ROYAL STATISTICAL SOCIETY

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RSS RESPONSE TO OCR REPORT 'STRIKING THE BALANCE: A REVIEW OF THE 11-16 CURRICULUM AND ASSESSMENT IN ENGLAND'

6 December 2024

This is the Royal Statistical Society response to the OCR report Striking the balance: a review of the 11-16 curriculum and assessment in England feedback survey. Answers to the questions we have responded to are below.

4. If you have any further thoughts about this report that you would like to share, please provide them here.

The Royal Statistical Society welcomes the report's suggestion that the maths curriculum should be reviewed. The report states that '*there is nothing fundamentally wrong with the content of GCSEs other than that there is too much of it*' and we agree that content should be adjusted to ensure that students can focus on the most important and useful content.

However, we also think that in this instance there is a need for *more* content in some areas – in this data-driven era, a stronger focus on statistics and data is needed within mathematical education. This is crucial to enable young people to explore data and understand the world around them. This view is echoed in the recent Royal Society report on the future of the mathematical sciences – showing that the value of statistics and data is appreciated by the wider scientific community (https://royalsociety.org/-/media/policy/projects/maths-futures/mathematical-and-data-education-policy-report.pdf).

In addition, we think that in the instance of maths, statistics and data something *is* wrong with some of the content – it is often outdated and does not make use of relevant, engaging and exciting examples or real-world data. We would like to see more engaging statistics and data content within the maths curriculum. We note that pages 86-89 of the report caution against emphasising real-world contexts when teaching maths, instead arguing that the maths curriculum should focus only on fundamental concepts and principles. We acknowledge the need for care around some of the challenges with using real-world contexts, for example ensuring that they are relevant and accessible to all learners and that they are not overly contrived or reliant on high levels of literacy. Teacher training would also be useful to help address some the points presented. However, we believe that real world contexts are crucial for engaging students across the spectrum of abilities and enabling them to see the utility of what they are learning. Statistics as a discipline is centred on context and cannot exist without it; it is not possible to develop data skills without working with data on a specific context: real-world contexts are crucial to the teaching of these subjects.

With a view to reducing content, the report mentions that some topics in the current mathematics curriculum might be better placed in further and additional maths qualifications. We stress the need to ensure that the data and statistics aspects are strengthened rather than squeezed out. The consequences of changing GCSE content for those going on to study A-level maths qualifications will also need to be addressed.

Regarding digital literacy, we welcome the report's recommendations to update the curriculum in this respect. We suggest that digital literacy should include statistical and data literacy, as there are essential for many aspects of digital literacy. Digital literacy links strongly to data skills, and we would like to see increased use of technology to teach maths, statistics and data – as we use it in the real-world when working in these subjects (including calculators and software). Likewise, there is a core place for data education, statistical literacy and AI education in any new digital skills qualification. There is also an opportunity to incorporate data skills and digital literacy into subjects across the board – capitalising on interesting and relevant examples to build these skills, in a joined-up manner. Digital assessment can also free up teacher time and efficiently improve understanding of students' strengths and weaknesses to aid teaching.

We are supportive of the report's recommendations to conduct a review of non-exam assessment models and explore their use. We believe that for subjects with a practical nature like statistics, assessment via course- or project- work, including being able to explore and work with large datasets and software, better enables students to develop the necessary skills and for these skills to be assessed. Exams are efficient, but are not necessarily the most effective option, or the most reflective of some students' abilities. The review also mentions spreading exams out over the two GCSE years. If modular assessment is introduced, a module specifically on statistics and data could help improve subject identity and allow students to recognise what statistics is and how it differs to mathematics. This is important to inform future choices – many young people, even when entering university, are not familiar with what statistics is.

We agree with the report's points around the need for an alternative to continuous retakes for students who do not pass GCSE maths – this alternative should be relevant and engaging and should equip students with the skills they need for daily life and work. We also agree that assessment at age 14 can be helpful to track student's strengths and weaknesses and enable them to feel early success after an often-challenging transition period (https://www.nottingham.ac.uk/research/groups/crme/documents/maths-pipeline-report.pdf). As well as data 'interpretation', as mentioned by the review, the full investigative cycle (including planning, exploring, analysing, and interpreting data) should form a key part of this assessment. CPD will be necessary in preparing teachers for changes such as the introduction of novel exams.

The report mentions a review of the current EBacc measures to encourage schools to offer a wider range of subjects, providing the example of expanding this to include creative and vocational subjects. As the report also flags, this would still leave little incentive to take any subjects outside of this 'set menu' - for example statistics. If EBacc is reformed then we believe that statistics should 'count', otherwise schools will not offer it. The recent large (20%) rise in Statistics GCSE entries in 2023 and 2024 (albeit from a low base) as the review points out, demonstrates interest in this subject. A possible solution, as we have proposed previously, is to refresh the mathematics GCSE offer, to enable students to either take two GCSEs (one in maths, and one in statistics/data), or one dual GCSE composed of elements of both. This would enable increased statistical and data content to be covered for all students, and would count towards the EBacc.

The report recommends changes to the curriculum and assessment materials to ensure they are relevant to modern Britain and encourage diversity. We agree and believe this is relevant to the teaching of statistics and data – we advocate for consideration to be given to how cultural connections can be made in our published recommendations for the teaching of statistics and data (link below).

Finally, we agree that government should ensure that there are mechanisms in place to establish continued improvements to the education system – including by appointing an independent body to do so. We would be happy to facilitate data and statistical representation on a relevant body.

We provide further detail on our key recommendations here: https://rss.org.uk/news-publication/news-publications/2024/general-news/rss-publish-key-recommendations-for-the-teaching-o/, and we would be happy to discuss these and feed into any further work on this.

5. What do you think are the key priorities or actions for the new government in regards to curriculum and assessment?

With regards to statistics and data, we see the key priorities as:

- Ensuring that maths, statistics and data content is relevant and equips students with the skills they need for daily life and work, including strengthening statistical and data content to prepare students for this data-driven era
- Striving to make the content engaging and interesting, with real-world data and examples in interesting areas, so that students can enjoy these subjects, see their utility and not disengage

- Working to join up the statistics and data that is inherent to the range of subjects taught at school (eg enabling data/statistics skills to be tracked across the board), while also increasing the subject identity of statistics to enable students to recognise what they are studying, so this can inform future pathways. One way of doing this, as we outline in our recommendations (further information below), is to introduce the option for students to take either two GCSEs in maths and statistics/data, or one dual GCSE composed of the core elements of both.
- Regarding assessment, we think that non-exam assessment should be explored, to reflect the practical nature of statistics and data education, and allow students to develop and demonstrate data exploration and understanding via course- or project-work.

We expand on our key recommendations here: https://rss.org.uk/news-publication/news-publications/2024/general-news/rss-publish-key-recommendations-for-the-teaching-o/