

Inspiring science education: extraordinary opportunities

The Wellcome Trust's vision is to achieve extraordinary improvements in human and animal health. We believe that this can only be realised if there is both a sustainable supply of high-quality scientists and a wider population that can embrace, challenge and respond to the innovation and development brought about by science and technology.

Science is the collection and interpretation of evidence through investigation, building on existing knowledge to improve our understanding of the world in which we live. It is not a collection of facts, but is about asking questions, experimenting and being curious. Individual scientific disciplines, alongside mathematics, are vital ingredients for developing a conceptual understanding of our world, and in tackling the global challenges facing us. For science education to be effective, context (conveying the science to young people in a way that is relevant and inspiring) is as important as content (helping them to acquire breadth and depth of knowledge).

OUR COMMITMENT

We are committed to making inspiring, high-quality science education available to all young people, helping them to meet their needs and achieve their aspirations in their chosen careers and lifestyles.

We will therefore promote science education that enables all young people to develop inquiring minds, to be imaginative but rigorous in their thinking, and to understand the processes of scientific investigation and the principles of scientific knowledge. For individuals, the benefits are lifelong, deepening knowledge, stimulating curiosity and enabling them to engage with contemporary and future issues that have science at their core. For society, science education makes more widespread many of the essential skills that underpin the economy and contribute to an understanding of culture.

We believe that the quality of education depends on the quality of the teachers and the teaching and learning they encourage, both individually and collectively.

We will champion the development of highly respected teaching professionals who are passionate about their subject, creative and innovative in their approaches, up-to-date in their knowledge and well resourced. This is not just for teachers in schools, but also those individuals in other roles and settings, such as museums, science centres, industry, universities and the media, who work to engage young people with science.

We advocate a holistic approach to science education through a rich curriculum that exploits the potential of teaching and learning both inside and outside school, finds new ways to stretch and challenge all young people, and encourages the pursuit of excellence in all aspects of education – vocational, applied and academic.

We will therefore work with partners in government, industry, academia and the science community to share and implement our vision for science education, developing long-term strategies and improving the evidence base for informing policy and practice.

MAKING OUR CONTRIBUTION

We are in a unique position to contribute to improving science education for all young people by building on our independence and commitment to support scientific research of the highest quality and to foster a popular appreciation of the value of science as part of

everyday life and culture. We are able to enrich opportunities for young people by using our access to leading scientists and educators, contemporary science materials and rich historic collections.

The scope of our strategy covers:

- education 5–19 – primary, secondary, FE and the interface to employment and HE
- science, maths and interdisciplinary links across STEM
- formal and informal learning
- local and national (UK) initiatives
- international – focused interventions to support Wellcome Trust overseas programmes.

Our goals are to:

1. take a leading role in stimulating debate and influencing action on key issues including:
 - a. generating a stronger evidence base in science education that can be used more effectively to inform improvements in policy and practice
 - b. redressing the balance between formative and summative assessment, so as to better meet the needs of learners, teachers, employers, universities and society
 - c. improving continuity and progression in the curriculum and learning experiences of young people, in particular as they move between phases of their education – from primary to secondary, secondary to higher and further education, and into employment
2. build on our investment in the National Science Learning Centre and Project Enthuse and strive to embed continuing professional development in the culture of schools and colleges, ensuring that all teachers of science, mathematics and related disciplines can access high-quality subject-specific training
3. enhance our reputation as a trusted provider of high-quality contemporary resources that challenge, stimulate and inspire young people in their thinking and engagement with science, through large-scale themed activities, publications, online resources, our grant schemes and exhibitions in Wellcome Collection and the Wellcome Library
4. strengthen our partnerships locally, regionally, nationally and internationally so that we can help young people to get the best scientific education regardless of background and ability.

OUR PRIORITIES

Our work spans a wide range of issues, currently focusing on three priority areas:

Science 5–14

We will look to reinvigorate the teaching of science in primary schools, improving the expertise of teachers and strengthening the continuity of science education within and between phases.

Young children are naturally inquisitive and rapidly take an interest in their surroundings. We need to harness this and help them to realise the excitement science can bring to their lives and the contribution it can make to their understanding of the world. The importance of these early years of education and the experience of young people as they move from primary to

secondary school is widely recognised, but there is a need to find ways for all schools to manage this transition as well as possible.

Science beyond the school gates

We will work with our partners to explore and understand in depth ways in which young people's engagement with science outside of school can be exploited more effectively.

At the peak of their education young people spend less than 20 per cent of their waking hours in school and under 3 per cent studying science. There is a wealth of opportunities for young people to engage with science beyond the school gates in their own time. We have evidence that many of them do benefit in this way but many others are denied such chances.

We will explore ways in which schools and other organisations such as museums, science centres, university outreach teams and industry can work together to help young people to learn science better and enjoy it more.

Understanding learning

We will look into ways in which neuroscience is being used to inform teaching and learning, and where possible develop further investigations to evaluate the strength of the evidence and how it can support and improve the quality of education.

Young people learn in a variety of ways, but understanding of what is effective and how this relates to how the brain works is far from clear. Claims that particular activities improve learning by stimulating brain activity need to be examined more systematically by educators, scientists and policy makers working together.

In addition to our priority areas we will develop focused activities to support science education in the Trust's local community around Camden and to enhance some of the international work of the Trust.

We will make our contribution to science education 5–19 in the UK through an integrated approach that brings together our priority areas and our other activities to achieve our overall goals.