

Research Brief

Changing the subject

How are the EBacc and Attainment 8 reforms changing results?

Dr Rebecca Allen and Dave Thompson, Education Datalab

Secondary schools have managed significant changes in the Key Stage 4 curriculum they offer in response to changes in performance tables and accountability measures from 2010 onwards. In this piece we assess how these changes are starting to affect the educational choices and successes of pupils at the ages of 16 and 18. We do this by following a cohort of pupils who took their GCSEs in 2012/13 and A-levels or other Key Stage 5 qualifications in 2014/15, comparing their outcomes to a cohort passing through the education system three years earlier.

Some schools have moved faster than others to realign their subject offer to suit the new accountability measures. In this research brief, we focus on 300 schools that implemented major curriculum change over the three year period 2009/10 to 2012/13. We are particularly interested in outcomes for pupil premium pupils and those with lower prior attainment because there is some concern that a more 'traditional' or 'academic' curriculum could stretch their efforts over too many subjects or into subjects for which they are less motivated or well-suited.

A new GCSE regime

The coalition government of 2010-2015 made three policy announcements that had a substantial impact on the curriculum that secondary schools offered at Key Stage 4 and their encouragement of pupils to take particular subjects. They did so to re-orient the curriculum towards more academic subjects at the expense of some arts and vocational subjects.

The English Baccalaureate (EBacc) was introduced in January 2011, applying

Key findings

- 300 secondary schools – we call them curriculum change schools – transformed their Key Stage 4 curriculum between 2010 and 2013 in response to government policy, achieving a rise in the proportion of pupils entering the EBacc from 8% to 48%.

- We find that pupils at these schools largely benefitted from these changes. They were more likely to achieve good GCSEs in English and maths, refuting claims that the more academic curriculum would distract focus from these core subjects.

- Those pupils who attended the *curriculum change* schools were 1.7 percentage points more likely to be taking an A level or other level 3 qualification after the age of 16 and 1.8 percentage points less likely to have dropped out of education entirely.

- Pupil premium students benefitted most from the changes

at these schools, essentially because low and middle prior attainment students increased take-up of EBacc subjects most. As a result, the pupil premium gap closed a little more than in schools with similar pupil intake demographics, including a six percentage point narrowing of the EBacc gap.

- Nevertheless, pupil premium students still do not have fair access to the EBacc curriculum subjects nationally, compared to students with similar prior attainment. We have identified nearly an 8% gap in languages take-up which translates 11,000 disadvantaged students and an 11% gap in humanities, equivalent to 15,000 students missing out.

- Although our evidence demonstrates that schools have successfully moved towards an EBacc aligned curriculum, our survey of headteachers confirms that delivering the EBacc to 90% of students is beyond the reach of many schools given specialist teacher shortages. Moreover, these headteachers believe that it is not appropriate for many students.

retrospectively to the 2010 performance tables, as a means of encouraging a more traditional curriculum in schools.^{1,2} The EBacc is achieved by studying GCSEs in certain subjects: English, maths, two sciences, history or geography, and a foreign language. The percentage of pupils achieving at least a grade C in six EBacc subjects is now included in school performance tables. In this report, we study the cohort of pupils who took their GCSEs in summer 2013 who would have been in year 9 at the time

of the announcement. Some schools immediately reacted to the new metric by placing restrictions on permissible subject choices for this cohort, particularly for those who were deemed able to achieve the EBacc. It should be noted that, at this time, the incentives to re-orientate the subject entries for lower attaining pupils were very low.

The introduction of the EBacc was closely followed by the recommendations arising from the Wolf Review of 14-19

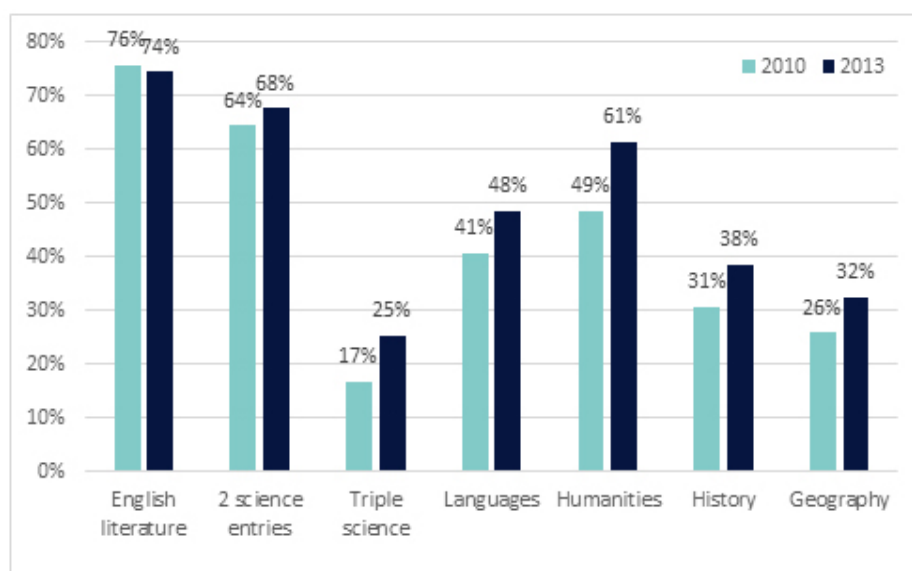
vocational education.³ It argued that the major increase in the number of vocational qualifications between 2004 and 2009 as a result of their equivalence in performance tables had resulted in pupils taking less rigorous qualifications that limited their progression both on to the next level of study and on to employment. The removal of the first set of these qualifications took place for those completing Key Stage 4 in the summer of 2014, one year after the cohort we study in this report.

Finally, two new headline measures, Attainment 8 and Progress 8, were announced in October 2013 to replace existing performance measures from summer 2016 onwards.⁴ These incentivise schools to ensure that all pupils, even those with low prior attainment, are taking qualifications that fill eight key subject slots: English; mathematics; three other qualifications in the EBacc subjects (sciences, computer science, geography, history and languages); and three further qualifications, which can be other GCSE qualifications in subjects not already counted, or any other ‘high value’ vocational qualification. This reform clearly post-dates the experiences of the cohort we study here, but has now become the primary driver of continued curriculum re-alignment across all secondary schools.

Changes in GCSE entries between 2010 and 2013

The cohort sitting their GCSE examinations in 2013 was the first to be affected by the government’s attempt to encourage entries in the more academic EBacc subjects. Figure

Figure 1: GCSE subject entry rates, 2010 and 2013



1 shows there was indeed a significant increase the entry rates to the EBacc subjects – sciences, languages and the humanities of history and geography. Since this summer 2013 cohort preceded the post-Wolf performance table rules, they took non-GCSE equivalent entries at similar rates to the 2010 cohort (around 3 per pupil).

Table 1 shows that, overall, both pupil premium and other students changed their subject entries towards EBacc subjects in roughly equal numbers. This summer 2013 cohort was unaffected by the later encouragement of English literature GCSE as part of the Progress 8 metric.

The rise in triple science entries reflected the continued implementation of the previous Labour government’s strategy to ensure the option was available to students and it affected those with higher prior attainment more than others. By 2013 there was still a large difference in the proportion of pupil premium and other students taking triple sciences (13 per cent

versus 30 per cent). However, these were largely due to differences in prior attainment between these groups. Accounting for this reduces the participation gap in triple sciences to around three percentage points. This still means that 5,500 pupil premium pupils who might be expected to take triple science GCSEs each year may be missing out on doing so and is consistent with the findings from our previous Missing Talent research.

Figure 2 to 4 show how entry rates to two science GCSEs, a language and a humanity (history or geography), respectively, increased between 2010 and 2013. It does so by plotting entry rates for students who are grouped into 20 prior attainment bands (Key Stage 2 vintiles). There is some similarity in the pattern of increase of uptake in these EBacc GCSEs: for any given KS2 vintile, rates of entry have increased for both the pupil premium and the non-pupil premium groups, but the gap in entry rates has persisted. This gap means that pupil premium students do not have fair access to the EBacc curriculum subjects nationally, compared to students with similar prior attainment. It amounts to a gap of 8% in languages take-up which translates to 11,000 disadvantaged students and an 11% gap in humanities, equivalent to 15,000 students missing out.

Pupils in the middle of the prior attainment distribution were affected by increases in subject entries across all three subject areas. The higher attaining pupils did not increase science entries since they were already mostly taking at least two EBacc sciences. The lower

Table 1: Percentage point increase in GCSE subject entries by pupil premium status, 2010-2013

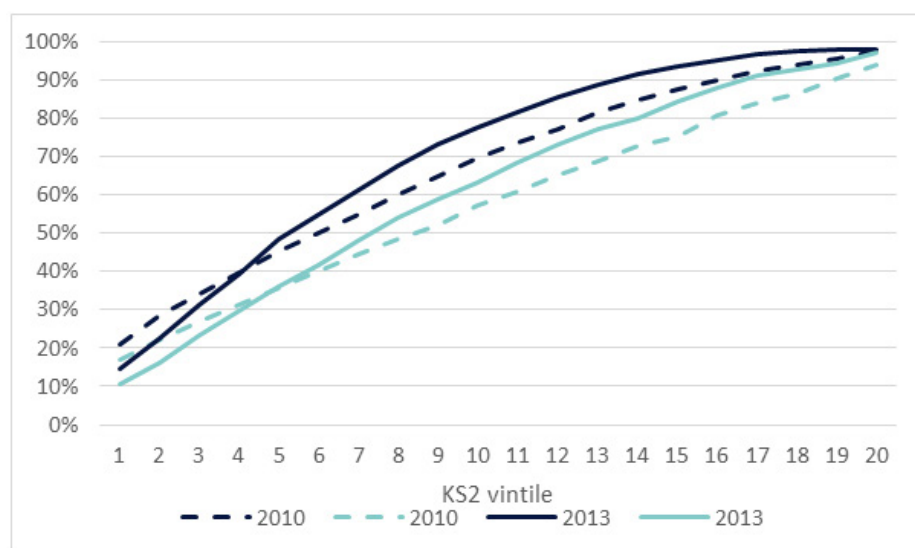
	Non-pupil premium	Pupil premium
English literature	-1%	0%
2 science entries	4%	3%
Triple science	10%	5%
Languages	9%	8%
Humanities	13%	13%
History	8%	8%
Geography	7%	6%

attaining pupils saw a small increase in uptake of a humanity GCSE, but little change in other subjects. This is consistent with the incentives in place for schools at the time, where there was no benefit to restricting subject entries for a pupil with little chance of achieving the EBacc qualification. The particularly low entry rates to GCSE languages for low prior attainment pupils means that we cannot know how they are likely to be impacted should they be required to take a language in the future.

Curriculum Change Schools

Secondary schools varied considerably with the speed to which they reacted to the introduction of the EBacc. We use the school's average number of EBacc slots filled in Attainment 8 to measure this reaction. This is a scale from 0 to 3 that measures how many entries each student has in EBacc-aligned sciences, languages and humanities. Between 2010 and 2013, the average student's filled slots rose by just 0.2 entries, but our interest here is in the schools where this change was considerable. We identify 300 'curriculum change' schools where the number of EBacc slots filled rose by at least 0.75 and EBacc entry rates rose from 8% to 48%. They are likely to have had a variety of motivations for making such a rapid change in their curriculum alignment and this must be borne in mind when interpreting the consequences of the change. Survey responses from headteachers⁵ at these

Figure 2: Entry rates for at least 2 EBacc science subjects, change 2010 to 2013 by pupil premium status



schools highlighted some of the factors affecting them:

"The change was a response from a poor Ofsted inspection where the school was heavily criticised for not entering students for more academic subjects."

"We felt that this was the future direction of travel and languages was already a strength of the school."

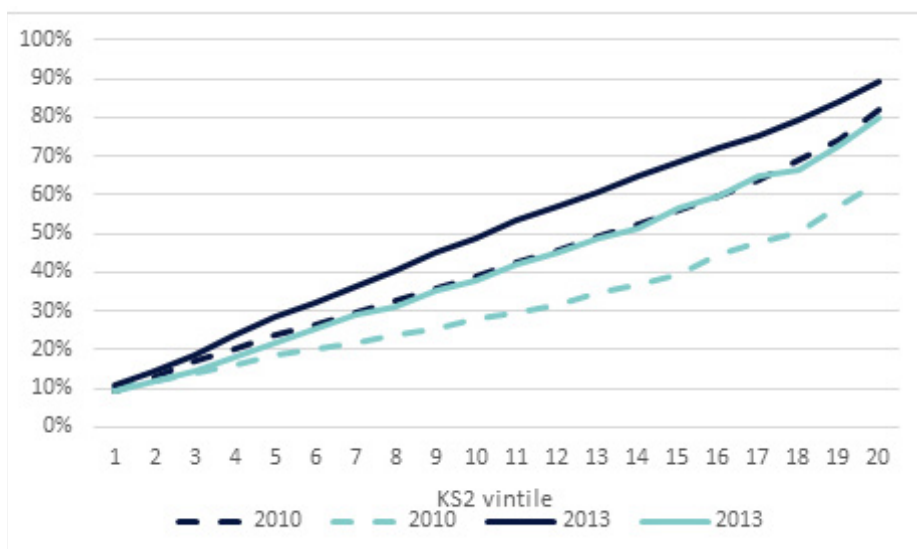
"The prior leadership of the school pursued a policy which forced students to take in particular a language."

"Regardless of background/context students need to be able to compete for university places and/or employment opportunities...We felt we would be doing the students a disservice if we did not have a curriculum that reflected that which was 'strongly encouraged'."
Department for Education

Figure 5 shows that these *curriculum change* schools were more likely than other schools to have a low average attainment on entry (KS2) profile and were more likely to have a higher proportion of pupil premium pupils. They were also less likely to have received an outstanding or good Ofsted judgment at their last inspection. However, these schools were no more or less likely to have a particular governance structure or be experiencing a change in governance over the period of inquiry. Their regional spread is not strikingly uneven, although inner London schools are over-represented in this curriculum change group and schools in the South East are under-represented.

The speed of curriculum realignment in these schools is amazing. In these 300 schools, the proportion taking at least two sciences rose from 43% to 71%; the number taking a language GCSE rose from 26% to 57%; and the number taking an EBacc humanity subject rose from 35% to 70%.

Figure 3: Entry rates for EBacc language GCSE, change 2010 to 2013 by pupil premium status



By comparing them to 300 schools with similar demographic characteristics⁶, we are able to see a pattern of leap-frogging from comparatively low entry levels in traditional academic subjects to much higher entry levels:

- **At least two EBacc sciences:** In 2010 the rate was 18 percentage points lower than in these matched schools; by 2013, the rate was 11 percentage points higher in our curriculum change schools compared to their matched schools. Over this period of time, the matched schools saw no increase in

their science entry rates.

- **Languages:** Entries leap-frogged those at their matched schools, where they were 11 percentage points lower in 2010 and 16 percentage points higher in 2013. Thus, the increase of 31 percentage points in the curriculum change schools massively outstrips a rise of just 4 percentage points at their matched schools.
- **Humanities:** In 2010 the rate was 8 percentage points lower than in the matched schools yet by 2013 it was 17 percentage points higher.

Following the national patterns described earlier, within our curriculum change schools it is the middle attainers that are most affected. Both pupil premium and other students experience rises in EBacc entry rates, though consistently from lower levels for pupil premium students.

Many headteachers responding to our survey told us that making changes to the curriculum to accommodate the EBacc brought many challenges:

"We already had a very traditional curriculum in 2010 (150 students doing MFL, almost no non-GCSE offer). We had increasingly come to believe that a core entitlement to knowledge really mattered, so to be honest the EBacc was a lever for what we wanted to do anyway."

"Lots of parents voiced that they didn't 'see the point' in their child studying languages. A number of parents formally requested for their children not to study a language. We allow all students to choose to follow the EBacc suite of subjects, however those students who really struggle with a foreign language are not 'guided' to do so."

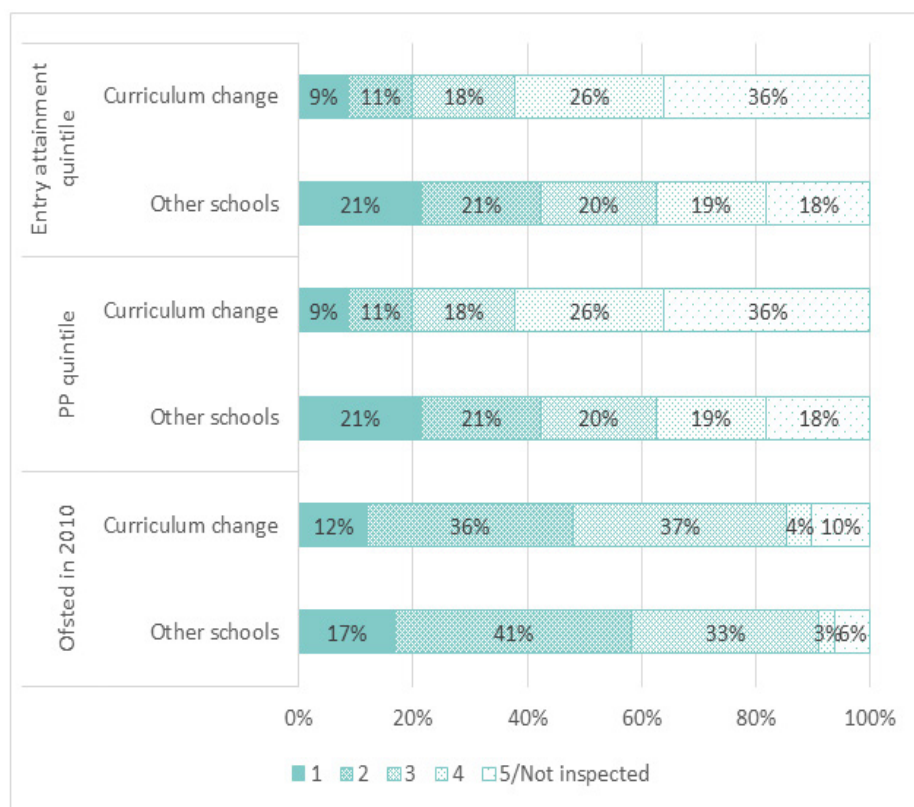
"MFL [Modern Foreign Languages] teachers experienced the biggest change in cohorts. They were used to smaller, more able cohorts. It also increased the need for additional staffing."

GCSE attainment at curriculum change schools

Figure 4: Entry rates for EBacc humanity GCSE, change 2010 to 2013 by pupil premium status



Figure 5: Characteristics of schools making significant changes in their EBacc entry rates



Critics of the new performance metrics have expressed concern that schools might move certain students towards a curriculum mix that was inappropriate for them. This might mean stretching the attention of lower attaining pupils across too many subjects, at the expense of core attainment in maths and English. Alternatively, students may be forced to take subjects for which they feel they have neither aptitude nor interest.

The headteachers at our curriculum change schools expressed these

concerns to us. For example:

"There was the challenge of ensuring the pedagogy within the EBacc subjects was sufficiently broad to cater for a wider range of students in terms of ability. Particularly as these subjects had, in recent times, tended to cater mainly for students at the mid-high end of the ability range. An associated challenge was for students who had not traditionally chosen these types of subjects to see them as a viable choice."

These expressed concerns clearly

limited the extent to which lower attaining students were encouraged to take EBacc subjects at the curriculum change schools. But overall we find very little evidence that it lowered GCSE grades in these 300 schools. Figure 6 shows that these schools saw a rise in the student's average best eight GCSEs (and equivalents) score, the proportions passing five or more GCSEs at A*-C (including English and maths) and a large rise in the proportion achieving the EBacc.

Figure 7 shows that the average grade rose by 0.4 and 0.2 of a grade in maths and English, respectively. Their average grade fell in all the EBacc subjects: this reflects the significant change in the mix of students taking these subjects at the curriculum change schools, rather than a deterioration in grades achieved by individual students.

These were felt by teachers in these EBacc subjects at the curriculum change schools:

"[There was a] reduction in pass rates in a couple of subjects; residual results for [languages] are poor, progress of students in this area remains a significant challenge and results reflect the apathy and lack of resilience of a number of students, particularly for middle ability students."

"It has put a big squeeze on subjects outside of the EBacc and we have had to plan our staffing accordingly. The narrower curriculum has not been in the best interests of all our pupils. We might not reach the 90% threshold

requirement being targeted by Ofsted given the number of students we have for whom we believe will not be able to thrive within the narrow focus."

"Results plummeted and a high level of disaffection was the result. By making the language element optional I now have students in year 10 taking French who want to study it and I expect to see results rise."

Of course, we need to account for any overall grade inflation during this time, as well as trends in attainment taking place at similar schools. If we model the changes in grades achieved at curriculum change schools between 2010 and 2013, compared to a matched set of schools with the same demographic characteristics⁷, we find that our curriculum change schools still improved their maths and English

results by one-tenth of a grade more than the other schools. Their 5+ A*-C pass rate improved by 1.2 percentage points and their percentage achieving EBacc improved by 11% more than the matched schools.

Within these curriculum change schools, the experience of lower and higher attaining students is quite different. Figure 8 illustrates some of these differences by reporting changes for low, middle and high prior attainment students separately. It shows that both the mid- and high-KS2 groups see significant translation of their GCSE grades into the EBacc qualification itself. This wasn't possible for the lower attainers because they largely were not taking the full set of EBacc subjects. The greatest gains overall are for the middle prior attainment group.

That said, the lowest prior attainment students do see significant improvements in their maths and English grades, and for some of them this translates into achieve five or more good GCSEs, including English and maths. Within this lower attaining group there is some evidence that the pupil premium students are the greatest beneficiaries.

It is hard to know how much curriculum change taking place in the school contributed to the superior attainment in English and maths for these students. It is perfectly possible that whatever motivations were driving the curriculum change itself – new school leadership or a desire to improve an Ofsted judgement – also motivated a separate re-focus on English and maths achievement for middle and lower attainers. However,

Figure 6: Change in headline GCSE achievement at curriculum change schools

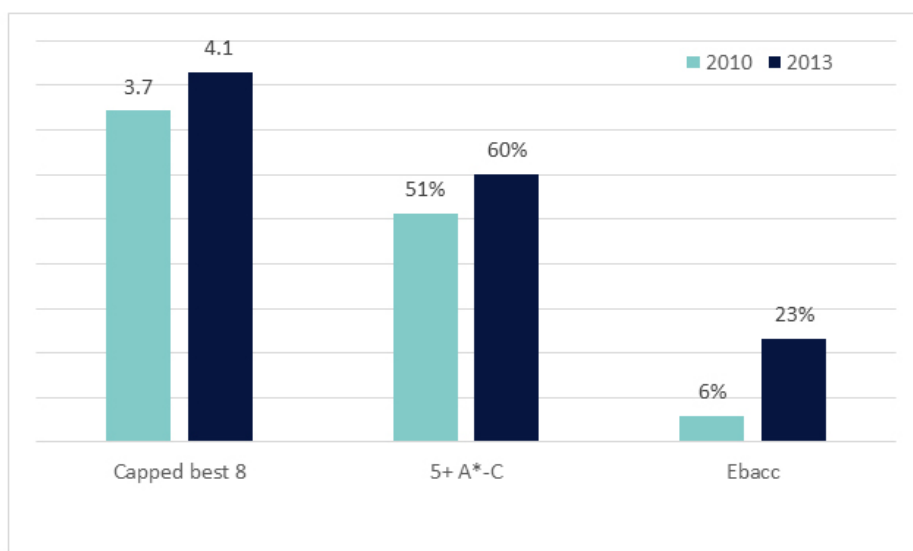
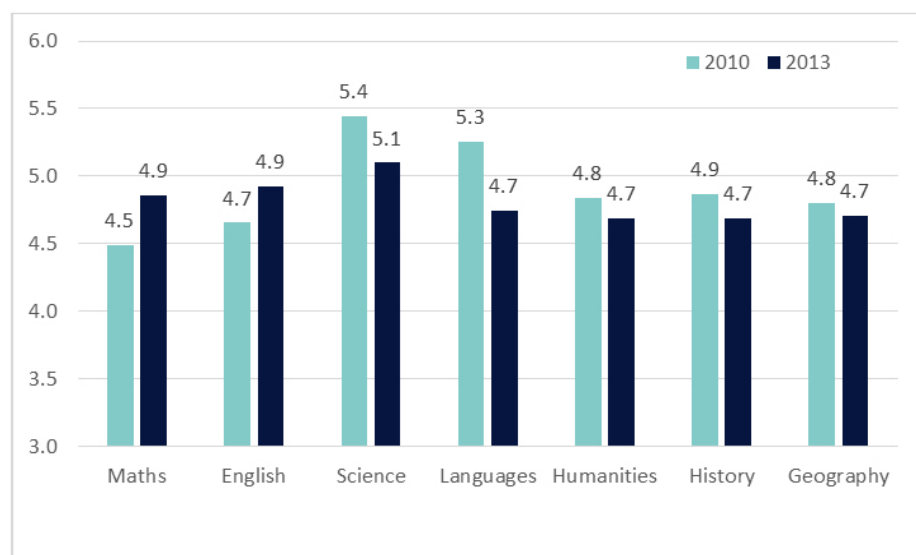


Figure 7: Change in average grade point score by subject at curriculum change schools



Note: D=4.0; C=5.0; B=6.0

it is true that these lower-attaining students were also studying more academic subjects in greater numbers by 2013. It is perfectly possible that spending more time in classrooms focused on traditional subjects had spillover benefits for attainment in the core subjects. Alternatively, studying a more traditional curriculum somehow changed the attitude or self-concept of these students to encourage them to pursue academic success more generally.

Because the students experiencing the largest changes in curriculum are disproportionately middle and lower prior attainment pupils, the pupil premium students in these curriculum change schools have benefited a little more, on average, than others. This means that in these curriculum change schools the pupil premium attainment gap has closed by slightly more than in their matched schools, by 6% of a grade in both English and maths. The gap in the proportion achieving 5+ A*-C has closed by 1 percentage point more than in the matched schools. And the proportion achieving the EBacc has closed by 6 percentage points more than in the matched schools.

Post-16 pathways

Given that students in the curriculum change schools appear to have benefitted from the more academic curriculum, achieving slightly higher maths and English grades without compromising their overall best 8 point score, it is possible that this has allowed them to take different post-16 pathways. The curriculum change schools had higher pass rates at age 16, but this advantage was not extended further by age 18 with about 1 percent of the cohort achieving their C in English in year 12 or year 13 across both the curriculum change and the matched schools who have similar intakes. The patterns of attainment in maths were very similar (Figure 10) and in both maths and English the rise in the proportions achieving a grade C was slightly higher for the pupil premium group.

Figure 11 shows the post-16 courses taken by students leaving the curriculum change schools, compared to the matched schools. Their higher pass rates in English and maths, combined with a more academic bundle of GCSE

Figure 8: Changes in attainment at curriculum change schools by KS2 prior attainment, 2010 - 2013

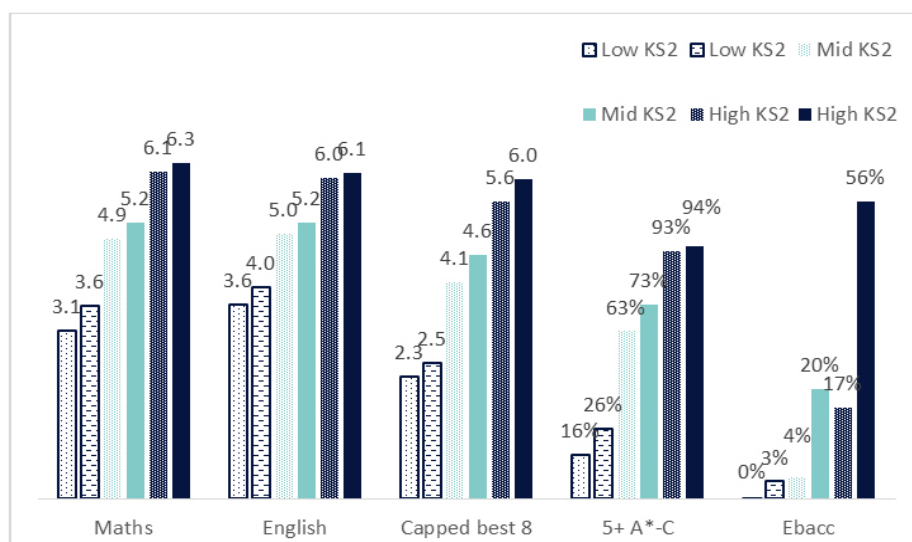


Figure 9: Proportions achieving at least a grade C in English at 16 and 18

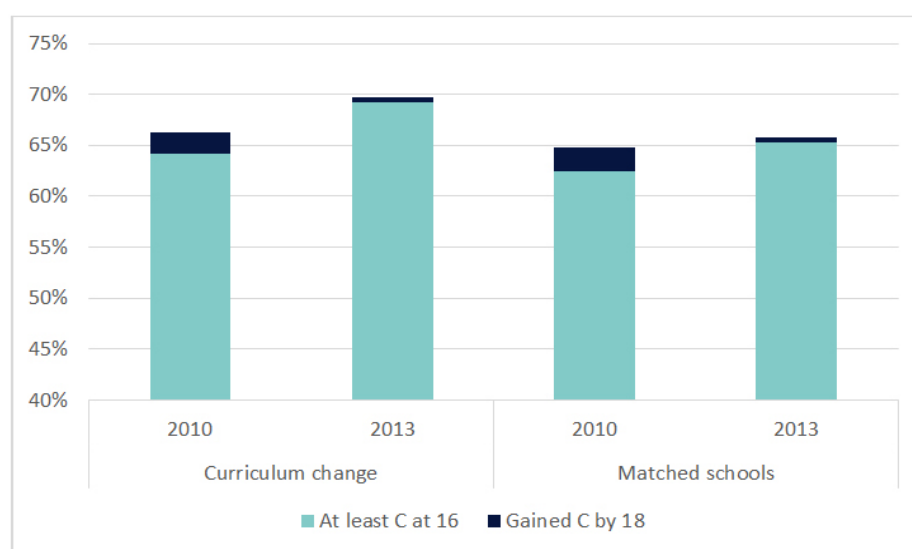
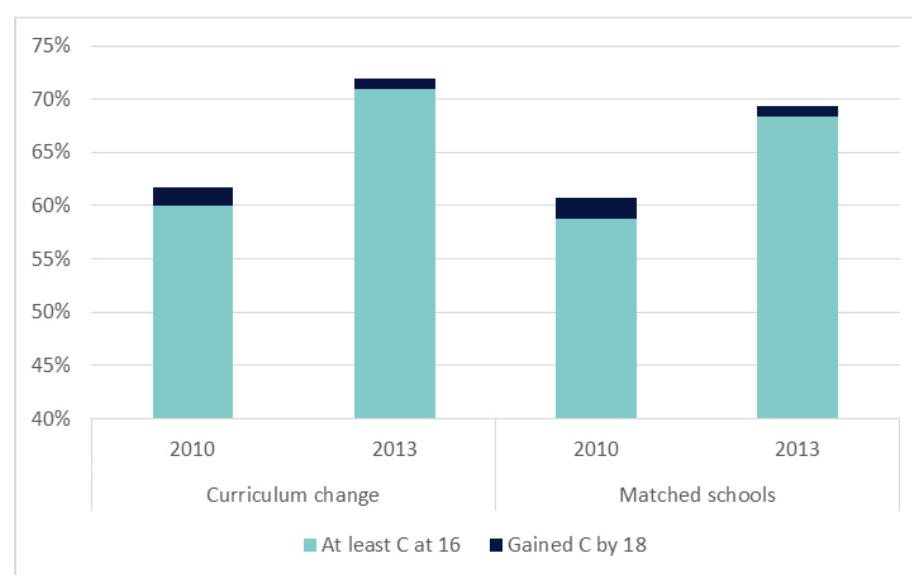


Figure 10: Proportions achieving at least grade C in maths at 16 and 18



These pupils in the curriculum change schools do appear to have benefitted from the reforms because it has enabled them to access a different post-16 route.

Again, pupil premium students have benefitted disproportionately and so the pupil premium gap in transitions to any post-16 education and to studying

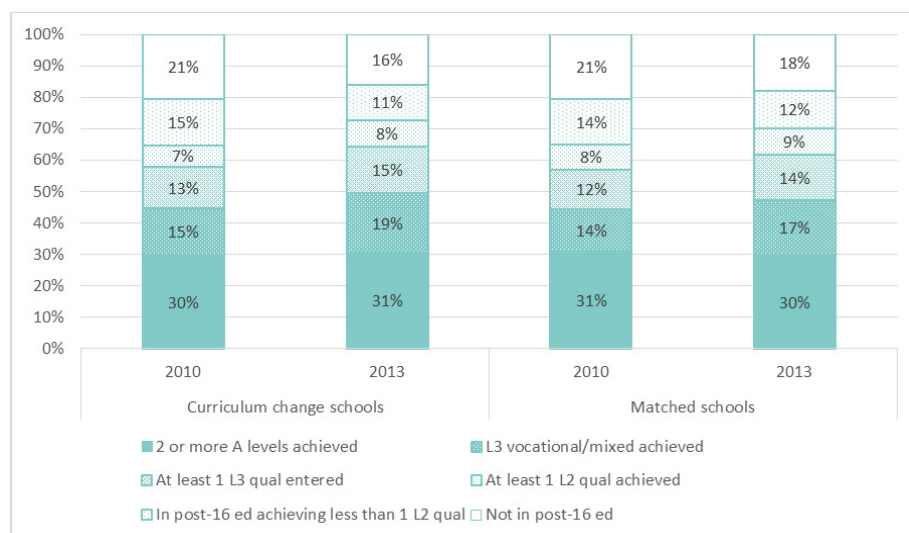
a Level 3 qualification has closed somewhat for students who studied at the curriculum change schools, compared to the matched schools.

Future changes in EBacc curriculum and challenges for schools

The new Key Stage 4 accountability metrics were felt to present a challenge to lower attaining and pupil premium students because these groups require the most significant changes in the curriculum they study. We have shown that, although the uptake of EBacc subjects has been rising amongst both the pupil premium and other groups, there is not yet evidence that the gap in take-up between these groups is closing. This is why in 2014/15, other students outperformed pupil premium students by 22% on a best 8 GCSE measure, but their outperformance was even greater at 29% on the new Attainment 8 measure that restricts which subjects count.

In this research we have focused on a set of schools that moved first to re-orientate their curriculum towards the EBacc subjects. We show that they appear to have done so without compromising on the quality of their core maths and English education and without stretching students over too many subjects at the expense of average grade. We think it is reasonable to use these findings to assert that it is possible to deliver a more academic curriculum to many students, particularly those

Figure 11: Post-16 route taken by students from curriculum change schools versus matched schools



with middle prior attainment, without compromising their attainment in English and maths.

Understanding the experiences of these early curriculum change schools is important since large numbers of pupils across all schools are now entering EBacc subjects, as shown in Figure 12. But these findings shouldn't be taken as evidence that implementing significant curriculum change across all schools can be achieved without costs. The group of schools that embarked on significant curriculum change over this period were not a random sample of schools and other factors associated with their decision to do so may have also supported improved GCSE maths and English attainment.

Furthermore, few of these schools are achieving 90% EBacc entry rates, as proposed by the government and most of the headteachers expressed significant

reservations about achieving such high entry rates:

"To implement the EBacc for all or even a significant majority shows a lack of understanding of the needs and aspirations of young people. One size does not fit all and we need to ensure the curriculum is as broad as possible to cater for the needs of many diverse children."

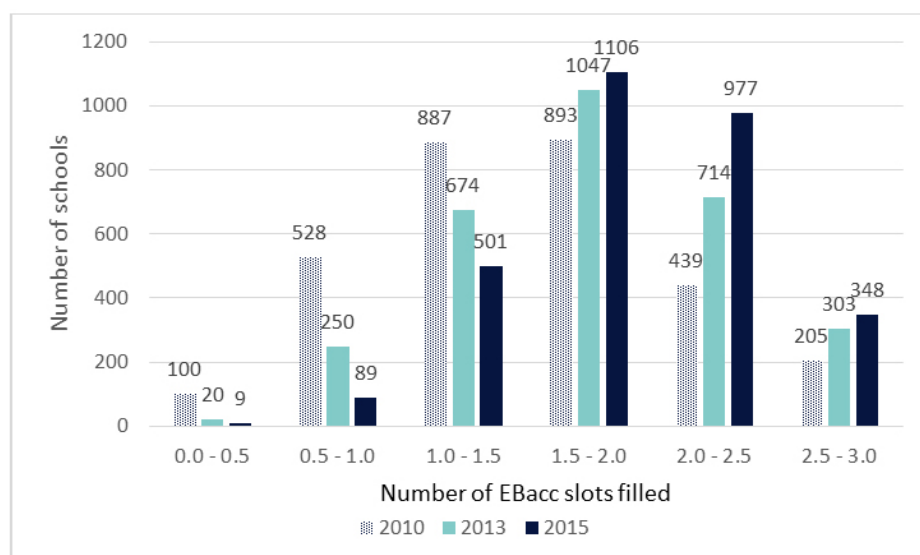
"We now have between 70-80% of students opting onto this pathway. I think this is right for our intake and the nature of the students. We will review each cohort, and continue to have individual interviews with each child in Year 8 to ensure they follow a curriculum that is right for them - challenging their assumptions but ensuring they will succeed."

Conclusion

It is particularly important that disadvantaged pupils have access to these subjects, alongside their peers. This includes addressing the significant gap in entry rates to triple science for disadvantaged pupils. Schools should be required to demonstrate parity of entry to EBacc subjects between their pupil premium and non-pupil premium students with similar prior attainment.

There is evidence to suggest these subjects are the right ones for many pupils, but not all. Many headteachers responding to our survey suggested that they would not be aiming for 90% of their pupils to sit EBacc subjects, as has been suggested for all mainstream schools by the government consultation:

Figure 12: School distribution of EBacc entries in 2010, 2013, 2015



Implementing the English Baccalaureate. No response to this consultation, which closed in January 2016, has yet been published. We would urge the government to publish their response in a timely manner and to consider whether the 90% aim is at all practical or desirable.

Furthermore, there is little point in having a government target that schools are incapable of meeting due to severe shortages of teachers in EBacc subjects.

Where there are teacher shortages, they are more likely to fall on schools serving disadvantaged communities, thus exacerbating inequalities. The Government has a duty to resolve these shortages before imposing mandates on schools.

In setting the EBacc as the 'gold standard' Key Stage 4 curriculum, we risk deprioritising the educational experiences of those for whom it is inappropriate. This group of pupils –

whether 10% or 30% of cohort – deserve to receive a curriculum that will equip them with the right skills to progress to further study and onto work. To this end, the Government should review the value of Key Stage 4 routes that include vocational qualifications and consider whether explicit guidance through a Technical Baccalaureate would raise the status and focus on the experiences of these pupils.

Recommendations

- 1. All pupils should have fair access to sit EBacc subjects, particularly those eligible for the pupil premium.**
- 2. The Government should reconsider its intention that 90% of pupils should be entered for EBacc subjects.**
- 3. The Government should consider what type of Key Stage 4 curriculum is appropriate for those not entering the EBacc and do more to facilitate a Technical Baccalaureate option.**

References

1. Department for Education. (2010). The Importance of Teaching: The Schools White Paper 2010. Retrieved April 21, 2015, from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175429/CM-7980.pdf
2. Department for Education. (2011). Statement of Intent of the Content of the 2010 Performance Tables - Addendum (The English Baccalaureate). Retrieved April 21, 2015, from <http://www.education.gov.uk/schools/performance/archive/Statement-of-Intent-2010-Addendum.pdf>
3. Wolf, A. (2011). Review of Vocational Education - The Wolf Report. London: Department of Education. Retrieved March 31, 2015, from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/180504/DFE-00031-2011.pdf
4. Department for Education. (2015b). Progress 8 measure in 2016 and 2017 Guide for maintained secondary schools, academies and free schools. Retrieved April 21, 2015, from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415486/Progress_8_school_performance_measure.pdf
5. We sent an email survey with five short question to 240 schools, of which 16 responded.
6. We select this comparison group by running a propensity score matching model with explanatory variables of free school meals proportion, prior attainment profile at school, number on roll and school admissions policy.
7. Formally, we model this as a matched difference-in-difference model with school fixed effects.