

House of Commons Education Committee: Examinations for 15 to 19 year olds in England

Response by the Wellcome Trust

May 2014

Key Points

- Practical work is a vital element of science education. It engages students in science and other STEM subjects, and is an essential part of training for higher education and a wide range of careers.
- We are disappointed by Ofqual's recent decision to remove direct assessment of practical skills from science A level grades, despite a lack of evidence to support the changes and serious concerns expressed by teachers, education professionals and members of the science community.
- Rather than basing these changes on evidence or the consensus of consultation responses, Ofqual will be taking a significant gamble with students' science education and the development of our future STEM (science, technology, engineering and mathematics) workforce.
- If the change is to proceed, it should be piloted for a limited period, with a robust monitoring system put in place by Ofqual to evaluate the impact on students' educational experiences.

Introduction

1. The Wellcome Trust has a long-standing commitment to supporting inspirational and high-quality science education. The science pipeline starts early, and well-equipped students will form the next generation of science leaders, innovators, researchers and technicians. Science education is also vital to ensure that all young people obtain the skills and knowledge needed to live in an increasingly technological age. We are therefore pleased to submit evidence to the House of Commons Education Committee inquiry on examinations for 15 to 19 year olds in England.
2. Our response focuses on the recent decision by Ofqual to remove direct practical assessment from science A level grades and its potential implications.

Recent changes to exams for 15 to 19 year olds

3. The extent and pace of change in examinations for 15 to 19 year olds has made it difficult for external partners to fully engage with the various processes. Whilst we wish to support improvements in science education through informal and formal consultations, this requires substantive resource which is often difficult to deploy at short notice. We are concerned that this is creating unhelpful uncertainty in the sector. The reorganisation of staff at the Department for Education, including internal redundancies, has added to this.
4. More generally, we would welcome a more evidence-based approach to decision making, with adequate piloting and a robust system to monitor not only the implementation of new qualifications, but also the impact on students' educational experiences.

Ofqual's proposed changes to the assessment of practical science

5. Practical work is an essential element of science education, enthusing and engaging students¹. It is also a crucial part of training for university study², higher apprenticeships and jobs in science and engineering³⁻⁶. Without these skills, students would be ill-equipped to progress to the next stage of their career and unable to test whether they are indeed inclined and suited to such progression.
6. For these reasons, the science community and a substantial number of teachers and education professionals expressed serious concerns about Ofqual's recent proposals to remove direct assessment of practical skills from science A level grades, fearing that it would lead schools to deprioritise practical work. Furthermore, the reporting of practical skills as a pass/fail statement would be almost meaningless as a source of information for universities. It would fail to stretch the most able students and is unlikely to incentivise high quality teaching of practical work.
7. The Trust highlighted these concerns to Ofqual in direct meetings, including with the Chief Regulator, in a letter to the Chair of the Board, and in direct response to the consultation. The Trust also signed a letter to *The Times*⁷ expressing concern about the proposal and emphasising the importance of practical work. Co-signatories included Research Councils UK, Universities UK and the Confederation of British Industry.
8. Only 19 per cent of 351 respondents to the consultation agreed with Ofqual's proposal, including only 17 per cent of teachers. Despite this, Ofqual intends to progress with its plans. The lack of consideration given to the responses brings into question the purpose of consulting on this issue. This is in stark contrast to the Department for Education's consultation on Key Stage 4 reforms, where a robust process resulted in the decision not to redevelop GCSEs into English Baccalaureate Certificates.
9. Of the different groups of respondents, the awarding organisations were the most positive about Ofqual's proposals, but even within this group, two out of five disagreed with the suggestion that practical science should be removed from A level grades. It is our impression that Ofqual has been influenced by the other three awarding organisations and their views around the difficulty of developing robust assessments for practical science. However, it is the responsibility of Ofqual, as the exam board Regulator, to set the standards and rules that awarding organisations must meet when delivering and awarding regulated qualifications. We are not aware of evidence to support the changes to practical assessment that are due to take place at A level.
10. Ofqual's consultation did not propose any options for direct assessment of practical skills at AS level and it has now decided that they will not be assessed. The changes to practical science at AS level were given insufficient consideration in the consultation and should be urgently reviewed. We know that practical experiences motivate students¹ and if there is no requirement to assess the resulting skills, this is likely to seriously affect teaching and the number of students who progress on to science A levels.

¹ The Wellcome Trust Monitor Wave 2. Tracking Public Views on medical research – Clemence et al. (2013).

² Reiss M., Abrahams I. & Sharpe R. (2012). Improving the assessment of practical work in school science <http://www.gatsby.org.uk/~media/Files/Education/Improving%20the%20assessment%20of%20practical%20work%20in%20school%20science.as.hx>

³ <http://www.ukces.org.uk/assets/ukces/docs/publications/high-level-stem-skills-exec-summary-full.pdf>

⁴ http://www.cbi.org.uk/media/1051530/cbi__edi_education__skills_survey_2011.pdf

⁵ Grant, L. (2011). Lab Skills of New Undergraduates: Report on the findings of a small scale study exploring university staff perceptions of the lab skills of new undergraduates at Russell Group Universities in England. London: Gatsby Charitable Foundation.

⁶ Grant, L., & Jenkins, S. (2011). Practical Skills of New Undergraduates: Report on research workshops delivered on behalf of the Gatsby Charitable Foundation. London: Gatsby Charitable Foundation.

⁷ The Times (December 2013) Teaching Science <http://www.thetimes.co.uk/tto/opinion/letters/article3954966.ece>

The future of practical science for 15 to 19 year olds

11. The impact of the changes is currently unknown and it is therefore vital that detailed monitoring plans are put in place by Ofqual. One of the main justifications for the proposals was to improve school science — the onus should be on Ofqual to verify that it has achieved this goal.
12. Following consultation on GCSE reforms in June 2013, Ofqual made the decision to progress with a 10 per cent weighting of direct practical assessment in GCSE science qualifications. Despite this recent decision, Ofqual now intends to re-consult on the matter, introducing further uncertainty to the future of practical science. Before implementing further change at GCSE, it is imperative that the impact at AS and A level is fully understood, especially given that science GCSEs are experienced by the majority of students, and changes at this level would therefore have far greater reach.
13. The changes to practical science assessment that are due to be implemented at A level also have the potential to indirectly impact teaching at GCSE level by lowering the status of practical work and reducing the incentive for high-quality teaching across all qualifications.

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