TEACHING BY DEGREES
The university backgrounds of state and independent school teachers

Dr Philip Kirby
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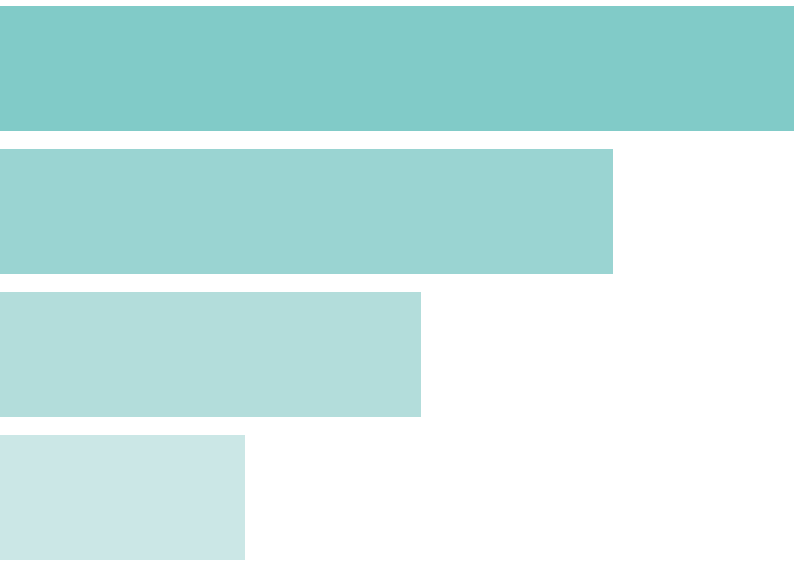

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FOREWORD

In October, we published one of the most successful Sutton Trust reports ever, *What Makes Great Teaching.* There we identified the factors that make for good – and poor – teaching. One of the most important factors in being a good teacher is good subject knowledge. Yet in some key subjects – such as physics and languages – access to a specialist teacher is too often lacking in state schools. That harms the chances of their students getting the A levels and GCSEs they need to get to the best universities.

But access isn't just helped or hindered by access to the right subject choices. It can also be a matter of who your teacher knows and what they know. Research by the Trust last year found that more than four in ten state school teachers would rarely or never advise a bright student to apply to Oxbridge. Too often that has been because neither they nor their colleagues have had any real experience of these universities.

A little over a decade ago, the Sutton Trust found that there were significant differences between the number of state and independent teachers that had attended the UK's top-ranked universities. Overall, independent teachers were more likely to have attended Oxbridge than their state school colleagues. Indeed, despite there being far fewer teachers in the independent sector than the state, the majority of Oxbridge graduates in teaching worked in the former.

Since then, successive governments have advocated the recruitment of more state school teachers educated at the UK's top-ranked universities. This has been a cross-party effort. We already know that independent school students are more likely to attend Oxbridge, but these policies have sought to level the playing field in terms of teaching staff, especially as Oxbridge-educated teachers have the knowledge to encourage others to follow in their footsteps.

In this report, we revisit this topic, using the latest figures. They suggest that there remains a significant gap between the proportion of teachers at state and independent schools that have studied at the nation's best universities. They also suggest that independent teachers are more likely to have a relevant degree in the main subject that they teach. Our report, *What Makes Great Teaching*, found that the most effective teachers have deep subject knowledge, so the fact that there is a continuing disparity is cause for concern.

But, there is encouraging news, too. There are more Oxbridge graduates entering teaching, and since 2003, the state sector has increased the proportion of its teachers that studied at Oxbridge.

Such a shift is testament to the drive to encourage more good graduates into teaching, and the success of schemes such as Teach First, which have targeted the nation's best graduates for recruitment into the state sector. There is much work still to do, but there has been real progress. In the future, we'd like to think that students will have equal access to teachers from the UK's top universities, regardless of the school that they attend.

To make this happen, the Sutton Trust would also like to see government support for Open Access, our programme to promote needs blind admissions to leading independent day schools, as well as more partnerships between independent and state schools, including in the sixth form for shortage subjects such as physics and languages.

However, the evidence of this report is encouraging. It shows that while significant differences remain, there has been progress. Radical policy options are needed to ensure that pupils from low and middle income backgrounds are even more likely to access the best specialist teachers and those with most experience of our leading universities.

Peter Lampl
Chairman
Sutton Trust

In 2003, the Sutton Trust published a study on the university backgrounds of teachers in the state and independent sector by Prof. Alan Smithers and Dr. Louise Tracey. This report revisits this topic, using 2015 data from the National Foundation for Educational Research's Teacher Voice survey, and the Independent Schools Council's Teacher Survey

EXECUTIVE SUMMARY

There remains a significant difference between the state and independent sectors, in terms of the level of their teachers' university qualifications:

- Of all teachers, state school teachers are more likely to possess BEd degrees than independent school teachers, but independent school teachers are more likely to possess Master's degrees and PhDs.
- Of all teachers, independent school teachers are almost twice as likely to have been awarded a BEd from Oxbridge; three times as likely to have been awarded a Bachelor's; over three times as likely to have been awarded a PGCE; and over four times as likely to have been awarded a Master's.
- Of secondary teachers, approximately 5% of state school teachers with subject degrees were awarded these by either Oxford or Cambridge. In the independent sector, the figure is closer to 17%.
- Of secondary teachers, independent school teachers are more likely than state teachers to have postgraduate qualifications relevant to the subjects that they teach, especially in the shortage subjects of physics and maths.
- Of secondary teachers, nearly nine in ten state school teachers in English, maths and science possess a relevant post-A level qualification, which concurs with the Department of Education's most recent figures. For the independent sector, the figure is slightly higher, at almost exactly nine in ten.

However, since 2003, it appears that there has been some progress in narrowing the gap between the two sectors, through improvement in the state sector:

- Since 2003, there has been an increase in the proportion of state school secondary teachers with Bachelor's and Master's degrees, along with an increase in the proportion of independent school teachers with Master's degrees.

- Since 2003, the state sector has recruited approximately 6,000 further secondary teachers with Oxbridge degrees, increasing its proportion of Oxbridge teachers from 3% to 5%. During the same period, the proportion of independent secondary teachers with Oxbridge degrees has remained stable at about 17%.

RECOMMENDATIONS

1. Further incentive should be given to graduates from the UK's most prestigious universities to teach in state schools:

The state sector has made some progress over the last ten years in attracting more teachers from the UK's most prestigious universities, including Oxbridge and the Russell Group. Schemes such as Teach First have contributed to this. The Sutton Trust believes that, if this progress is to be consolidated and continued, more incentives need to be provided to these teachers.

2. Further efforts need to be made to ensure that state school teachers have qualifications in the subjects they are teaching:

The Sutton Trust's recent report, *What Makes Great Teaching,* found that the most effective teachers have deep subject knowledge.[1] In the independent sector, a higher proportion of teachers have postgraduate and Oxbridge qualifications in subjects relevant to those that they teach. In the future, the Sutton Trust would like to see this gap narrowed further.

3. Further investment should be given to Open Access policies, which offer 'needs blind' admissions to independent schools:

Through the Sutton Trust's pioneering Open Access trial, the Trust has shown that it is possible to open our leading independent day schools to all, regardless of a family's ability to pay.[2] This report reiterates these recommendations, believing that admissions to independent schools should be based upon ability, rather than ability to pay. More needs blind admissions to independent schools would ensure that less-privileged students have greater access to teachers with knowledge of Oxbridge and strong subject specialism.

4. Further incentive should be given to fostering partnerships between independent and state schools:

Formal partnerships between state and independent schools are increasing, but more could be done to break down barriers between the two. Last year, the Sutton Trust published its Mobility Manifesto, which called for a deeper relationship between state and independent schools.[3] Such relationships offer the promise of further narrowing the disparity between

[1] Coe et al. (2014) p. 2.
[2] Sutton Trust (2012).
[3] Sutton Trust (2014).

the two sectors and enabling students to access more specialist A level teachers in shortage subjects.

5. Further research needs to be undertaken to determine why careers in independent, rather than state schools, are so attractive to graduates from the UK's most prestigious universities:

This report, building on previous research, has identified an apparent discrepancy between the attractiveness of the state and independent sectors to graduates from the UK's most prestigious universities. Further research is needed to understand why this is the case, and how the state sector can best foster increased recruitment of these same graduates.

INTRODUCTION

For students to qualify well, they need well-qualified teachers. This is a truism that requires little reiteration. Less well-known is the university background of teachers across the school system. Anecdotally, it might be presumed that more are employed by independent schools than state, but few analyses have examined this in depth. There has also been little research regarding where these teachers have acquired their qualifications. Is there, for example, a higher proportion of Oxford and Cambridge graduates at independent, rather than state schools, as accepted wisdom might suggest? And how does this sit with recent pronouncements, from political parties of all persuasions, that more well-qualified teachers should be entering the state school system, especially from Oxbridge?[4] The Sutton Trust first analysed this issue just over a decade ago, and this report provides an update on the current state-of-play, using data from two recent surveys of both the state and independent sectors. It suggests that there is still a significant gap between the kinds of qualifications possessed by state and independent teachers, but that there is some evidence that this gap is shrinking.

BACKGROUND

In 2003, a survey by Prof. Alan Smithers and Dr. Louise Tracey for the Sutton Trust found that there was a significant difference between the nature of qualifications possessed by a sample of 1,256 state and 625 independent secondary school teachers. In particular, it discovered that there were notable differences in the proportion of teachers from each sector that had attended the UK's leading universities. For example, over 17% of independent secondary school teachers had obtained a subject degree from either Oxford or Cambridge, compared to just over 3% of state school teachers.[5] "More than half of Oxbridge graduates in teaching [were] to be found in independent schools. The average independent school [had] seven times as many teachers with an Oxbridge degree and three times as many graduates from top-ranked universities as the average state school." Nearly 30% of independent school teachers had attended a leading university, compared with just over 10% of state school teachers.[6] And teachers in independent schools were five times more likely to possess a PhD as their counterparts in the state sector.[7] Across a range of measures, there was a marked difference between the type and awarding institution of educational qualification, according to the sector within which the teacher was working.

Increasing the number of teachers in the state school system with degrees from the top universities has been a priority for successive governments. During the early days of the last Labour government, Lord Adonis, former schools minister, described, "the progressive disappearance of Oxbridge-educated state-school teachers."[8] Over ten years later, he reiterated this point. "Far too many schools," he said, "a good proportion in the bottom half of comprehensives, and still quite a few academies have no Oxbridge teachers and very few from leading universities." He warned that it would be difficult to foster applications to Oxbridge from state school pupils, "unless you can develop a cadre of teachers in your own schools that have that background themselves"; a statement that has been supported, anecdotally, elsewhere.[9] In other words, the challenge was to ensure that more graduates from the UK's top universities ended-up teaching in state schools.

More recently, Conservative Education Secretary during the coalition government, Michael Gove, called for a similar recruitment policy for state schools and suggested that there had been some progress toward this goal. Speaking in 2014, he stated that, "Education is now the most popular career destination for Oxford graduates."[10] Earlier that year, it was reported that, "A quarter of students leaving Oxford are now opting for life in the classroom, with the profession proving the most popular choice for graduates at both Oxford and Cambridge combined, according to the universities' career

[4] See *Guardian* (2011), Labour Press (2015), DfE (2014b), Kirkup (2010).
[5] Smithers and Tracey (2003) p. 10.
[6] In this earlier report, leading universities were defined using contemporary league tables, and were: the London School of Economics and Political Science, Imperial College London, University College London, Durham University, University of York, University of Nottingham, University of Birmingham, University of Warwick, University of Bristol, University of Edinburgh and the University of St. Andrews (Smithers and Tracey, 2003, p. 10).
[7] Smithers and Tracey (2003) p. 2.
[8] Adonis (1997).
[9] *Guardian* (2011), Matthews (2014).
[10] DfE (2014b).
[11] Griffiths (2014).
[12] University of Oxford (nd). Data for the University of Cambridge could not be accessed externally, but the independent student newspaper of Cambridge has previously indicated that teaching is one of the two most popular destinations for graduates (Varsity News, 2010).

services."[11] According to Oxford's latest figures, education continues to be the most popular destination for graduates, with 12.5% entering the sector.[12] Within this, the proportion of graduates that have entered the state, rather than independent education sector is less clear, but the figures do offer grounds for encouragement. Part of this report's purpose is to gauge the proportion of these graduates that have ultimately started working in the state sector.

Today, contemporary debates over the qualifications of teachers within the state school system have been intensified by debates over the nature and effect of academies. Specifically, this has focused on the levels of 'unqualified' teachers in the state school sector (those without Qualified Teaching Status (QTS)), and the growth in academies and free schools, which, under the previous coalition government (2010-2015), were perceived to have more freedom to recruit teachers without standard qualifications, such as the Postgraduate Certificate in Education (PGCE).[13] Rather than increasing the level of well-qualified teachers in the state school system, academies, to their detractors, have decreased the size of the pool. To their proponents, the fact that QTS is not required to teach at academies means that they can better compete with independent schools in attracting graduates from the best universities, who do not have formal teaching qualifications. Given this, it seems an apt time to return to this topic, in an effort to understand the latest trends; to see whether, as successive governments have advocated, greater numbers of Oxbridge- and Russell Group-educated teachers have entered the state school system, and whether, with the relaxing of rules regarding the qualifications of teachers within academies, there has been any change in the gap between the qualifications of state and independent teachers since 2003.

While there has been little research in this area, other than the Sutton Trust's earlier report, several analyses have considered the broad differences between the teaching cohort in state and independent schools. This has included the work of the Centre for the Economics of Education at the London School of Economics. In a discussion of market competition for private and state school teachers, the Centre notes that a significant number of teachers recruited to the independent sector have been trained in the state sector (movement the other way has been comparatively smaller, given the expansion of independent schools in recent years, amongst other reasons). This is important because, "When a teacher is trained at the expense of the state, and moreover gains working experience in one of its schools, it is a significant loss on its investment when that teacher leaves the state system, and a concomitant gain to the independent school that is able to hire that worker without having born [sic] any of the expense of the training."[14] While this may be offset by positive externalities to other state schools in the area – especially if a formal teaching arrangement exists between the independent and state school in question – it is trends like this that make it important to continue to analyse this area, and to understand the differing levels of teacher qualification between the two sectors.[15]

It should be noted, too, that this report is not suggesting that the university background of teachers is the only determinant of good teaching, nor that the inequalities in teacher qualifications between the state and independent sector necessarily mean that a 'better' education is to be afforded to students at the latter. Last year, the Sutton Trust outlined six components of 'great teaching' that included, for example, quality of instruction, classroom management and classroom climate; components that need not be affected by a teacher's university background. It does suggest, however, and in line with that earlier report, that pedagogical content knowledge is one of the foundational components for the best teaching, and that there is strong evidence that this impacts significantly on student outcomes.[16] Given this, it is pertinent to consider how teachers with degrees from the higher-ranked universities are distributed across the state and independent sectors, and whether the gap that was identified in 2003 has been narrowed by the aforementioned efforts of successive UK governments.

In structure, the report: first, discusses methodological issues; second, examines some of the overall trends regarding the differing qualification types across the state and independent sectors; third, analyses how well-represented the UK's most prestigious universities' graduates are within both teaching bodies; fourth, considers the relevance of state and independent teachers' degrees to their main teaching subjects; fifth, offers a narrative summary and conclusion of the report's main findings; and finally, recommends a series of measures that might be considered by the government going forward.

[13] Adams (2010), Mulholland (2012).
[14] Green et al. (2010) p. 22. For earlier work, which identifies the same transfer of teachers from the state to the independent sector, see Smithers and Robinson (2000, 2001).
[15] For more on the Teaching Schools programme, see DfE (2013). According to recent figures, 33% of independent schools share facilities with state schools, 5% loan teaching staff, and 3% sponsor an academy (Staddon, 2014).
[16] Coe et al. (2014) p. 2.

METHODOLOGY

According to the Department for Education's latest figures, there are 451,000 full-time equivalent teachers working in state-funded schools in England.[17] By level, there are 214,000 full-time equivalent secondary teachers, and 210,000 primary teachers, with the remainder working in special schools or centrally employed.[18] These teachers are serving a state student cohort of some 7,700,000.[19] For the independent sector, figures are slightly more difficult to ascertain. The DfE state that there are 579,000 students in the independent sector in England as a whole. The Independent Schools Council (ISC) represents over 500,000 pupils, which is about 80% of independently taught pupils in the UK. ISC pupils are served by 56,000 full-time equivalent teachers.[20] Thus, while there are less than ten students for every teacher in the independent sector, the state sector has larger class sizes, with an average of about 17 students per teacher.

The Department for Education has also published data regarding the qualifications of the state school workforce in England (the independent sector remains outside of its purview), which was not available at the time of the Sutton Trust's previous report. As an overview, the DfE suggests that, "95.9 per cent of teachers hold qualifications at degree level or higher"; a figure that includes those with both Bachelor of Education degrees and PGCEs.[21] Such qualifications are a requirement for attaining Qualified Teacher Status (QTS), which is the prerequisite for teaching in maintained primary and secondary schools in the UK.[22] In the independent sector, according to 2010 data, 99% of teachers have either a teaching or academic qualification.[23] These figures, though, tell us little about the awarding institutions of these qualifications. For this, the Sutton Trust has commissioned and drawn-upon additional research undertaken by the National Foundation for Educational Research (NFER) (n=1,478) and the Independent Schools Council (n=4,680), respectively; both undertaken during the early months of 2015. Through these, more specific information about the nature of teachers' qualifications, within both sectors, has been made available.

The sampling strategies were slightly different for each survey, but represent the most up-to-date data that is available in this area. Given anomalies encountered in any data set of this size, particular decisions regarding the selection of data have had to be made at various points during the analysis. Rather than listing these here, they are included in footnotes next to the relevant section of analysis, or, if deemed of especial importance, discussed in-text. A brief methodological essay has also been included as an appendix, which elaborates upon some of these issues in greater depth than is possible in the main text. Where it has been considered that the data upon which graphs have been produced is instructive, this has been included in table form beneath the same. It is important to remember that this data is based upon samples, rather than entire populations, and that the results should be seen as indicative. Where possible, they have been cross-referenced with other, publicly available figures to ensure accuracy and corroborate trends. They have also been cross-referenced, where appropriate, with the findings of the Sutton Trust's previous report on this topic, by Alan Smithers and Louise Tracey.[24]

RESULTS

QUALIFICATION TYPE: A COMPARISON OF OVERALL TRENDS

As an introduction to the data, this section examines some overall trends; it does not break down the results by either the awarding university of teachers' qualifications, or subject specialism, which is the purpose of the two later sections. Across state and independent sectors, the proportion of teachers with one of the major higher education qualifications is broadly uniform (Figure 1). Within independent schools, a higher proportion of teachers have postgraduate qualifications (Master's, PhD), which concurs with the findings of the Centre for the Economics of Education at the LSE.[25]

Within state schools, BEds (Bachelor of Education degrees) are over twice as common, but the proportions of teachers in both types of school with Bachelor's and PGCE qualifications – the most common type of teacher qualification – is similar.[26] In part explanation of the difference in the proportion of BEds between the two sectors, it might be recalled that BEds are a popular choice for those who are interested, especially, in teaching at primary level, and that 60% of respondents to the ISC survey were secondary school teachers.[27] In addition, it is possible that BEds are deemed less desirable than subject undergraduate and postgraduate degrees in the independent sector. Postgraduate degrees appear more popular in the independent sector, with over one in four teachers holding a Master's degree, and nearly one in 20, a PhD.

[17] DfE (2014e) p. 1.
[18] DfE (2015) Table 1.
[19] DfE (2014d) Table 1a.
[20] DfE (2014d) Table 1c; ISC (2015b) p. 26.
[21] DfE (2014e) p. 2, p. 11.
[22] DfE (2014c).
[23] ISC (2010).
[24] Smithers and Tracey (2003).
[25] Green et al. (2010) p. 1, Murphy et al. (2009) p. 23.
[26] When the surveys are discussed, PGCE is used as shorthand for PGCE or other higher teaching qualification. Within the survey of independent teachers, a small minority of respondents included only their highest qualification, rather than all of them, as requested. Given this, it is possible that the figures for Bachelor's degrees, especially, are slightly deflated.
[27] Skill: National bureau for students with disabilities (nd).

TEACHING BY DEGREES

Figure 1. Percentage of all teachers, by post-A level qualification

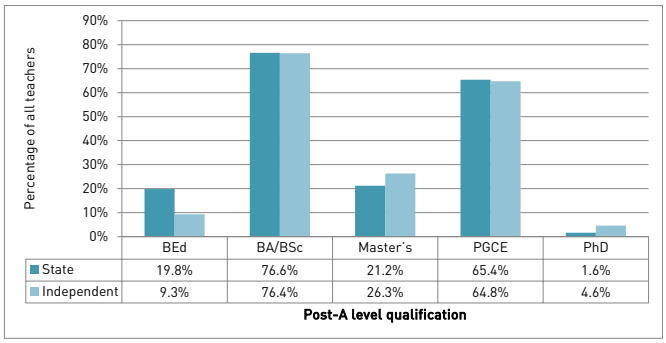


Figure 4. Percentage of all teachers with any qualification from Oxbridge or a Russell Group university

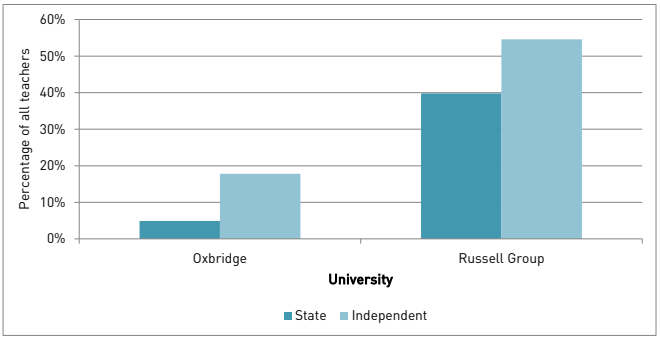


Figure 2. Percentage of secondary teachers, by highest post-A level qualification, 2003 v. 2015

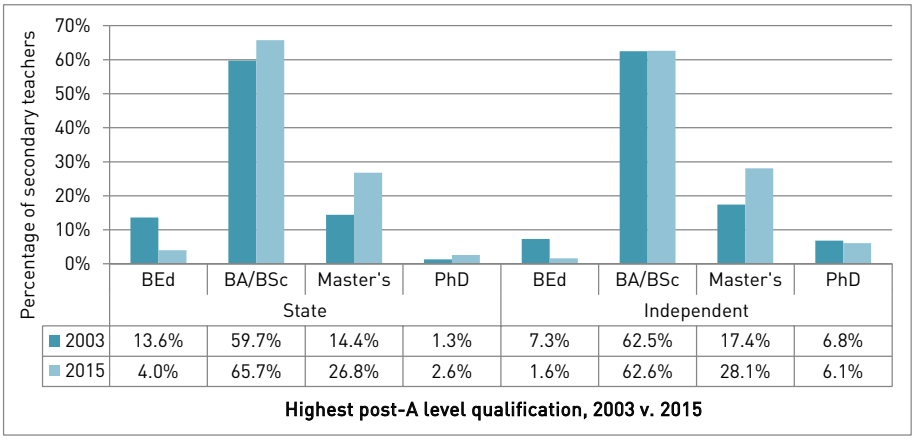
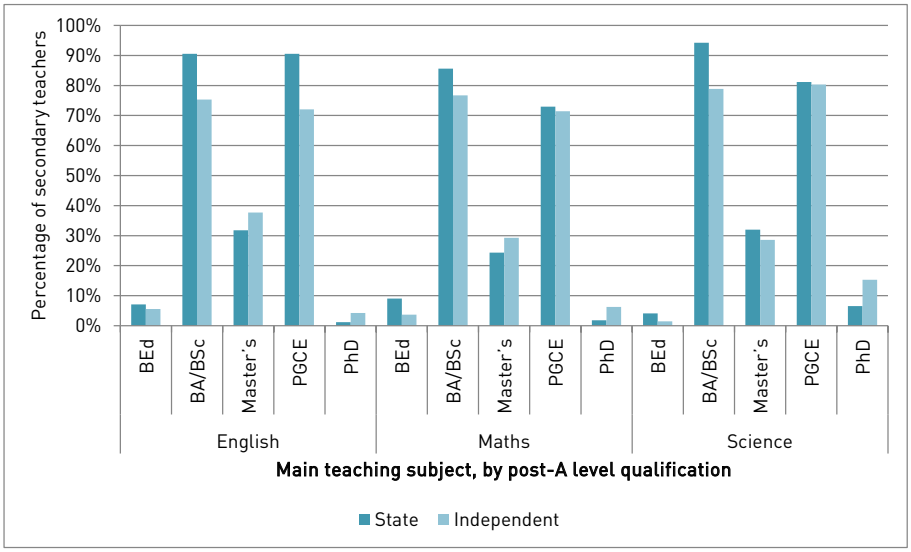


Figure 3. Percentage of secondary teachers with main teaching subject of English, maths or science, by post-A level qualification



How does this data relate to the Sutton Trust's previous findings in this area? In the following graph, this data is compared with the aforementioned 2003 Sutton Trust report.[28] In the independent sector, the qualification levels of secondary school teachers have remained stable for Bachelor's degrees, with an increase in those holding Master's degrees and a decrease in those holding BEds. In the state sector, the three most notable trends appear to be a similar decrease in the popularity of the BEd, and an increase in the proportion of secondary teachers with Bachelor's and Master's degrees. Perhaps the most obvious explanation for this is that those teachers with a Teacher's Certificate (a qualification that was superseded some years ago, but formerly allowed teachers to teach without a Bachelor's degree), are increasingly leaving the state school system. In 2003, 16.1% of teachers possessed a Teacher's Certificate, but today, that qualification is no longer available as a route into teaching, and Bachelor's degrees appear to be the preferred alternative.

When the results for secondary school teachers of maths, English and science are considered, in particular, independent school teachers generally hold a higher proportion of postgraduate degrees than state teachers. This is the case for Master's degrees and PhDs in all subjects, except science, where the proportion of state teachers with Master's degrees is higher than the equivalent in the independent sector. Broadly, BEds and PGCEs are more common amongst state secondary teachers in maths, English and science than independent teachers. The figures also suggest that Bachelor's degrees are more common amongst state teachers in these subjects than independent teachers, but again, as per the caveat mentioned previously (footnote 26), it should be borne in mind that the number of independent teachers with Bachelor's degrees may have been slightly deflated in the ISC survey.

QUALIFICATION LOCATION: THE AWARDING INSTITUTIONS OF TEACHER QUALIFICATIONS

In popular discourse, it is often assumed that a greater proportion of independent school teachers, rather than state, obtained their qualifications from either Oxford or Cambridge. The putative linkage between these institutions is given further colloquial support by the high proportion of independent school students that later pursue studies at Oxbridge. Last year, for example, the DfE stated that, "Pupils from private schools were five times as likely to get places at Oxbridge as their peers educated in the state system."[29] Specifically, "Figures published for the first time by the Department of Education show that one-in-20 pupils from the fee-paying sector goes straight in to Oxford or Cambridge at the age of 18. This compares with just one-in-100 of those from state schools."[30] These figures are supported by work in this area by the Sutton Trust, which has found that, "Independent school pupils are nearly seven times as likely as pupils from comprehensive schools to be accepted into Oxbridge: 5.2% of independent school pupils were accepted by Oxford and Cambridge, compared with 0.8% of pupils in non-selective state schools".[31] But does this link hold true for teachers at independent and state schools, too? As an initial indicator, the graph below shows the percentage of state and independent teachers to have a qualification (of any type, including BEd, Bachelor's, Master's, PGCE and PhD) from Oxbridge. It also includes the same for the relative proportion of teachers with any qualification from the Russell Group (which includes the Universities of Cambridge and Oxford); an established ranking of research-led UK universities that regularly feature at the top of university league tables.[32]

The results show that, while the overall number of Oxbridge graduates in the state sector is higher than the independent sector (see below), independent teachers are more than three times as likely to have a qualification from Oxbridge as their state sector colleagues, as a proportion of their respective sector; a difference of over 10 percentage points. The difference between the proportion of independent and state teachers with a qualification from a Russell Group university is even greater, with a nearly 15 percentage point difference in favour of the former. Over 50% of independent teachers have a qualification from a Russell Group university, but for the state sector, the figure falls to just below 40%. The trends are equally striking when the percentage of all teachers who attended Oxbridge is refined by the type of degree (Figure 5). For those teachers in possession of a Bachelor's degree, this was almost three times more likely to have been awarded by Oxbridge in the independent sector than the state; for those with a PGCE, over three times as likely; and for those with a Master's degree, over four times as likely. Across all qualification types, the awarding body was more likely to have been Oxbridge for independent school teachers than for state school teachers. Even though BEds were less than half as popular in the independent sector as the state sector overall, independent teachers were nearly twice as likely to have been

[28] In the 2003 report, data was only recorded for secondary teachers and was not available for those with PGCE qualifications, so the same restrictions have been applied here. It should be noted, too, that to allow comparability between reports, only teachers' highest qualifications have been considered in this case.
[29] Paton (2014).
[30] Paton (2014).
[31] Sutton Trust (2011) p. 3.
[32] The Russell Group consists of: University of Birmingham, University of Bristol, University of Cambridge, Cardiff University, Durham University, University of Edinburgh, University of Exeter, University of Glasgow, Imperial College London, King's College London, University of Leeds, University of Liverpool, London School of Economics and Political Science, University of Manchester, Newcastle University, University of Nottingham, University of Oxford, Queen Mary University of London, Queen's University Belfast, University of Sheffield, University of Southampton, University College London, University of Warwick, University of York (Russell Group, 2015).

awarded this qualification by Oxbridge. Over one quarter of all teachers with Master's degrees in the independent sector received these from Oxbridge; in the state sector, the figure was fewer than one in 10.

Given the especially close connection between many independent schools and Oxbridge, though, might these trends differ for other prestigious UK universities? Figure 4 has already provided a broad indication of the proportions of teachers with a qualification from a Russell Group university across the two sectors. As a proportion of teachers with a Bachelor's degree, 10 percentage points more attended Russell Group universities in the independent sector than in the state. Independent teachers are also more than twice as likely to have attended a Russell Group university and have been awarded a Master's, and more than four times as likely to have attended a Russell Group university and been awarded a PhD. While PGCEs are less common among independent school teachers than state school teachers overall (Figure 1), those independent teachers that do have them are over a third more likely to have acquired the same from a Russell Group university. In other words, across Bachelor's degrees, Master's degrees, PGCEs and PhDs, teachers at independent schools are consistently more likely to have been awarded their qualification by one of the UK's top universities, as defined by its membership of either Oxbridge or the Russell Group.

Returning to the quotations in the introduction to this report, these findings clearly have particular implications for those attempting to foster a more equitable distribution of top university-educated teachers across the independent and state school sector. They suggest that there is still a large disparity between where teachers in the state and independent sector have been educated. But if the gap remains, has there been any improvement since the Sutton Trust last examined this issue? In other words, has there been any narrowing of the gap since 2003? Considering the data across time, the results show that there has been some improvement.

In Figure 7, the proportion of secondary teachers with subject degrees from Oxbridge, as a percentage of all secondary teachers with subject degrees, is presented for both sectors, comparing the years 2003 and 2015. The data suggests that, across these years, the proportion of state secondary teachers to have studied for a subject degree at Oxbridge increased by 2.3 percentage points. At independent schools, by contrast, there appears to have been a slight decrease (although this is perhaps too small to suggest that there has necessarily been a transfer from the latter to the former, rather that there are more Oxbridge-educated teachers overall and the state-funded sector has been the main beneficiary). While caution should be used when extrapolating, it is instructive to convert these percentage differences into absolute numbers of teachers; not least because these percentage differences do not adequately capture the difference in size between the teaching bodies of the two sectors. In numerical terms, they suggest that, in the period 2003 to 2015, approximately 6,000 additional Oxbridge-educated secondary teachers entered the state school system, bringing the overall total to nearly 11,000.[33] Given the difficulties in estimating exactly the number of secondary teachers in the independent sector (outlined in the methodology), the specific figure for the independent sector is not derivable. It can be said, though, using the most conservative estimate, that there are now more Oxbridge-educated teachers in the state sector than the independent sector. Given that independent secondary teachers constitute a small minority of all secondary teachers, there is a still a sharp disjuncture between the two sectors. But the efforts of consecutive governments appear to have made gains.

SUBJECT SPECIALISM: THE RELEVANCE OF TEACHERS' DEGREES TO SUBJECTS TAUGHT

In the latest review of the state school workforce, the DfE found that in English, maths and science, the vast majority of secondary teachers possessed a relevant post-A level qualification. In English, 85% of lessons were taught by a teacher with a relevant qualification; in maths, 83%; and in science, 88%.[34] These results concur with the findings of this report. In English, maths and science, state teachers appear to have a higher number of relevant qualifications than the average teacher across all subjects. Thus, with reference to their primary teaching subject, 89% of state secondary English teachers possessed a relevant qualification; 83% of maths teachers; and 88% of science teachers. On average, over 86% of state secondary teachers in English, maths and science held a relevant post-A level qualification. In line with the DfE, the findings of this report suggest that, "High proportions of English, maths and science teachers have relevant qualifications for the subject they teach."[35] The comparison between the DfE's and Sutton Trust's findings is shown in Figure 8.

[33]For 2015, this calculation was made by multiplying the DfE's latest count of all full-time equivalent state secondary teachers (DfE, 2015, Table 1), by the percentage of secondary teachers in the current survey to have been awarded a subject degree from Oxbridge (given in Figure 7), by the proportion of state school secondary teachers that possess a subject degree (also derived from the current survey). For 2003, the same series of calculations was used, except the sources were DfE (2001, p. 56) and the Sutton Trust's 2003 report.
[34]DfE (2014d) pp. 11-12.
[35]DfE (2014d) p. 11.

Where a differential does exist, though, is in the proportions between the independent and the state sector. On average, secondary teachers in independent schools are more likely to have a relevant qualification in their main teaching subject. In Figure 9, the percentage of secondary teachers with a relevant qualification in English, maths or science is presented for both the independent and state sector. While qualification levels in English are comparable, maths teachers are four percentage points more likely to have a relevant qualification in the independent sector than state, and science teachers, five percentage points more likely. Coupled with the findings of the previous section, a higher proportion of these degrees also come from the UK's highest-ranked universities. In other words, the independent sector appears to have more well-qualified teachers when both the quality and relevance of their qualifications are considered. The differences in the relevance of teachers' qualifications to the subjects that they teach are not huge, but they are notable. And because of them, it is possible to concur with Green et al. that, "Independent school teachers are more likely that state school teachers... to be specialists in shortage subjects."[36]

Breaking down these figures further also reveals that there are differences in the relevance of qualifications for physics teachers, in particular. While over 90% of biology and chemistry teachers have relevant qualifications across both school sectors, the independent sector has a noticeably higher proportion of subject specialists in physics. In the

Figure 5. Percentage of all teachers who attended Oxbridge, by post-A level qualification

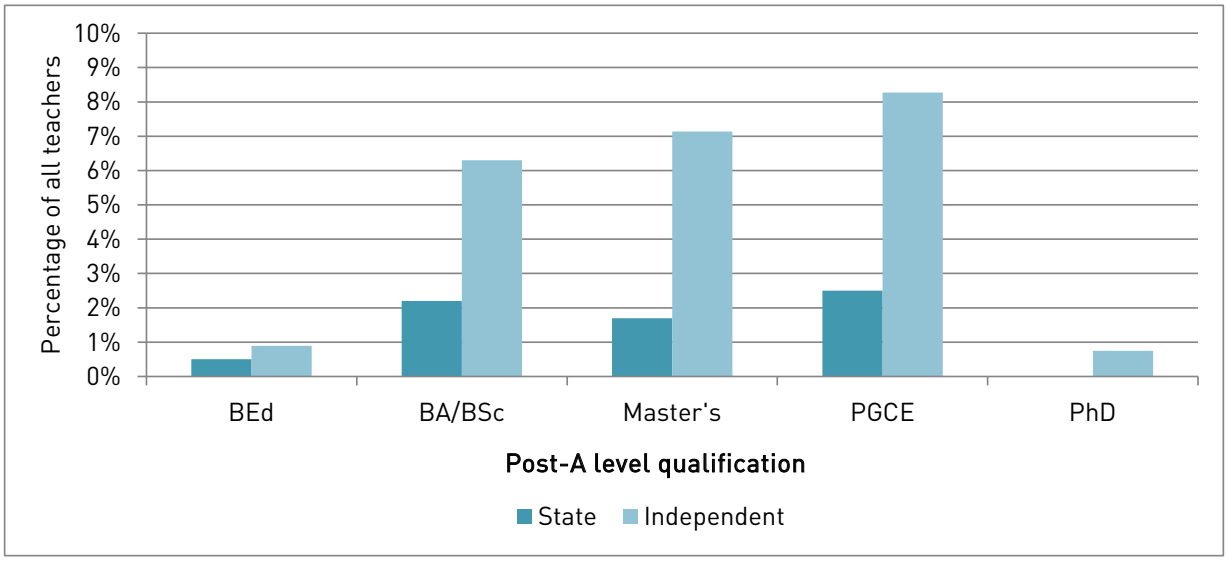
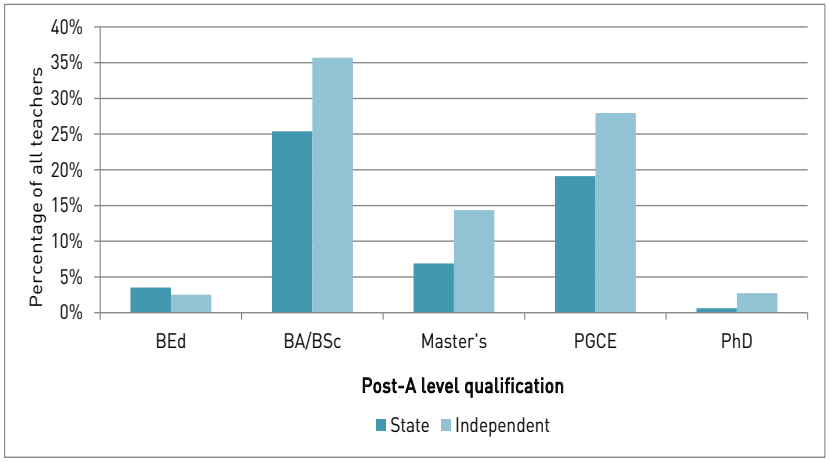


Figure 6. Percentage of all teachers who attended a Russell Group university, by post-A level qualification



[36]Green et al. (2010) p. i.

Figure 7.Percentage of secondary teachers with subject degrees from Oxbridge, as a proportion of all secondary teachers with subject degrees, 2003 v. 2015

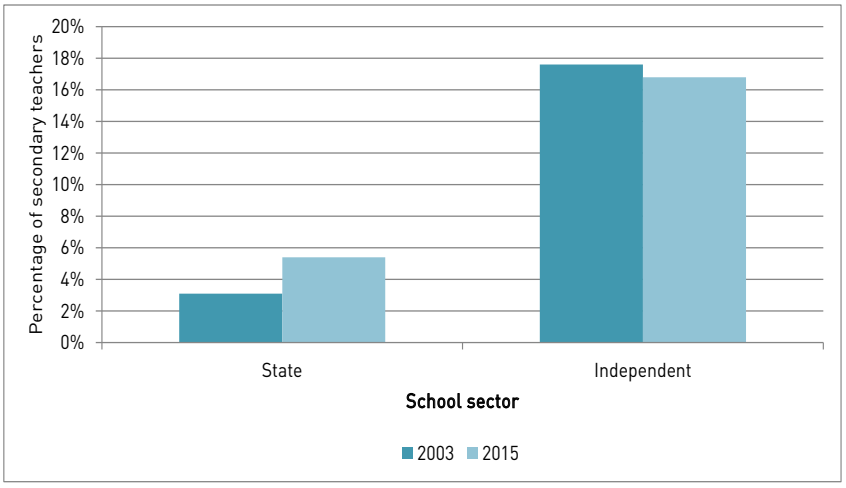
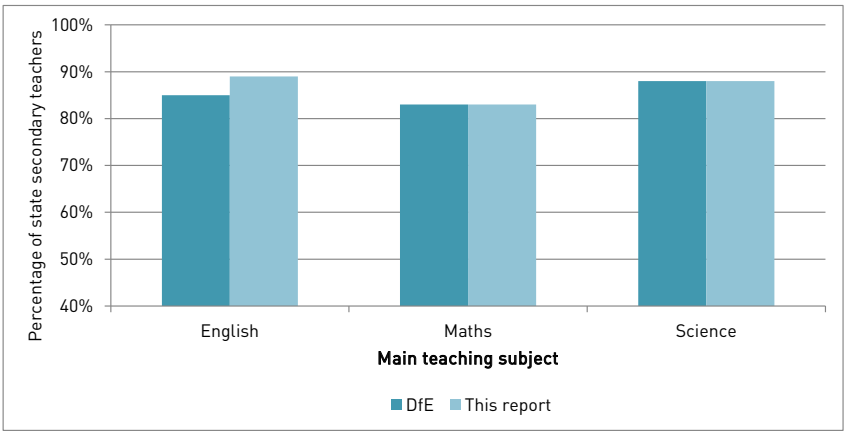


Figure 8. Percentage of state secondary teachers with main teaching subject of English, maths or science, with a relevant post-A level qualification, by teaching subject, DfE v. this report



independent sector, 91% of physics teachers possessed a relevant qualification; in the state sector, this figure dropped to 78%. After physics, the next subject with the fewest specialist teachers was maths, with 87% possessing a relevant qualification in the independent sector, and 83% in the state sector. The shortage of specialist teachers in these subjects was recently noted by government with the unveiling of a stimulus package worth £67 million to attract 2,500 new teachers to these disciplines.[37] Announcing the move, Education Secretary, Nicky Morgan, stated that, "We want to attract more quality candidates to teach maths and physics and further raise the status of teaching as a rewarding career." "The plans announced today will raise standards in maths and physics further to ensure more children leave school with these valuable skills and can go on to compete for top jobs and succeed in life."[38] Given these figures, the targeting of these subject areas would seem appropriate. As with the first substantive section of this report, the proportion of independent teachers with postgraduate qualifications is also substantially higher than state teachers, for those possessing a degree relevant to their teaching subject. In English, independent teachers are twice as likely to have a relevant Master's degree as state teachers, and about three times as likely to possess a relevant PhD. In maths, independent teachers are more than twice as likely to possess a relevant Master's degree as state teachers, with no state teachers sampled possessing a relevant PhD, compared to 3% of independent teachers. In science, the proportion of teachers with a relevant Master's degree is higher, with one in five independent teachers holding the same, compared to just

[37]HM Government (2015).
[38]HM Government (2015).

Figure 9. Percentage of secondary teachers with main teaching subject in English, maths or science, with a relevant post-A level qualification

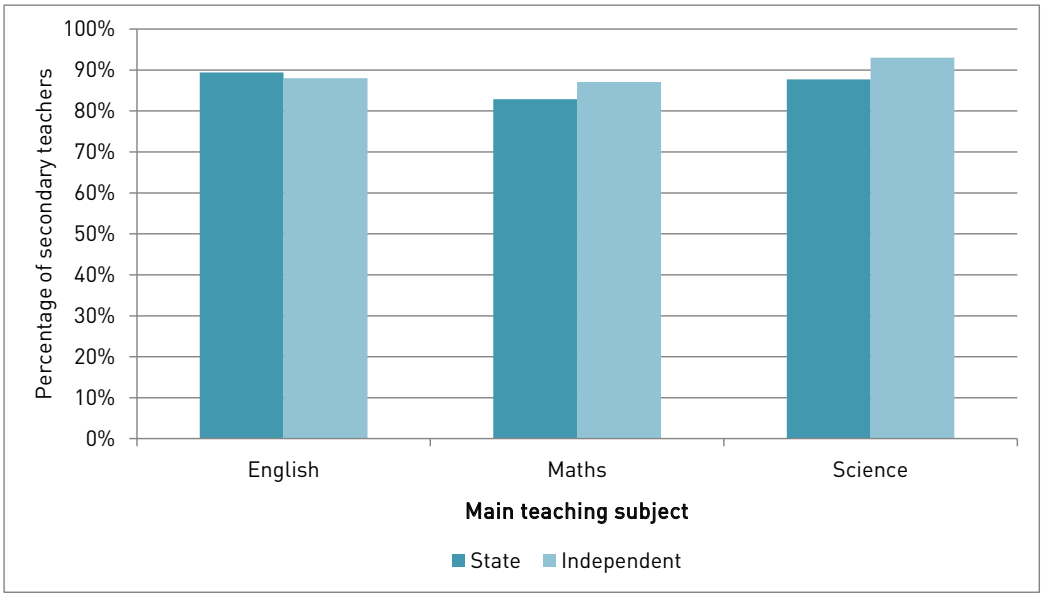
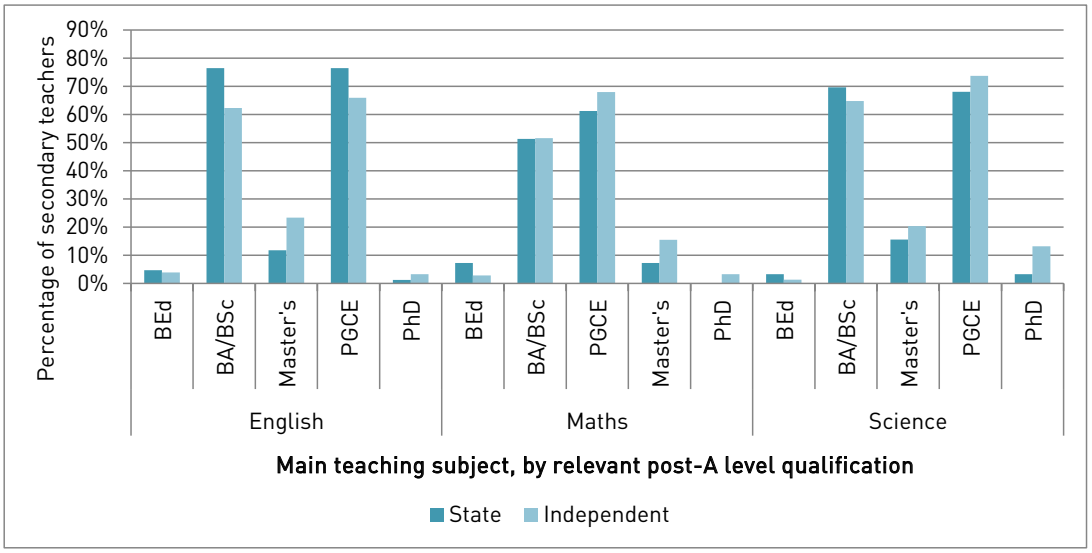


Figure 10. Percentage of secondary teachers with main teaching subject of English, maths or science, by relevant post-A level qualification



over one in six state teachers. Again, there was a significant disjuncture in those science teachers holding relevant PhDs, with independent teachers more than four times as likely to possess one as state teachers. Remaining aware of the caveat discussed on page 7 (footnote 26), state teachers appear slightly more likely to possess a Bachelor's degree than independent teachers, especially in English and science. This gap disappears, though, when the differential in postgraduate qualifications is considered.

CONCLUSION

In the independent sector, teachers need not have Qualified Teacher Status, which "has led some to portray teachers in the independent sector as unregulated, unaccountable and lacking the necessary professional preparation that would make them fit to teach."[39] QTS, however, is but one measure of teacher qualification. If the awarding institution of teachers' qualifications is considered, the picture changes dramatically. There remains a discrepancy between the proportion of independent school teachers who went to the UK's top universities, and the proportion of state school teachers who did the same. Far from being underqualified using this metric, a disproportionate number of independent school teachers have had access to some of the UK's highest-ranked universities. Indeed, there is anecdotal evidence to suggest that the lack of formal requirements for teachers entering the independent sector actually encourages, rather than discourages, applications from graduates of some of the UK's leading universities, because top applicants wish to enter the teaching sector immediately, rather than pursuing further qualifications.[40]

While there remains a gap between the state and independent sectors, however, there is evidence that this gap has narrowed. Since 2003, and extrapolating from the findings of this report, it can be estimated that the state sector has recruited about 6,000 additional secondary teachers from Oxbridge, while recruitment to the independent sector from the same has remained broadly stable. Extrapolating these figures for the nation as a whole, it can be said that there are now more Oxbridge-educated graduates in the state sector, than in the independent. This suggests that, while there is clearly a long way still to go, there has been progress in realising the goals of consecutive governments to recruit more teachers educated at the nation's best universities into the state school system. In 2012, Teach First noted that, "10 per cent of all Oxbridge [graduates for that year] applied to Teach First, along with 6 per cent of Russell Group universities."[41] Although it is difficult to point to any single causal factor, this does suggest that schemes such as Teach First have had at least some success in recruiting more graduates from the nation's best universities into state teaching. Such emphasis has led to charges of elitism, but it also appears to have had some success.[42] This trend also suggests that, despite the relaxing of rules around teacher qualifications for academies, there has not been a concomitant decline in state teachers' actual qualifications, as measured by the metrics applied in this report.

In terms of subject specialism, high proportions of secondary teachers at both state and independent schools have qualifications relevant to their main teaching subject. Within this, however, independent school teachers are more likely to hold postgraduate qualifications than their state school colleagues in English, maths and science. Splitting science into its three constituent secondary-level subjects, there also appears to be a need for more relevantly-qualified teachers to enter physics, with maths another, albeit slightly less pressing, shortage area in the state sector. This concurs with recent statements by Education Secretary, Nicky Morgan, who has prioritised the recruitment of well-qualified teachers into these two subject areas.[43]

Again, it is important to reiterate that formal qualifications are only one measure of teaching quality. The effectiveness of individual teachers can vary across a series of measures, including the composition of the school population, as well as individual aptitude and other uncertified skills that are difficult for external research to measure.[44] It is important to recognise the outstanding work of state school teachers across the country. At the same time, the high proportion of teachers in independent schools that have degrees from the UK's leading institutions, and the concomitantly higher pass-rate of students at independent schools, does suggest a correlation. Recent analysis conducted by the ISC, based upon data from the Joint Council for Qualifications, suggests that independent school pupils constitute 13.6% of all entries at A-level, but achieve 29.5% of all A* grades.[45] Similar trends are found in specific key subjects, including physics, biology, chemistry, maths and further maths.[46] The pressures that state school teachers work under are well-known, and along with the frequently superior facilities of independent schools, their smaller class sizes, and other factors, teacher qualifications do represent only a single part of the puzzle. But this part is key, as narrowing the gap between teacher qualifications in each sector also promises to narrow the gap in academic

[39]Eliott Lockhart (2010) p. 1.
[40]Matthews (2010).
[41]Knight (2012).
[42]Maddern (2015).
[43]HM Government (2015).
[44]Green et al. (2010) p. 15; Coe et al. (2014) p. 2.
[45]Salmons (2015).
[46]Salmons (2015).

performance. As things stand, teachers that have received their degrees from Oxbridge and Russell Group universities are more accessible to students at independent schools than state schools. There has been some progress in narrowing this gap, but the challenge is to ensure that, in the future, there is a more equitable distribution of teachers from the best universities across the entire UK school system.

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APPENDIX: A SHORT ESSAY ON METHODOLOGY

This brief appendix discusses some of the methodological challenges of writing this report, including the differing sampling strategies used across surveys, the issues involved in making comparisons across time, and possible ambiguity regarding definitions. To make the narrative of the report as accessible as possible, these have been included here, with more specific points included in the body of the text and as footnotes where appropriate. As with any research project, several decisions have been made that could have been made differently. The purpose of this section is not to review all possible approaches to the data, but to explain and justify some of the key decisions that have been used in this report, and to discuss how the author has attempted to make the findings as robust and transparent as possible; part of that attempt being the inclusion of this section.

To begin, it is important to note that differing sampling strategies were used by the three surveys in this report. For the 2015 NFER-administered survey of the state sector, at least 1,000 primary and secondary school teachers were consulted. These teachers volunteered to sit on the NFER Teacher Voice Omnibus panel (which is consulted three times a year), and as such there will be an element of self-selection in this sample. The teachers, however, were unaware of the questions that they were to be asked and the coverage of teachers by their role is comparable with the teacher population as a whole, displaying a representative spread of schools, geographical location, school type and eligibility for free school meals. For the 2015 ISC-administered survey of the independent sector, all 1,267 schools holding UK membership of the constituent associations of the ISC were contacted, and responses were collected over a period of two months. While this ensures that a greater number of responses are received, it also means that respondents are self-selecting. At the same time, the large sample size achieved for ISC teachers provides statistical weight. A similar limitation applies to the previous Sutton Trust report. While it was ensured that the schools contacted were representative of the state and independent sectors as a whole, it was difficult to place controls upon the particular respondents that returned the questionnaire. Given this, it is possible that those more enthusiastic about the survey (for the topic under present consideration that might mean those teachers with higher qualifications) responded in greater numbers than others. Where possible, especially for state sector data, broad trends have been checked against publicly-available data from the DfE by way of further amelioration. The similarity in percentages of Oxbridge-educated independent school teachers in both the 2003 and 2015 surveys gives confidence about the reliability of the independent school data.

Outside of this, a significant amount of interpretation was required in an effort to understand anomalies that are a universal element of datasets of this size. In all cases, the intention has been to make the data as accurate as possible, while ensuring that methodological specificity and transparency has been maintained. As mentioned in the text, with regard to teachers' specialism in physics, chemistry or biology, it has been considered that a degree classed as 'Other science' is a relevant qualification. This is because several relevant respondents appeared to classify their degree as such, and in the belief that many may have done so because it was more straightforward than scanning the entire list of subject categories for their particular degree subject area. At the same time, it is impossible to know exactly what this category included in each case, so it is possible that this slightly inflated the figures for subject specialism in science. Without this amendment, however, subject specialism totals in science were deflated, and it might be noted that the present totals are supported by the DfE's own statistics. Similarly, there were differences between how NFER and the ISC defined specialist teaching certificates and qualifications. The ISC recorded a larger range of qualifications, so agreement had to be found regarding how the ISC-recorded qualifications would map onto those for the state sector. This was achieved by dialogue between the ISC and the Sutton Trust, to ensure that the results were as accurate as possible, and satisfactory to both parties.

Other issues have been considered on a case-by-case basis. For example, the NFER-administered survey differentiated between primary and secondary teachers through several measures, including the type of school at which the respondent taught. Given that a large proportion of independent schools teach mixed-age ranges, though, this same sorting strategy could not be used to differentiate between primary and secondary teachers. Initially, both data sets were sorted by the highest Key Stage at which teachers claimed to be teaching, given that this data had been acquired by both surveys, enabling a single approach to be used for both samples. However, for the NFER state teacher survey, results using this approach did not exactly match the type of school at which the respondent claimed to be teaching. Given that it seemed less likely that the respondent would mistake the type of school at which they were teaching, than the highest Key Stage at which they taught, the state school data was split into 'primary' and 'secondary' teachers using the former variable. (It may have been, for example, that respondents noted the highest level at which they had ever taught the subject, rather than the current level at which they were teaching). The most accurate measure for the ISC sample, though, continued to be dividing teachers by the highest Key Stage at which they taught. While this meant that a different sort was used to differentiate between primary and secondary teachers in both samples, it did ensure that the most accurate approach was used for each. Where direct comparison has been made, such as between the proportions of state and independent teachers with degrees in the subjects that they teach, the same sorts have been used for both samples.