

## Technical notes

TN1) The Department of Education (DfE) has used various criteria over the years for deciding which schools to count in lists of academies. For example, sometimes the former City Technology Colleges are counted separately. Some academies established in September 2010 are run without sponsors, and have been called ‘converter academies’, though this has not been applied to former grammar schools or CTCs which appear to be their own sponsors.

This report uses as its basis the criteria and listings supplied by DfE requiring academies to have KS4 results for the summer of 2011, to have been opened by 12 September 2010, and provided that there are also KS4 results for summer 2010 for comparison, whether as an academy or for the predecessor school. (This final requirement only make a difference of a few schools.) This resulted in a list of 269 academies, including former CTCs and recent ‘converter academies’.

Using this full list is problematic in that it includes schools which had only been open as academies for nine months when pupils sat GCSEs. Their results are largely the product of the school the academy replaced. We have therefore often based analysis on a reduced list requiring academies to be opened on or before September 2009, so that summer 2011 examination candidates had at least spent the whole of Key Stage 4 at an academy (184 academies). Later in the report, we also work with a much smaller list of 44 academies which were opened by September 2006, in other words where summer 2011 examination candidates had completed all of their secondary education. (Of this smaller group, 4 were former CTCs and 1 a former independent school.) The use of these reduced data sets is made explicit in the text of the report.

TN2) One difficulty in comparing the improvement of academies is that other schools are improving too. When looking at improvement of academy results, we have adjusted raw data for 2010 and earlier by the amount by which the score for all maintained schools had risen. This makes it easier to see whether academies had improved *more than other schools*. An analogy would be referring to a teacher earning £200 a week some years ago as earning £500 “in today’s money”.

TN3) In an earlier investigation, reported in Wrigley (2011, page 136), it was discovered that over 90% of pupils achieving a C grade or above in GCSE Science also achieved grade C or above in GCSE Maths, but only 50% of those with a Science GNVQ Intermediate achieved grade C or above in GCSE Maths. A similar exercise was conducted comparing ICT / computing with GCSE maths. Conversely, roughly half of GNVQ candidates in Science and Computing obtained D or E in GCSE Maths.

TN4) For many years the Department for Education has produced attainment data for pupils eligible for free school meals (FSM). Recently the category 'disadvantaged pupils' has been used to cover both FSM-eligible pupils and pupils in local authority care. Unfortunately data is often missing for 'disadvantaged pupils' specifically, so we have had to substitute the FSM data. In practice, there is negligible difference statistically between the two, since less than 1 in 30 of those classified as disadvantaged are in care. For all practical purposes, the two can be used interchangeably in the present context.

TN5) SFR or Statistical First Release is a form of data provided at particular times of year by Department for Education statisticians. It provides a wealth of information broken down into various categories. The most important is the January issue including the verified attainment data for the previous summer, and the February issue which focuses on aspects of social equality and provides data for different ethnic groups, for example. In January 2011 a much more detailed analysis was also published for every school.

TN6) The universal application of 35% as a 'floor target' is clearly unjust, given the different circumstances of schools and the prior attainment and levels of dis/advantage of their pupils.

There are also problems with grouping schools into bands according to the proportion of their pupils who are entitled to free school meals (FSM). The fundamental flaw is that in many schools the higher level GCSE results are not predominantly generated by their disadvantaged pupils; a more fitting correlation would be higher levels of parental education or occupation, though this is more difficult to track. Some schools have large numbers of both FSM pupils and children of professional parents, whereas in others with similar FSM percentages the non-FSM pupils are mainly the children of less educated or less highly-skilled parents.

It was therefore a major step forward for the Department for Education this year to analyse the performance of pupils with various levels of prior attainment, and to show the results among disadvantaged pupils.

TN7) Various attempts have been made by the Department for Education over the years to calculate 'value added', none of them perfectly reliable. This is extremely difficult, because it entails not only prior attainment (KS2) but also different levels of progress during KS3 and KS4. For example, disadvantaged pupils tend to fall further behind, possibly because of their perceptions of the difficulty young people in their neighbourhoods face in securing good employment, but within this many EAL pupils who were graded low at KS2 because they were late starters in English are able to catch up.

We attempted various calculations in the course of this research, the most successful of which consists of calculating the standard expectations of pupils from their KS2 attainment, and adjusting for the proportion of disadvantaged pupils in the school. Even this tends to show selective schools such as grammar schools doing better than expected by the formula, probably because level 4 covers a very wide range of attainment and those gaining grammar school places will be at the upper end. To a lesser extent this may also be true of comprehensive schools situated in more affluent areas. Only the range has been quoted in the text, as an appropriate indicator of the variability of ‘effectiveness’ among academies after controlling for their different circumstances. The range is not invalidated by the explanation provided earlier in this paragraph.

TN8) In order to make a fair comparison between the year-on-year improvement of academies and that of other schools, it is essential to recognize that different types of school have been raising their scores at different rates. At the most extreme, a school with 100% 5AcemEQ can only go down, while schools below 30% have been under extreme pressure to raise their scores and some of them have done so quite dramatically. Using 2010 as a baseline, non-academies starting 30% or below rose 8.8 percentage points in a year, whereas those starting at 61-70% rose by 0.6 percentage points.

Many more academies (or predecessor schools, in the case of newly opened academies) began low than is the case for non-academies. For example, 44% of academies but only 16% of non-academies had 0-40% in 2010.

The process used to establish a virtual matching set of non-academies was to adjust their weighting to match that of academies. The improvement for each group of *non-academies* was multiplied by the proportion of *academies* belonging to that group. The products were added to establish how this virtual matching set of non-academies improved.

A similar process was adopted based on the different proportions of disadvantaged pupils in academies and non-academies, since heavily disadvantaged schools (academies and non-academies) have been improving the most. At the extremes, academies / non-academies where 0-10% of pupils were disadvantaged improved 2.2 and 2.0 percentage points respectively in the past year, whereas those with 61-80% disadvantaged improved 7.7 and 7.2 percentage points.

TN9) In general, comparison was made between results for 2011 and for the predecessor school’s penultimate year. This is to avoid a ‘dip’ effect in cases where demoralization due to a school’s closure has affected the final year’s results.

For academies which were open before 2006, their 2011 results were compared with their 2007 results.

Academies only open since September 2010 have not been included in this improvement calculation, since they have been open for too short a time to speak of their academy status impacting on 2011 results.

Where there is less than a 2 percentage point change upwards or downwards, this is shown as 'no trend'.

All this, of course, is a statement whether academies are improving more or less than all schools nationally, and relates therefore to each year's adjusted data (see TN2).