

Purpose and quality of education in England inquiry

Evidence from the Wellcome Trust

27 January 2016

Key points

- The purpose of education is to prepare people for life, equipping them with the knowledge and skills to contribute to a thriving society. It should provide young people with the understanding and motivation for further studies and enable them to make informed decisions in their everyday lives, including about their education and employment.
- Science education should enable all students to develop the knowledge, interest and skills that enable them to connect with the science around them and progress into careers in STEM fields.
- Current school performance measures concentrate on exam results without recognising the wider benefits of education. We have developed a [Framework for Governance](#) that outlines a series of high-level performance indicators that go beyond exam results and can be used to monitor school performance.
- The Education Select Committee should look into how current reforms are being monitored and evaluated, and encourage the Government to put stronger research programmes in place to underpin future reform.

Introduction

1. The Wellcome Trust is a global charitable foundation dedicated to improving health. We have a long standing commitment to making inspirational, high-quality science education available to all young people, spending around £9 million each year towards this aspiration.
2. We applaud the Education Select Committee for considering the purpose of the English education system. This response focuses on science education, but also calls for a more evidence-based education system that is monitored by wider measures than just exam results.

Inquiry questions

What the purpose of education for children of all ages in England should be

3. The purpose of education is to prepare people for life, equipping them with the knowledge and skills to contribute to a thriving society. It should provide young people with the understanding and motivation for further studies and enable them to make informed decisions in their everyday lives, including about their education and employment. At a national level, the education system also needs to meet the demands of the future workforce.
4. More specifically, science education should enable all students to develop the knowledge, interest and skills that enable them to connect with the science around them with confidence and pleasure and make evidence-based decisions in a future shaped by advances in medicine, science and technology.

5. An inspiring and informative science education, including knowledge of science careers, will lead some students to become scientists or technicians, building the future workforce for healthcare, scientific discoveries and for wider economic growth.

What measures should be used to evaluate the quality of education against this purpose

6. Education can be evaluated at different levels – individual pupil level, school level and system level. Currently, these different levels are primarily evaluated by metrics that focus on academic qualifications. This is a narrow scope of assessment which should be broadened.
7. For example, current secondary school performance tables are all based on GCSEs – Attainment 8, Progress 8, the English baccalaureate and the percentage of pupils achieving grade C or above in English and maths - putting pressure on schools to concentrate solely on exam results rather than balancing these with wider skills and experiences. Likewise, primary school performance tables focus on SATs performance in two subjects, rather than a wider set of measures.
8. We believe a broader set of measures, reflecting broader educational purposes, should be used. This approach is successfully used in other countries, for example the Netherlands¹, where around 20 indicators give a full picture of the school, including students' and parents' satisfaction, destination measures, staff-student ratios, as well as exam results.
9. The Wellcome Trust and the National Governors' Association has developed a set of high-level performance measures that governors might use to monitor their schools. While these include attainment, some also relate to the wider purposes of education, such as items d, e, i, j and k in the list below:
 - a. proportion of pupils making expected progress – a pupil should be in an educational environment where they make at least expected progress
 - b. pupil attainment
 - c. staff morale – there is a direct correlation between staff morale and staff performance; in short, happy workers perform better
 - d. pupil wellbeing and resilience
 - e. behaviour of pupils – pupil behaviour has a significant impact on the learning environment
 - f. use of resources – effective use of resources allows schools to give pupils the best education possible
 - g. effectiveness of communication with parents – a school must understand its parents and their views of the education being provided to their children
 - h. relationship with local community – developing a good relationship with the local community can open up experiences for students and enhance pupils' learning

¹ Vensters voorverantwoording from the VO-raad <http://www.venstersvo.nl/>

- i. future aspirations of pupils – pupils with high aspirations are more likely to go on to university, apprenticeships and other further education opportunities that lead to successful careers
 - j. preparation for the next stage of education – part of a school's role is to give pupils the knowledge and skills they need to succeed in the future
 - k. the range of opportunities available for pupils to experience and enhance success – offering pupils opportunities to experience success enriches their educational experience beyond academic attainment alone.
10. These make up a comprehensive list of measurable factors that can define the success of a school. Some are more easily measured than others, but the Government should be encouraged to look beyond traditional data sources such as exam results to monitor the full picture of school education. More detail on the different indicators and how they might be measured can be found in [the Framework for Governance](#).

How well the current education system performs against these measures

11. Without suitable benchmarks and data it is too difficult to fully assess how the current education system is performing. However, we are able to comment on some aspects of science education, including some international comparisons.
- a. The Wellcome Trust Monitor² reported that 82% of 14- to 18-year-olds said that school science lessons were very or fairly interesting. Balancing high achievement and engagement is not always easy, and we generally perform highly on this compared with international comparisons³.
 - b. Students in England are also more likely to aspire to a career in science than many international counterparts⁴ with 82% of 14- to 18-year-olds saying science was a good area of employment⁵. 45% of first year undergraduates study a STEM subject in the UK⁶.
 - c. However, the UK still has a STEM skills shortage⁷. Until 2015, there was a positive 10-year trend in numbers of students taking science A levels. In 2015 this rise plateaued, with numbers taking biology A level decreasing by 1.2%, chemistry by 1.6% and physics by 1.1%⁸. reflecting a problem with progression to and specialism in further and higher education.
 - d. There are particular gaps for certain disciplines. For example, the Association of the British Pharmaceutical Industry (ABPI) recently highlighted the major skills gap in mathematical and computational skills used in biology⁹.
 - e. Progression is also not equal among all groups of students. For example, only 21% of physics A levels are taken by female students¹⁰ and only 25% of physics undergraduate students in 2009/10 were from lower-socioeconomic

² The Wellcome Trust Monitor, the Wellcome Trust, 2012

³ Science education – have we overlooked what we are good at?, NFER, 2013

⁴ Science education – have we overlooked what we are good at?, NFER, 2013

⁵ The Wellcome Trust Monitor, the Wellcome Trust, 2012

⁶ HESA, 2015

⁷ Jobs and growth: the importance of engineering skills to the UK economy, RAEng, 2012

⁸ Joint Council for Qualifications (2015) 'GCE Trends 2015' <http://www.jcq.org.uk/examination-results/a-levels/2015/gce-trends-2015>.

⁹ Bridging the skills gap in the biopharmaceutical industry, ABPI, 2015

¹⁰ Joint Council for Qualifications (2015) 'GCE Trends 2015' <http://www.jcq.org.uk/examination-results/a-levels/2015/gce-trends-2015>.

backgrounds¹¹. Progression to science A levels is also less likely for students eligible for free school meals than other students¹².

12. The education system in England must continue its work to develop better metrics to enable it to become more evidence-based. In particular, it is important that the Government has the right metrics in place to monitor the impact of its reforms – often the only outcomes measures are exam results and these are only available some time after the reform has been implemented. **The Education Select Committee should look into how current reforms are being monitored and evaluated and encourage Government to put stronger research programmes in place for future reform.**

¹¹ Socioeconomic Diversity in STEM Higher Education, CaSE, 2012

¹² www.questionsforgovernors.co.uk