

# A BETTER WAY

U-turn if you want to, but the journey to improve GCSE mathematics is just beginning, says **Peter Ransom**...

**N**ews that education secretary, Michael Gove, has decided not to replace GCSEs with the English Baccalaureate Certificates (EBCs) was met with relief from teachers, unions and associations alike. However, while the U-turn was needed, it should not detract from the important task of shaking up the exam system and ensuring GCSE mathematics is at the heart of the reform agenda.

The EBCs were almost universally disliked and many, including members of the Mathematical Association and myself, as president designate, feared the pace of change was relentless, and in the long term would be harmful to students' prospects. Since mathematics is a core subject and one vital to the viability of our economy, it is clear that GCSE mathematics needs to undergo dramatic reform – but not within the overly ambitious timetable that has been proposed; there are many factors that need to be considered.

## Can one size fit all?

One particularly contentious issue when discussing mathematics exams is the issue of tiered papers. The current system of tiered papers isn't perfect and can limit students' ambitions. In a recent speech, Michael Gove stated, "Reformed GCSEs will no longer set an artificial cap on how much pupils can achieve by forcing them to

choose between higher and foundation tiers. Reformed GCSEs should allow students to access any grade while enabling high quality assessment at all levels. The appropriate approach to assessment will vary between subjects and a range of solutions may come forward, for example, extension papers offering access to higher grades alongside a common core. There should be no disincentive for schools to give an open choice of papers to their pupils."

While there has been talk of a single tier paper aimed at all students, there is also serious consideration being given to a suite of papers, catering for all abilities, as an alternative to a single tier exam, which is an idea that the MA has discussed with Stefano Pozzi, the assistant director of the national curriculum review division.

## The C grade 'cliff edge'

Another failure of the current assessment system, which I hope will be addressed, is the option to take GCSE exams early. Selecting pupils to sit mathematics twice in Year 9 and twice in Year 10 giving them many bites of the cherry, isn't always in their best interest. Of course teachers' motivation is understandable; they want to stack the odds in favour of pupils achieving that magic 'C' grade. Unfortunately it can result in students being satisfied with a C or B grade when they are capable of something higher. If students are continually entered for exams before they are fully ready, this could limit their options for higher education. The prestigious universities are increasingly scrutinising GCSE results and using A\* as the discriminator grade, when admitting students onto rigorous law and medicine degree courses. This strategy of multiple early entries needs to be stopped, as Department for Education research shows this is detrimental to pupil attainment.

Rushing students through examinations to bag that C grade is one of the fundamental flaws within the assessment system and is driven by the current Performance Table criteria. Measuring a school's success on how many children achieve grade C or above has unfortunately led to an



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inordinate amount of time being focused on students on the C/D borderline. This is at the expense of lower-attaining students, as well as the most able. Michael Gove has proposed to move towards an average point score system in order to reward schools for the achievements of all pupils. As it stands, mathematics results will remain subject to the current threshold calculation, which is a major concern.

## Introducing rigour to command global respect

There is much in the media about how English pupils' mathematics skills compare with their East Asian counterparts. While the picture isn't as dire as is sometimes suggested, undoubtedly there is a need to introduce more rigour into GCSE mathematics to ensure pupils have sufficient grounding to progress with the subject.

I often hear people talk about how the exams are getting easier and that may well be true. For example, although a C grade is considered a minimum

benchmark for further study, more sixth form colleges are requesting that prospective mathematics A-level students achieve at least a grade B in GCSE maths because a C grade doesn't sufficiently demonstrate a strong grasp of algebra and geometry needed at a higher level. New qualifications are currently under

development for 16-19 year olds that will hopefully be more relevant to their future studies.

I'm pleased to see that GCSE mathematics is moving towards more robust ends and I've certainly noticed more geometry and algebra questions in exam papers – I hope this trend continues. Getting students to exercise problem solving and apply their mathematical knowledge to more unusual circumstances needs to be a key objective in order to ensure that the future workforce is sufficiently numerate and able to compete in the STEM industries.

One barrier to strengthening these problem solving skills is the nature of the exam questions; they are often broken down at every stage. It would be far more beneficial if pupils were given more opportunity to work through a problem from beginning to end without being spoon-fed. Michael Gove's commitment to make GCSE mathematics more robust is a step in the right direction in ensuring it becomes an even more internationally respected qualification, but we cannot underestimate the role that culture and attitude play in mathematical success.

Working as a teaching consultant, I have travelled to schools across the world and it is clear to see attitudinal differences toward mathematics between the UK and countries in Asia for example. In South Korea, children spend much more time studying and they view education as hugely valuable, which is evident in the fierce competition for university places. In the UK, there is a prevailing attitude that it is OK to be bad at mathematics, an attitude that can be

unintentionally reinforced by wider society. No one would dream of saying they could barely read and write, yet I often hear people stating that they can barely do their times tables, without thinking of the message that is communicated to children. We have to show our young people how useful the subject is and encourage our society to shift its perception of mathematics.

## Ready for reform

Clearly, this is an exciting time for GCSE mathematics and it's encouraging to see that it is getting much needed attention with promise for a reform. It is vital that any changes to exams are well thought out and the opinion of teachers, unions, associations and Ofqual are carefully considered. We need to take a long-term view of mathematics and the GCSE qualification. Is it sufficiently robust on a global scale? Is the exam testing the skills that are required in the workforce? Will all students have an opportunity to reach their potential? Is GCSE mathematics providing a route for further study? All of these questions need to be addressed if the reform is to be dramatic and ultimately, worthwhile.