

Education Select Committee hearing: Sir Michael Wilshaw

Evidence submitted by the Wellcome Trust

1 September 2015

Key points

- Science is a core subject that must be studied by all students until the age of 16. It should be prioritised alongside English and mathematics by all schools and their accountability systems. But Ofsted inspections fall short of recognising its importance - **73% of recent primary school Ofsted reports and 33% of secondary school reports do not mention science at all.**
- Ofsted has huge influence over the behaviour of schools and if science is not prioritised within Ofsted inspections, schools may not see it as a priority for their students. **We recommend that the Education Select Committee question Sir Michael Wilshaw about Ofsted's role in ensuring that inspections consider the core subject of science alongside English and maths in primary and secondary schools.**
- Practical science assessment for GCSE and A level is changing. Ofsted has a stated role in monitoring the quality and quantity of practical science being carried out in schools and reporting on this within their inspection. **We are keen to hear about Ofsted's plans for systematic monitoring of students' practical science experiences.**
- Ofsted should use a wide range of performance indicators when judging a school, and should encourage school governors and senior leaders to do the same. A school is not successful on exam results alone and this should be reflected in their Ofsted rating.

Introduction

1. The Wellcome Trust has a long-standing commitment to making inspirational, high-quality science education available to all young people. Each year, we spend around £12 million supporting teachers, funding and creating educational resources, and commissioning high quality research. This will help nurture the next generation of scientists and technicians, and those who draw upon scientific skills in other careers. We also aim to support all students to develop the skills and knowledge they need to live in an increasingly technological world.
2. We are pleased to have the opportunity to submit evidence for the Education Select Committee. The Wellcome Trust's strategic interest is in improving science education, but we appreciate that we cannot improve science education without taking into account the wider education landscape of which Ofsted plays an important role.

Evidence

1. Science is a core subject from primary school until the age of 16. All schools must teach a broad and balanced curriculum, including science, as stated in the National

Curriculum and the requirements for academies. Currently, science is suffering from a decline in its status and is not highly prioritised in many primary schools¹. With the removal of external examinations in science at key stage 2 in 2009, it does not receive the same emphasis in primary accountability measures as English and maths, even though it is one of the three core subjects.

2. Ofsted has a responsibility to verify good teaching of a broad and balanced curriculum and we believe that this should include, at the very least, comment on all of the core subjects including science. The Wellcome Trust has carried out a review of 100 primary school Ofsted reports from 2014 and found that **73% did not mention science in their reports at all**, while every report mentioned maths (see Appendix A).
3. Given Ofsted's great influence over schools' behaviour it is essential that it holds schools properly to account on science teaching. We recognise that science might not be taught during every Ofsted visit to a primary school, but inspectors should nevertheless be able to examine evidence of its teaching through discussion with teachers and pupils and examination of their work.
4. Secondary school inspection reports are more likely to comment on science than primary schools, but not all of them do so. 33% of secondary school Ofsted reports we reviewed did not mention science, whereas 100% mention maths². **We recommend that the Education Select Committee question Sir Michael Wilshaw about Ofsted's role in ensuring that inspections consider the core subject of science alongside English and maths in primary and secondary schools.**
5. Reforms across accountability, assessment and curriculum mean schools are coping with a number of changes. Practical science assessment will no longer directly contribute to the GCSE or A level grade which could lead to schools diminishing the amount of practical work carried out. Ofsted's role in monitoring any changes in students' practical work has been raised by many parties including the then Minister for Schools, Liz Truss. and by Glenys Stacey, Chief Regulator of Ofqual³. **We are keen to hear about Ofsted's plans for systematic monitoring of students' practical science experiences.**
6. We are pleased that there is continued emphasis on the importance of school governors within the new Ofsted framework. We urge Ofsted to look at how governors monitor their school using not only examination results, but other valuable high-level performance indicators. Indeed, we encourage Ofsted to use a similarly broad approach in making its own judgements. The [Framework for Governance](#), developed between the Wellcome Trust and the National Governors' Association, suggests a set of performance indicators for governors to use including teaching quality, pupil wellbeing, behaviour, relationships with the local community and future aspirations (see Appendix B).
7. The Wellcome Trust has a positive and productive working relationship with Ofsted's National Advisor for Science. We have used the 2013 'Maintaining Curiosity' report extensively to shape our work and would be grateful for further research on science education. We urge Ofsted to maintain the National Advisor for Science role as an expert on science education, and to act as a point of contact for the science education community.

¹ [Maintaining Curiosity](#): A survey into science education in schools. Manchester: Ofsted; 2013; Wellcome Trust. [Primary Science Survey Report](#). London: Wellcome Trust; 2011; [Primary science: Is it missing out?](#) London: Wellcome Trust, 2014; [Tomorrows World](#): Inspiring Primary Scientists, CBI and Brunel University London, 2015.

² 33 schools out of 100 schools sampled did not mention science. For full details see Appendix A.

³ [House of Commons Science and Technology committee evidence session, 12 May 2014](#).

APPENDIX A

Review of the extent to which Ofsted reports mention science

Science is a core subject alongside English and mathematics in primary and secondary schools in England - it must be studied by all until the age of 16. Evidence suggests that science has been losing status in many primary schools in recent years⁴. Given the influence that Ofsted has upon the behaviour of schools, and its responsibility to verify good teaching of a broad and balanced curriculum, we were interested to explore the extent to which school inspection reports comment on science.

Primary schools

The Wellcome Trust carried out a preliminary review of Ofsted's full school inspection reports from 770 primary schools to see how many mentioned science⁵. **93% of reports did not mention science at all.**

This prompted a more thorough examination of recent reports, using a sample of 100 schools from 2014. **73% of these primary school inspection reports did not mention science, but 100% mentioned mathematics.** A 'mention' refers to science or mathematics being written about in any context in the report⁶. Table 1 shows the data from the schools sampled in 2014 broken down by Ofsted rating.

| | Schools that did mention science (n=27) | Schools that did not mention science (n=73) | All schools sampled (n=100) |
|-----------------------------|--|--|------------------------------------|
| Outstanding | 11% | 9% | 10% |
| Good | 85% | 70% | 74% |
| Requires improvement | 4% | 25% | 16% |
| Inadequate | 0 | 0 | 0 |

We were also interested in the extent to which science was mentioned in inspection reports from other parts of the UK, noting that the inspection systems vary across them. In Northern Ireland, 10% (11 out of 115 reports) of primary school reports mentioned science, in Scotland 20% (8 out of 40) and in Wales 100% (50 out of 50) of primary school reports mentioned science (Welsh inspection guidance specifically states that inspectors should look at results and trends in science).

Secondary schools

A review of 100 Ofsted reports of secondary schools in England was then carried out for comparison. Inspections of secondary schools are more likely to report on science than primary schools, but still fall well short of full coverage. **33% of secondary schools' full school inspection reports did not mention science, whereas 100% mentioned maths⁷.**

⁴ [Maintaining Curiosity](#): A survey into science education in schools. Manchester: Ofsted; 2013; Wellcome Trust. [Primary Science Survey Report](#). London: Wellcome Trust; 2011; [Primary science: Is it missing out?](#) London: Wellcome Trust, 2014; [Tomorrows World](#): Inspiring Primary Scientists, CBI and Brunel University London, 2015.

⁵ Reports were published across a number of years, sampled by the order they were reported on the Ofsted website in August 2015. Schools that have recently become academies and not had an Ofsted inspection since then will not have been sampled.

⁶ A search was carried out for any term containing "scien" – all of which were verified to be referencing science.

⁷ Of the schools that did not mention science, 16% were outstanding, 33% were good, 14% were requires improvement and 2% were inadequate.

APPENDIX B

Framework for Governance high level performance indicators

A full list of high-level performance indicators included in Element C of the [Framework for Governance](#):

- Proportion of pupils making expected progress
- Pupil attainment
- Quality of teaching
- Staff morale
- Pupil wellbeing and resilience
- Behaviour of pupils
- Use of resources
- Effectiveness of communication with parents
- Relationship with local community
- Future aspirations of pupils
- Preparation for next stage of education
- Range of opportunities for pupils to experience and enhance success

The Wellcome Trust is a global charitable foundation dedicated to improving health. We support bright minds in science, the humanities and the social sciences, as well as education, public engagement and the application of research to medicine. Our investment portfolio gives us the independence to support such transformative work as the sequencing and understanding of the human genome, research that established front-line drugs for malaria, and Wellcome Collection, our free venue for the incurably curious that explores medicine, life and art.