



Attainment gaps between the most deprived and advantaged schools

**A summary and discussion of research by the Education Research Group
at the London School of Economics**

The Sutton Trust, May 2009

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Foreword

One of the defining characteristics of countries such as the UK with low social mobility are stark, persistent gaps in the school results between children from deprived backgrounds and their more advantaged counterparts. Far from acting as the great social leveler, education systems can perpetuate inequalities, and enable the privileged in society to consolidate their already substantial advantages for future generations. The Trust's central concern however is with those children on the wrong side of the educational divide; the price of unfulfilled potential is a lifetime of missed opportunity - a loss not only for the individual but the country as a whole. As the current Secretary of State for Children, Families and Schools has recently said, the attainment gap is 'the devil in our education system'.

Attainment gaps can be expressed in different ways. Across England as a whole, for example, 40% of children eligible for free school meals, the standard measure of pupil deprivation, obtained five or more GCSE examination passes at grades A* to C in 2008, compared with 67% of those not eligible for Free School Meals. A recent Government analysis argues that attainment gaps between the most and least deprived schools have been narrowing slightly in recent years, but gaps between pupils within schools remain stark.

This report asks a different but equally important question: what is the achievement of a pupil in a highly deprived school compared with a similar child in a less deprived school? It is of course a question that is close to the heart of parents themselves. In a school system that is highly socially segregated, and that encourages choice between schools, we would all like to know whether our son or daughter will progress at the same pace given the overall social make-up of other pupils at the school.

The findings in this report are unequivocal, and make for uncomfortable reading for parents and policy makers alike. Whether expressed in terms of 'raw' gaps, in which the individual characteristics of pupils are ignored, or conditional gaps (which take account of the social background, ethnicity and prior attainment of pupils), the attainment of otherwise similar pupils in deprived schools lags significantly behind those in the more advantaged schools. This is as much the case for pupils from deprived backgrounds as it is for the most highly academically able pupils.

What is more, the research finds that those highly able pupils were more likely to have taken a vocational qualification at age 16 at the most deprived schools than highly able pupils at the least deprived schools – indeed they were ten times more likely to have taken a GNVQ (General

National Vocational Qualification). Every child should be able to choose between vocational and academic qualifications, and one educational route should not be seen as an inferior option than the other; but a pupil should be no more likely to opt for a vocational course in a disadvantaged school than in an advantaged one. Personal choice and aspiration should be the driving force for such decisions, not the preferences of schools, preoccupied with maximizing their position in published league tables.

The report also reveals that there exists a 'hidden poor' among pupils in our schools who have at some point in their schooling been eligible for a Free School Meal, but who are not eligible for a Free School Meal in their current year (in this case their GCSE year). In 2006, 13.6% of secondary school pupils in England were eligible for a Free School Meal in their GCSE year (roughly 75,000 pupils). But an additional 7.7% of pupils were eligible for a Free School Meal earlier during their secondary school career (roughly 42,000 pupils). These pupils are in many ways indistinguishable from 'FSM' pupils – facing the same levels of educational disadvantage. And yet they are ignored in the calculation of official attainment gaps.

The Trust believes that all pupils who have been eligible for Free School Meals at some point in their secondary schooling should be recognized in the official measures of attainment gaps and the premiums awarded to the most deprived schools. But extra resources at such schools, for teaching for example, may not be the whole answer. If the gaps in achievement are due in part to 'peer effects' - benefits from being educated with pupils with higher levels of prior attainment, and lower levels of deprivation – then we must strive to achieve a more even spread of pupil intakes into state schools, in terms of ability and disadvantage. The Trust advocates the greater use of area wide banding, in which pupils of a range of abilities are enrolled at all local schools, as well as the use of random allocation (alongside other criteria) for admissions to over-subscribed schools.

Another key area is the advice and guidance offered to pupils when choosing qualifications. It is absolutely critical that pupils and parents receive sufficient objective information and guidance, especially at disadvantaged schools. Currently, we are failing to do so.

We are hugely grateful to Dr Philip Noden and Professor Anne West, from the Education Research Group at the London School of Economics, for producing what we believe is an important piece of work in this field -- research that will inform and aid the drive to reduce the attainment gaps that currently bedevil our schools system, and blight the lives of too many of our children.

Key findings

All pupils

- Pupils eligible for Free School Meals (FSM) at some point in their schooling in the most deprived 10% of schools on average achieve two grades less in their best eight GCSEs than FSM pupils in the most advantaged 10% of schools, after individual factors (ethnicity, social background, prior attainment) of pupils are taken into account.
- Pupils not eligible for Free School Meals in the most deprived 10% of schools on average achieve two and a half grades less in their best eight GCSEs than non-FSM pupils in the most advantaged 10% of schools, after individual factors of pupils are taken into account.
- Pupils are more likely to enter vocational examinations in the most deprived schools than those in more advantaged schools. For example they were five to six times more likely to enter a GNVQ.

Highly able pupils

- Highly academically able pupils (the 10% highest attainers at age 11) in the most deprived 10% of schools on average achieve half a grade less per GCSE examination than high ability pupils in the most advantaged 10% of schools, after individual factors (ethnicity, social background, prior attainment) of pupils are taken into account.
- Highly able pupils attending the most deprived schools were ten times more likely to take an intermediate GNVQ than high ability pupils in the most advantaged schools.
- High attaining pupils attending the most deprived schools face a double penalty – they enter fewer full GCSE examinations (not vocational equivalents or half GCSEs) and achieve about half a grade less per full GCSE examination entered.

Including the 'hidden poor' in pupil attainment gaps

- In 2006, 13.6% of secondary school pupils in England were eligible for Free School Meals in their GCSE year. However, an additional 7.7% of pupils - the 'hidden poor' - were eligible for Free School Meals at some point during their secondary school career.
- The GCSE attainment of the 'hidden poor' was found to be slightly lower than the attainment of those who were eligible for FSM in their GCSE year.
- 22% of 'ever FSM' pupils attain 5 GCSEs A*-C including English and maths compared with 52% of 'never FSM' pupils – an attainment gap of 30%. This is a larger gap than the equivalent 28% gap between FSM and non-FSM pupils, the Government's preferred measure.

Introduction

This is a summary of research, funded by the Sutton Trust, that examines gaps between the GCSE attainment¹ of pupils in English schools with different levels of deprivation. It considers these gaps for both disadvantaged pupils (defined by eligibility for Free School Meals²) and their more advantaged counterparts. The analysis uses data available in the Government's National Pupil Database, and is based on the examination of the outcomes of about 555,000 pupils who took GCSEs in 2006³.

It also investigates the differences in progress made by the most academically able children (defined by those in the top 10% nationally in their Key Stage 2 tests at age 11) in the most and least deprived schools.

The analysis considers attainment in GCSEs, and also the likelihood of choosing vocational or academic GCSE qualifications in schools of different levels of deprivation.

It tracks the attainment of all the pupils who were eligible for Free School Meals (FSM) at some point during their secondary schooling but who were not eligible for FSM in their GCSE year – a group termed the 'hidden poor'. Official figures only publish the proportion of pupils eligible for FSM in a given year. Including all pupils who have been eligible for FSM at some point during their secondary schooling (including their GCSE year) enables a new attainment gap to be computed between those pupils who have never been eligible for FSM and those pupils who have been eligible for FSM at some point.

The findings have a number of important implications for schools policy.

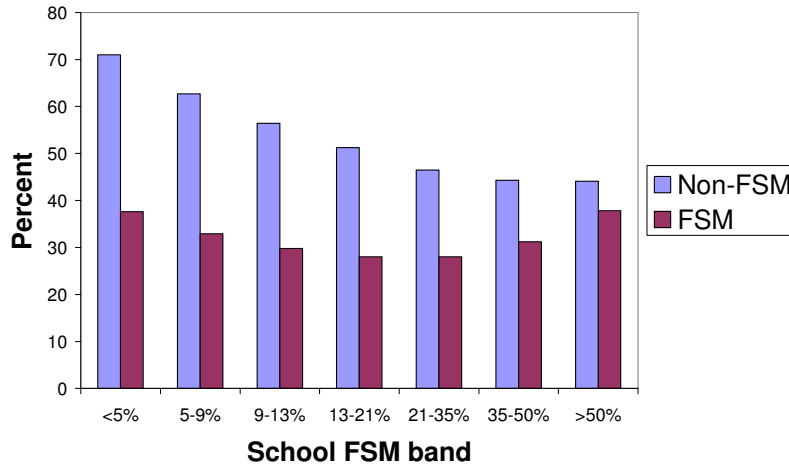
The starting point for the research was a series of analyses published by the Department for Education and Skills in 2006. While differences between the attainment of pupils from different social groups are well known, with those from poorer backgrounds in general showing lower levels of attainment, some interesting findings relating to pupils eligible for Free School Meals (FSM) were reported.

¹ GCSEs are the main exams taken by 16 year olds in England and are available in more than 40 academic and nine applied subjects

² Eligibility of Free School Meals is the standard measure used to identify school pupils with high levels of social deprivation. In this report, FSM denotes pupils who were eligible for FSM at any stage of schooling.

³ The analysis uses the National Pupil Database and the Pupil Level Annual Schools Census (PLASC), all collected by the Government. The 2006 GCSE cohort is the first group of pupils for whom PLASC data is available for each year that they have attended secondary school.

Figure 1: Percentage of non-FSM and FSM pupils achieving 5+A*-C grade GCSEs and equivalent (Source DfES, 2006)



As the figure above shows, pupils eligible for FSM were more likely to achieve five or more A* to C grade GCSEs if they attended the most deprived schools – those with FSM levels over 50% and over – than those at slightly less deprived schools. One possible interpretation of this finding would be to conclude that FSM pupils are better off attending the most deprived schools. This report shows why this would be an incorrect interpretation of the data, revealing that a number of other factors help us to understand most of this phenomenon.

The broader question the research seeks to address is whether similar pupils achieve better or worse GCSE results depending on the overall level of FSM eligibility within their school. This is an important question for FSM pupils, but also for those pupils who have shown particular academic potential earlier in their schooling. Much attention has been paid to the attainment gaps between schools and within schools, but from a parent's perspective, a critical question is whether their son or daughter is performing as well in a school as they would in other schools – regardless of levels of deprivation.

Equally important is the question of what type of qualification children choose to study at school. The national pupil data used for this research provides information on this also, in particular allowing the analysis to distinguish between vocational and academic qualifications taken in schools of different levels of deprivation.

Gaps in attainment between the most and least deprived schools

Are schools with deprived intakes really better for poor pupils? To address this initial question, the analysis examines the attainment, in 2006, of FSM and non-FSM pupils in schools with different levels of deprivation. The analysis considers attainment gaps between all the pupils who at some point in their schooling have been eligible for FSM, and those pupils who have never been eligible for FSM. The research examines how far the surprisingly good performance of FSM pupils in the most deprived schools is explained by the ethnic background of pupils and by the type of examinations taken at those schools.

The analysis takes into consideration the individual prior attainment of pupils by taking account of each pupil's average score in Key Stage 2 tests at age 11 (pupils are tested in English, mathematics and science). The research uses the best grades achieved by pupils in up to eight GCSE (and equivalent) examinations (translated into a point score) as its measure of pupil attainment. This is a more fine-grained measure than the five or more A to C grades at GCSE indicator used in performance tables as a benchmark for attainment at age 16. Pupils were then classified into ten groups, or deciles, according to the level of FSM at the school they attended. These are referred to as 'deciles of school deprivation'.

Raw school deprivation gap and the 'ski jump' profile

The research first reports the raw gaps in GCSE attainment for particular types of pupils between the most and least deprived schools – that is calculating differences without taking into account the different ethnicity of pupils, their social background or prior attainment, all of which impact on individual attainment.

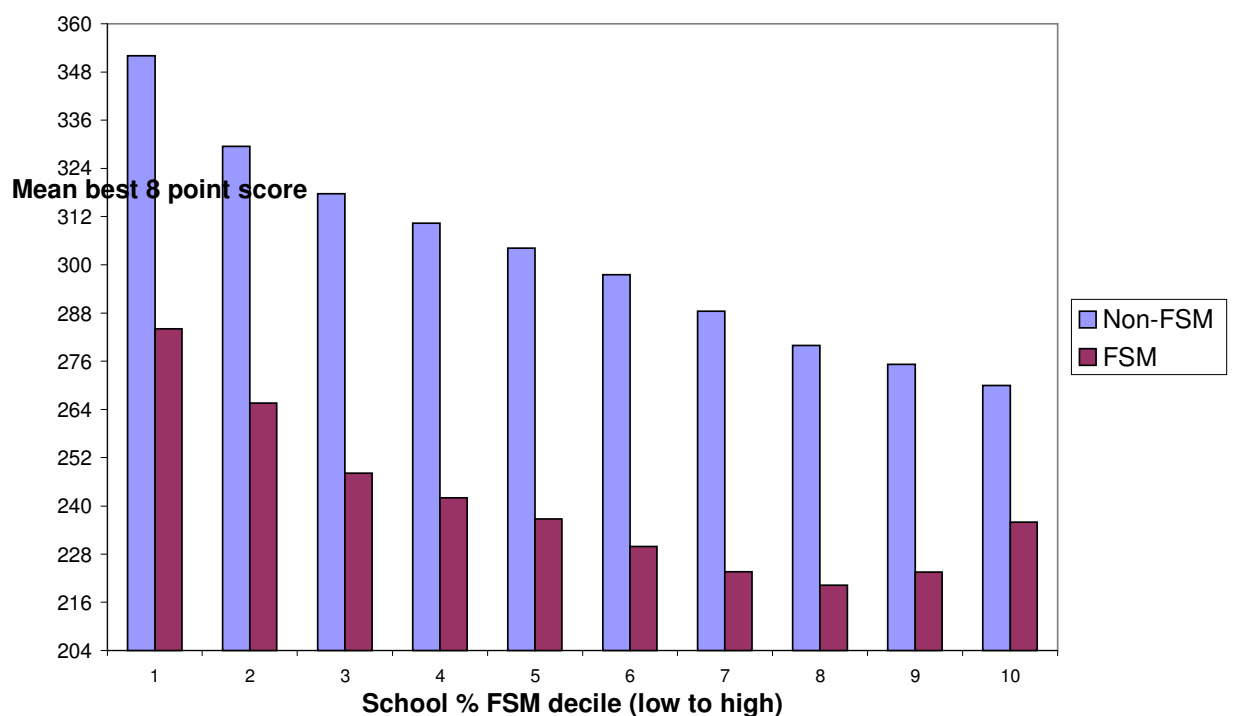
Pupils eligible for Free School Meals (FSM) in the most deprived 10% of schools are found on average to attain eight grades less in their best eight GCSEs than pupils eligible for FSM in the most advantaged 10% of schools. Pupils not on Free School Meals meanwhile in the most deprived 10% of schools on average attain thirteen grades less in their best eight GCSEs than pupils not eligible for FSM in the most advantaged 10% of schools.

To put these gaps into context, they can be expressed in terms of actual GCSE grades. So for FSM pupils attending the most advantaged 10% of schools the mean raw score equated to two grade Cs and six grade Ds in the eight GCSEs (or equivalents). For FSM pupils attending the most deprived 10% of schools the mean score equated to two grade Ds and six grade Es - ie eight grades lower. However, in keeping with the 'ski jump' pattern detailed in the DFES figures

(see figure 1 above), the mean level of attainment among FSM pupils in the most deprived schools was found to be higher than that of those in slightly less deprived schools.

For non-FSM pupils the corresponding mean scores equated to five grade Cs and three grade Bs at the most advantaged schools, compared with a mean attainment of thirteen grades less for non-FSM pupils at the most deprived schools.

Figure 2: Mean best 8 GCSE and equivalents point score for non-FSM and FSM pupils by deciles of school deprivation (6 points equates to one GCSE grade, e.g. C = 40, B = 46 etc)



In terms of raw scores therefore, for both FSM and non-FSM pupils there is a tendency for examination results to be higher in the least deprived schools, as figure 2 above shows. Here the first decile of school deprivation contains the tenth of schools with the lowest FSM rates; the tenth decile contains the tenth of schools with the highest FSM rates. However, for FSM pupils there is a slight uplift in examination results in the most deprived schools although examination results are still much lower than for FSM pupils in the most advantaged schools. In other words, FSM pupils in the most deprived schools tend to do better than their counterparts in schools with slightly lower levels of disadvantage, but not as well as those in the top 10% of schools. When presented over different school deciles (as in figure 2), levels of attainment consequently trace out a profile akin to a ski jump.

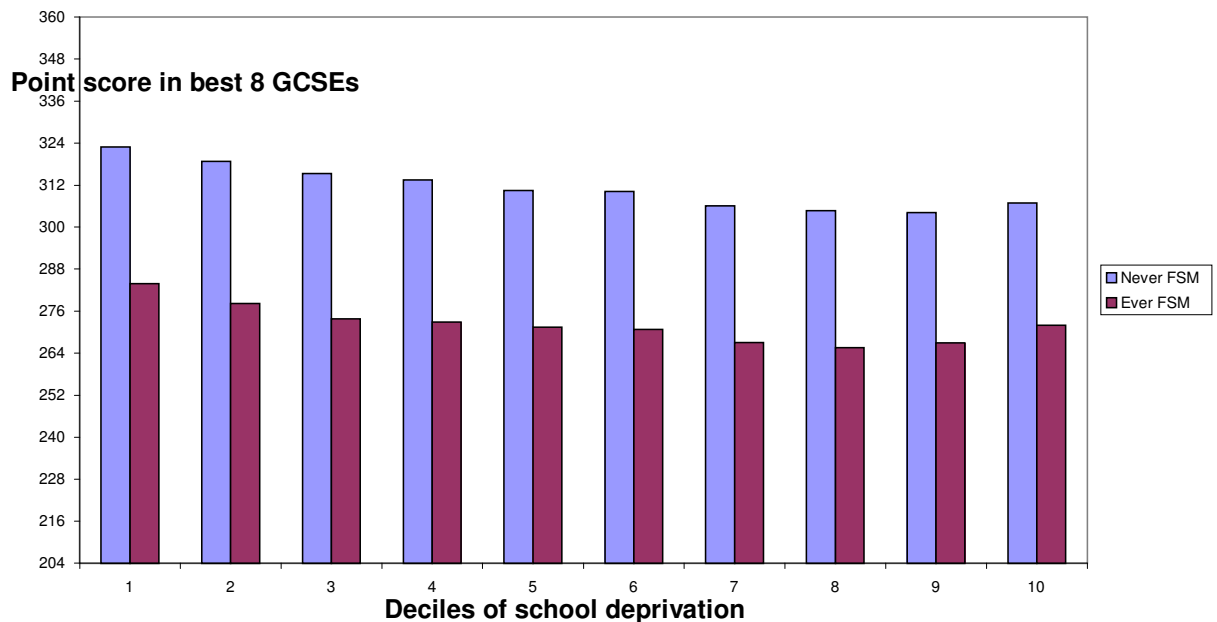
Differences in scores when background factors for pupils are taken into account

The analysis then progressively takes into account the prior attainment of pupils and a range of other variables including their social background and ethnicity. These factors are likely to explain some of the differences in the attainment of pupils.

Controlling for other factors, for pupils who were eligible for FSM during their secondary schooling, attending one of the most deprived 10% of schools was associated with achieving two GCSE grades less than attending the most advantaged 10% of schools. This is less than the eight grade difference found in the raw scores.

Meanwhile, controlling for other factors, for pupils who were never eligible for FSM during their secondary schooling, attending one of the most deprived 10% of schools was associated with achieving just over two and a half GCSE grades less than attending the most advantaged 10% of schools. Clearly this is substantially less than the thirteen grade difference found in the raw scores.

Figure 3: Estimated attainment across the deciles of school deprivation controlling for pupil prior attainment and background



The figure above details the ski-jump pattern being described. These figures show the estimated attainment controlling for other factors (the figures presented relate to a white British girl of average prior attainment and age, living in a neighbourhood with an average level of deprivation).

The light purple bars represent the estimated attainment of pupils who were not eligible for a Free School Meal during their secondary schooling, while the dark purple bars represent estimated attainment for pupils who were. The first decile of school deprivation contains the tenth of schools with the lowest FSM rates; the tenth decile contains the tenth of schools with the highest FSM rates. The GCSE points score is produced by apportioning scores to GCSE grades, where A* equals 58 points, A is 52, B 46, C 40, D 34, E 28, F 22 and G 16.

Interestingly, even when this range of factors is taken into account in the model, a shallow ski jump shape is present for non-FSM pupils as well as FSM pupils. This suggests that pupils attending the most advantaged schools tend to achieve better results than other pupils but that those attending the most deprived schools tend to achieve higher examination results than those attending slightly less deprived schools.

Vocational and academic choices

It is also important to consider the pattern of examination entries in schools with different levels of deprivation. The analysis aimed to address the following question: do pupils in the most deprived schools achieve better examination results than might be expected because more pupils were entered for vocational examinations such as intermediate GNVQs⁴ (which counted as the equivalent of four grade C GCSEs in the school performance tables).

The research indeed reveals that pupils (both FSM and non-FSM) at the most disadvantaged schools took fewer full GCSE examinations than those at more advantaged schools. These pupils were also five to six times more likely to enter examinations other than full GCSEs, such as vocational GCSEs and GNVQs, in addition to those full GCSEs.

It is possible that this reflects the different preferences of pupils and parents from schools with different levels of deprivation – that is, pupils in deprived schools may be more likely to choose vocational courses. However, this was found also to be true among the highest ability pupils who might be expected to opt for academic courses (see page 13).

Vocational qualifications reducing the school deprivation gap

Examination results in qualifications other than full GCSEs tended to reduce the gap in attainment between pupils attending more deprived schools and more advantaged schools. Attending one of the most deprived 40% of schools for example was associated with achieving about one third of a grade less per entry for GCSE (and equivalents). However, when the analysis was restricted to full GCSE examinations only (that is, when GNVQs and other vocational qualifications were excluded from the analysis) the difference increased to about half a grade less per entry.

This suggests that qualifications other than full GCSEs are more popular at more disadvantaged schools and that they attenuate the gap in attainment between the most advantaged and the most deprived schools. This effect of vocational qualifications, combined with the impact of individual background factors of pupils (particularly their ethnicity), explains most of the 'ski jump' pattern across the deciles of school deprivation - ie why the attainment of FSM pupils in the most deprived schools is higher on average than those in slightly less deprived schools.

⁴ GNVQs, or General National Vocational Qualifications, have subsequently been phased out, and pupils now can take a range of vocational qualifications, including BTECs, and vocational GCSEs.

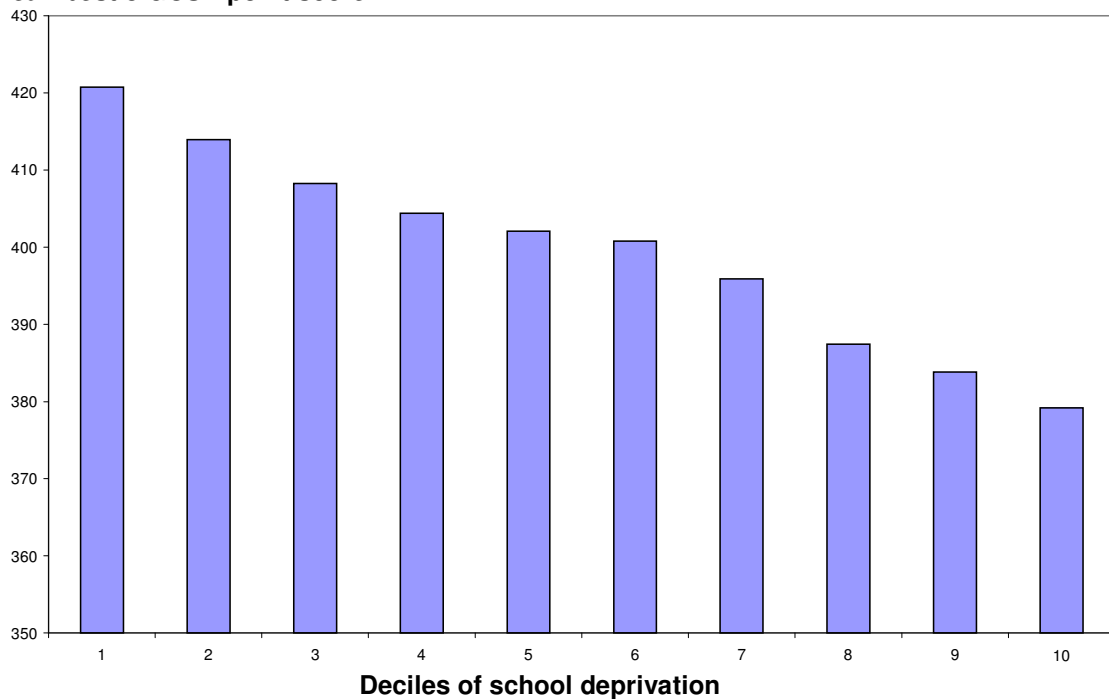
Differences in outcomes for high ability pupils at the least and most deprived schools

The research also considers a sub-group of highly academic able pupils in the cohort by identifying the top 10% nationally in their Key Stage 2 tests at age 11. This group constitutes 54,038 pupils.

School deprivation gap for high ability pupils

Figure 4: Mean best 8 GCSE and equivalents point score for high ability pupils by deciles of school deprivation (6 points equates to one GCSE grade, e.g. C = 40, B = 46 etc)

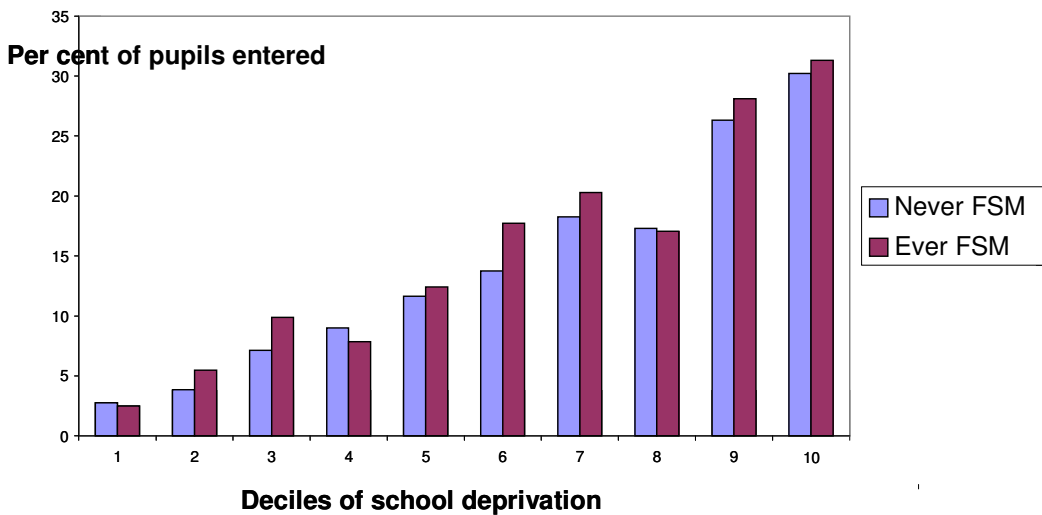
Mean best 8 GCSE point score



For high ability pupils attending the most advantaged 10% of schools the mean raw score equated to seven grade A GCSEs and one A*. For high ability pupils attending the most deprived 10% of schools, however, the mean score was seven grades lower (equating to two grade A GCSEs and six grade B GCSEs).

Controlling for other factors, for high ability pupils during their secondary schooling, attending one of the most deprived 10% of schools was associated with achieving about half a grade less per GCSE examination than attending the most advantaged 10% of schools.

Figure 5: Percentage of highly able pupils entering an Intermediate GNVQ by deciles of school deprivation



As the figure above shows, even among the top 10% of highly academically able pupils, those attending the most disadvantaged schools were ten times more likely to take an intermediate GNVQ than were high ability pupils in the most advantaged schools. This was true for those pupils never eligible for a Free School Meal - 'never FSM' - and those who at some point in their schooling were eligible for a Free School Meal - 'ever FSM' pupils.

Examination results in qualifications other than full GCSEs also tended to reduce the gap in attainment between high ability pupils attending more deprived schools and more advantaged schools. Thus in terms of attainment in full GCSE examinations high attaining pupils attending the most deprived schools face a double penalty – they enter fewer full GCSE examinations and achieve about half a grade less per examination.

Including the 'hidden poor'

The analysis also examines the question: do pupils eligible for FSM in their GCSE year do worse than those eligible for FSM earlier in their secondary school career?

Published attainment figures only register pupils who are eligible for FSM in their GCSE year. But the 2006 GCSE cohort is the first year group for whom individual level FSM data is available for every year of their secondary schooling. The analysis shows that a larger proportion of pupils are eligible for FSM during the earlier years of secondary school than during the later years.

In 2006, 13.6% of secondary school pupils in England were eligible for FSM. However, the figures show that an additional 7.7% were eligible for FSM at some point during their secondary school career. We refer to these pupils as the 'hidden poor'.

Attainment of the 'hidden poor'

The mean raw GCSE (and equivalents) attainment of the 'hidden poor' was found to be slightly lower than the attainment of those who were eligible for FSM in 2006 (see table below) while their prior attainment at Key Stage 2 was found to be higher.

Mean Key Stage 2 and best 8 GCSE and equivalent scores for 2006 cohort by FSM status

| | N | Mean of average point score at Key Stage 2 (English, maths and science) | Mean point score in best 8 GCSE and equivalent examinations |
|-------------|--------|---|---|
| Never FSM | 432211 | 61.4 | 314.8 |
| FSM in 2006 | 66438 | 51.7 | 235.3 |
| Hidden poor | 47199 | 52.9 | 232.5 |

If we combine these groups a new attainment gap can be computed between 'ever FSM' pupils ('FSM in 2006' plus the 'hidden poor') and 'never FSM' pupils.

22% of 'ever FSM' pupils were found to attain 5 GCSEs A*-C including English and maths compared with 52% of 'never FSM' pupils – an attainment gap of 30%. This is a larger gap than the equivalent 28% gap between FSM and non-FSM pupils, the Government's preferred measure.

Policy implications

Targeting resources and diversifying intakes

The analysis of the attainment of pupils in schools with different levels of deprivation underlines the central importance of policies that focus on improving attainment in schools with high levels of deprivation. Even when individual factors for pupils are taken into account, significant attainment gaps remain for otherwise similar pupils who are attending schools of different levels of deprivation⁵

These differences in attainment could be due to a number of factors associated with advantaged schools, from better pupil behaviour to more effective teaching. The analysis could also represent evidence of a 'peer effect' - suggesting that pupils attending more advantaged schools derive additional educational benefits from being educated with pupils with higher levels of prior attainment, and lower levels of deprivation.

So while increasing efforts to allocate greater resources to deprived schools are to be welcomed, another solution to such educational inequalities may be to ensure that there is a more even spread of pupil intakes into state schools, in terms of ability and disadvantage.

Encouraging greater use of area wide banding, in which pupils of a range of abilities are enrolled at all local schools, would be a relatively low cost means of reducing this source of educational inequality. The intakes of all schools in the area would be genuinely comprehensive, and so the potential benefits and penalties of being with certain peer groups would be evenly spread.

The inclusion of random allocation as a factor in admissions processes for over-subscribed schools is another option. Where a school has more applicants than places, which pupils get in is decided by random allocation which lessens the likelihood of 'social selection'.

There are particular concerns that relate to the conditional gap in achievement for highly able pupils between the most and least deprived schools. Government proposals to monitor school achievement in a more systematic way, not just considering average attainment (the 'report card'), may help raise awareness of the needs for this particular group if they are explicitly recognised. But questions will also be raised about whether the Government's current gifted and

⁵ An assumption of the analysis is that the pupils attending different schools are indeed similar, and not different in some way that is not reflected in the data.

talented programme is operating effectively in all schools, particularly those with the most deprived intakes.

Advice and guidance

The findings raise questions about the extent to which pupils attending the most disadvantaged schools are entered for examinations other than full GCSEs.

It is possible that this simply reflects the different preferences of pupils and parents from schools with different levels of deprivation - pupils in deprived schools may be more likely to choose vocational courses. However, this tendency was also found to be true among the highest ability pupils who might be expected to opt for more academically-focused courses. This suggests that it is perhaps the schools that are encouraging the up-take of vocational courses, rather than being driven by individual pupils' choices.

This may be of particular concern for high attaining pupils attending these schools where they may be entered for examinations which serve to improve schools' 'league table' positions but may not be in the best long term interests of the pupils concerned. The implications for higher education prospects can not be overstated; this is particularly important as some universities, particularly highly-selective institutions, would expect to see certain key academic GCSEs. Vocational qualifications would not have the same weight in the admission process.

Another key area is the advice and guidance offered to pupils when choosing qualifications. It is important that pupils and parents receive sufficient objective information and guidance, especially at disadvantaged schools. Schools need to give pupils honest advice about where certain choices are likely to lead them in terms of further and higher education and employment options.

Vocational qualifications have an important role to play, but a young person should be no more likely to take or not take them in a disadvantaged school than in an advantaged one. Personal choice and aspiration should be the driving force, not school preference or league table positioning.

Redefining pupil attainment gaps and targeting resources

The 'hidden poor' represents a significant number of pupils that are not taken into account when currently computing attainment gaps between disadvantaged and advantaged pupils. The creation of an 'ever FSM' category, composed of all pupils that at some point in their secondary

schooling have been eligible for FSM, would increase the numbers of pupils classified as disadvantaged by over 50% and potentially has important implications for the allocation of resources and for measuring progress.

The Department for Children, Schools and Families should consider using 'ever FSM' as its indicator of poverty rather than FSM eligibility in a single year for example in the important PSA (Public Sector Agreement) target which aims to close the attainment gap [Delivery Agreement 11, Indicator 2]. The effect of using the simple FSM measure in one school year as the indicator of whether a pupil comes from a 'lower income and disadvantaged background' is to underestimate the attainment gap. The 'hidden poor' are counted in the non-FSM group even though, as this analysis shows, they have levels of attainment very similar to FSM pupils. This has the effect of reducing the level of attainment reported for the non-FSM group and so disguising the extent of the attainment gap.

On the same basis the DCSF should also consider incorporating an 'ever FSM' indicator into its Contextual Value Added modelling for schools as it is likely that this would improve the fit of the model.

Most significantly the extra resources the Government and local authorities devote to FSM pupils needs also be devoted to schools with high levels of pupils who have been eligible for FSM at some point in their school careers. The challenges this latter group face are similar to their FSM peers, yet their needs are not currently recognised when allocating school budgets.