Science and mathematics education for 5-19 year olds – Position Statement

Science and mathematics and their applications play, and will continue to play, a vital part in our ability to achieve sustainability in human health, well being and quality of life, the environment and in wealth creation. For the UK to compete in the international global economy it must raise levels of scientific and mathematical literacy throughout the population as well as increasing the numbers of active scientists and mathematicians in all sectors of the economy – business, industry, public services and not-for-profit organisations. The Science Council members consider that increasing the numbers of young people who study science and mathematics, and raising the quality and breadth of science and mathematics education, are crucial for the UK in the 21st Century.

The Science Council believes that:

With regard to the curriculum:

- Education in schools and colleges in science and mathematics must provide for the differing needs of all students at every stage of primary, secondary and further education, as part of a broad, balanced education for the citizens of the future.
- It is not possible for a single qualification route to meet all needs and therefore provision must support multiple pathways for progression to further and higher education and employment.
- Pre-16 science education must be grounded in the three key disciplines of physics, chemistry and biology, complemented by a solid understanding of mathematics.
- The curriculum should go beyond facts to highlight scientific and mathematical reasoning and processes of inquiry, to show areas of uncertainty, emphasise connections between disciplines and to reflect current and evolving developments.
- Teaching of science should encompass a variety of approaches to ensure the understanding of how science is brought to bear in everyday experiences.
- Practical and experimental work is an important element of science education both for aiding learning and the skills gained.

With regard to science and mathematics staffing:

- It is important that young people have the opportunity to be taught by qualified teachers with appropriate subject knowledge in their discipline at each level, especially post-16.
- More entrants into teaching are required across the science and mathematics disciplines, with appropriate training routes, financial incentives and mechanisms to attract and retain new graduates, returners and those changing career.
- Science and mathematics teachers at all levels of the curriculum and across all disciplines should be encouraged and supported in schools and colleges, not least in respect of financial assistance, variety of provision and availability of teacher cover to enable CPD.
- Laboratory Technicians are key members of the science staff and their work should be fully recognised and supported through appropriate training and career development opportunities.
- Staff in science and mathematics departments should be recognised as part of the wider science professional community and engaged at this level.

- The Chartered Scientist and Chartered Science Teacher designations, and their holders, should be recognised and supported by educational institutions, Government and the professional bodies.

With regard to incentives and encouragement for young people to study science:

- It is important to provide positive incentives for pupils, teachers, schools and colleges to increase numbers of 15-19 year olds studying science and mathematics and to remove actual and perceived disincentives.
- The importance of science and mathematics education to all areas of work and leisure needs to be promoted widely, and the importance of studying these subjects emphasised at all stages of education.
- Young people are entitled to accurate and appropriate information on careers from science and mathematics, with knowledgeable advice and guidance from qualified advisers and an up-to-date awareness of the diversity of sectors employing scientists, engineers and mathematicians.
- All users of science and employers of scientists – the professions, industry, government, academia – have a responsibility individually and jointly to engage and enthuse young people.

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