What a waste of money!

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Abstract

Using data from the Qualifications and Curriculum Authority's (QCA) annual national survey of curriculum provision (conducted by the authors since 1997) the authors investigate the impact of the range of government supplied performance boosting measures on end of key stage national test outcomes at key stage 3 (2006), while controlling for other factors (school background variables and involvement in national initiatives) that might affect performance.

A nationally representative sample of 375 secondary schools which participated in the 2004 and 2005 QCA curriculum surveys form the basis of the investigation. The data generated provide a comprehensive range of variables enabling an in-depth analysis of which measures impact on test performance at key stage 3.

Introduction

A 'Standards' agenda based on pupil/school performance outcomes produced through national end of key stage tests and the resultant comparative ranking of schools through 'league tables' as measures of the success of government education policy interventions since the mid-1990s has resulted in strategic changes in schools' pedagogical thinking and their prioritisation in planning for teaching and learning. This governmental obsession with 'standards' in the narrowest definition of the term (ie percentage targets for population scores at fixed levels of performance on narrowly domained tests in a restricted number of subjects) has resulted in a situation in which 'quick fix' strategies to produce short term gains in 'test scores' over-rule the learning agenda. The problem with this single frame of reference is that it becomes, and in England has become, little more than a crude accounting and accountability measure which creates a simplistic and unrepresentative notion of pupil 'performance' and underperforming schools (Grayy,2004; Wiggins & Timms,2002; Karsten et al,2001). It has also led to the bandying around of terms such as 'under-performance' and 'under-achievement' by education policymakers without any attempt to standardise definitions. For example does 'under-achievement' mean low achievement, lower achievement relative to another group of achievers or lower achievements than would be expected by an observer? (Gorard & Smith,2004). It is accepted (Hall et al, 2004; Brehony, 2005; de Waal 2006) that schools over the last decade have been and still are allocating more teaching time to the tested subjects, are 'teaching to the test' and devoting more and more time to test preparation (Boyle and Bragg, 2006). 'Under pressure from bureaucrats to achieve, schools which desperately need to cater to their pupils' diverse requirements are having to tailor teaching to the tests. This distortion matters because of the gaps it leaves in understanding and learning' (de Waal, 2006, p.19). The government performance targets have necessitated the production by schools of quantifiable performance measures which in turn require an emphasis on external testing to generate nationally standardised performance data on the basis of which the government can self-congratulate on the success of their interventions in education! 'The result has been an obsession with target-chasing…instead of being a useful tool to measure pupils' achievements, standardised tests have become the 'raison d'etre' of teaching, the benchmark of whether a school lives or falls' (de Waal, 2006, p.19).

To achieve these targets or at least achieve accounting parity with their neighbours and therefore the anonymity of parity within the mass, many schools pay a substantial percentage of their resource budget to purchase, implement and mark Optional Tests (which are available in English and mathematics for every non-end of key stage tested school year group ie Y3, Y4, Y5, Y7 and Y8, with the exception of Y1). Schools widely use government promoted 'catch up' programmes and 'booster classes' as more cost-free methods of improving test outcomes.

The government, in acknowledgment of the link between schools in disadvantaged circumstances and poor test performance, and concerned at the failure by many of these socially 'disadvantaged' schools to achieve the government set targets for external test performance (Lupton, 2004; Smith, 2003; Gorard & Smith, 2004; Gray, 2001, Gray 2004), has supplied a range of centre-periphery initiatives designed to address the issue of raising school performance. Although, Leithwood contests that 'actually improving achievement has proven to be an extraordinarily difficult and badly underestimated challenge, even when vastly greater resources are devoted to it' (Leithwood 2004, p460) and Gray maintains that 'the odds are still stacked against schools in poorer areas' (Gray 2004, p293). We therefore had to test the possibility that a school's participation in one or more of the various government schemes could have an effect on its performance. The list of programmes is quite extensive; Specialist School status, Excellence in Cities, KS3 National Strategy, National Secondary Strategy, Healthy Schools, Increased Flexibility Programme, 14-19 Enterprise (Pathfinders), Leadership Incentive Grant, Leading Edge, Federation, Youth Enterprise, Young Apprenticeships, Partnerships for Progression/Aim Higher, Networked Learning Community.

Data Held

The data for this paper were collected as part of the QCA funded Monitoring Curriculum and Assessment project. A nationally representative sample of 375 (11%) state maintained secondary schools that provided information in the 2005 survey form the basis of the study. A wide range of variables were collected describing the sample schools in terms of their performance, school background factors, strategies employed to boost performance and involvement in national government initiatives.

Performance data

The only nationally standardised measurement of achievement available for key stage 3 (aged 14 years) is the percentage of pupils achieving level 5 or above in English, mathematics and science (DfES, 2006).

Background Data

There are a range of variables which help to describe each school and its cohort in context: percentage of pupils eligible for free school meals (FSM), percentage of pupils with special education needs (SEN) and percentages of pupils with English as an additional language (EAL) offer some insight into the socio-economic status of each school. Size of school, gender and whether the school is selective on ability or religion offer further variables for description and analysis.

Performance enhancing strategies

The other available data for this investigation describe each school's strategy for maintaining or improving performance. These variables include the percentage of teaching time allocated to each tested subject in year 8, the use of catch up programmes, booster classes, summer schools and optional tests.

Government initiatives

Each school supplied information about which of the national initiatives they were involved in, for example Specialist School Status, Excellence in Cities, Leadership Incentive Grant, Healthy Schools and Increased Flexibility Programme.

Analysis and discussion

All variables were analysed using multiple regression modelling statistics to investigate their significance in predicting or explaining test outcomes at key stage 3. The authors wanted to explore how the percentage of teaching time allocated to English and mathematics in year 8 or the Optional tests taken in year 8 might relate to the Key Stage 3 English and mathematics test results at the end of year 9, whilst controlling for as many additional variables that might also impact on the results. There were a lot of variables to consider within this model, but many did not prove significant when considered alongside the other factors. Following a gradual whittling down process, to remove those variables with the least significance, the final models resulted.

English Model

> KS3 English test performance = $\alpha + \beta_1$ %FSM + β_2 %SEN + β_3 %EAL + β_4 gender + β_5 religious status + β_6 % teaching time allocation in year 8 (2005) + β_7 Leadership Incentive Grant

This model recorded an F value of 92.094 indicating a high significance and $R^2 = .672$ indicating that 67% of English test performance could be predicted or explained by the model. More specifically, 67% of test performance can be predicted by %FSM whilst controlling for the other listed variables.

The first five variables in the model are all descriptors of school background, all highly significant predictive variables with $P < 0.0005$. As the percentage of FSM increases, test results decrease by -.606. As the percentage of pupils with EAL increases, test results increase by .175, a complete turnaround compared to the effect at key stage 1 (Dyson et al, 2004). The higher the proportion of pupils with no SEN, the higher the test results by .253. If a school is single sex, then results record an increase of 9.464. Schools that select their cohort on the basis of religion also record higher results by 4.710.

The remaining two variables in the model, percentage teaching time allocation in year 8 ($P=.001$) and Leadership Incentive Grant ($P>.0005$) interestingly recorded a negative impact on key stage 3 English test results in year 9. As the percentage allocation of English teaching time in year 8 increases, year 9 test results decrease by -1.09. If a school receives the Leadership Incentive Grant, test performance was 4.415 lower.

Mathematics Model

$$\text{KS3 mathematics test performance} = \alpha + \beta_1 \%\text{FSM} + \beta_2 \%\text{SEN} + \beta_3 \%\text{selective} + \beta_4 \text{gender} + \beta_5 \text{religious status} + \beta_6 \text{specialist school status}$$

This model recorded an F value of 140.224 indicating a high significance and $R^2 = .702$ indicating that 70% of mathematics test performance could be predicted or explained by the model.

As for the English model, the first five variables in the model are all descriptors of school background, all highly significant predictive variables with $P < 0.0005$. As the percentage of FSM increases, test results decrease by -.519. The higher the proportion of pupils without SEN, the higher the test results by .205. If a school is selective on ability, the results increase by 8.004. If a school is single sex, then results record an increase of 4.400. Schools that select their cohort on the basis of religion also record higher results by 4.339. The only other variable to remain in the model was specialist school status (P=.001), schools with specialist school status recording an increase in key stage 3 test performance of 3.021.

Due to the large number of variables in the model, predictions were carried out to establish the level of significance of each, in order to try to reduce the model. It was found that each variable has a considerable impact on the predicted test score outcome. The variables were also tested for multicollinearity to ensure that they were not too closely interrelated. Finally, in order to demonstrate a good model-fit, how well the model works as a predictive tool, the residuals were plotted against the dependent variable, performance at key stage 3 in year 9. A normal distribution resulted, indicating a reliable and robust model.

Conclusion

The analysis indicates that the composition of a school ie school type and socio-economic status of its cohort has a significant influence on test performance at key stage 3. Schools with fewer pupils disadvantaged by social/cultural circumstances and schools that carefully select their pupils according to ability, gender and religion (which following recent research we can take to mean by social class, ie middle class parents migrating to faith schools and faith schools 'selecting' their own intake (Waterman, 2006)) will achieve higher test results. As already discussed, the relationship between disadvantage and attainment has been widely researched eg Bracey shows that 'among 17,000 US schools all sustained success as measured by test scores came in more affluent schools, not one school out of 2,100 with a poverty rate above 75% and hardly any of the 7,000 more with the rate above 25% were able to show consistent improvement over more than two years' (Bracey, 2004, p635). This has been acknowledged by the UK government who provided the numerous national initiatives aimed at helping the more disadvantaged schools. One might therefore expect these national initiatives to have impacted on test outcomes although research (eg Harris & Ransom, 2005) has alluded to the failure of externally funded improvement programmes raising achievement in the poorest schools. However, the only national initiatives that figured significantly in the multiple regression analysis were specialist school status, which exerted a positive impact on mathematics results and the Leadership Incentive Grant (LIG), which had a negative effect on English results.

Schools must meet certain criteria in order to apply for specialist school status, they must raise £50,000 from private sector sponsors and design a four year development plan, clearly outlining targets that relate to learning outcomes. Successful schools are granted £100,000 plus £50,000 from the sponsors and £129 per pupil for the following four years. These criteria are more difficult for schools in more disadvantaged situations to achieve, so one might expect that having specialist status would relate to better test performance due in part to the profile of schools involved but also due to the increased resources. The LIG, however, is aimed at schools in deprived areas and those facing tough challenges through a range of other circumstances. Successful schools receive £125,000 per year for three years. One might therefore expect receipt of the LIG to be associated with a poorer test outcome, as the targeted schools will be those that are struggling. Over time one might expect or hope to see an improvement in results, but such changes take time especially when social and cultural infrastructures within whole communities need to be reformed first. Research has shown how much harder schools in disadvantaged areas need to work in achieving and sustaining performance levels than schools in more privileged areas 'as success can be short lived and fragile in difficult or challenging circumstances' (Whitty, 2001, p9).

With the immense pressure placed on schools to achieve nationally set targets, one would expect the wide provision and implementation of performance enhancing measures that are currently being supplied to schools. It was interesting to note that within the final analyses the use of Optional English and mathematics tests in year 8 did not have any effect on test outcome for that same group of pupils taking their end of key stage 3 tests in year 9. Further analysis also revealed that the more disadvantaged schools (ie those with higher %FSM) were more likely to use Optional tests. This is perhaps cause for concern not only due to the prioritization of resource cost of implementing the tests, but also that schools could be wasting valuable 'teaching' time while conducting practice tests. Perhaps those schools who spend most time actually teaching the core subjects achieve higher results? Analysis revealed that the more disadvantaged schools tend to allocate more time to teaching English and mathematics than schools in more affluent areas. However, English teaching time allocation had a detrimental effect on test outcome at key stage 3, B = -1.09 indicating that test score decreases by -1.09 as percentage teaching time increases. This suggests that 'drilling' pupils to pass the national tests in English isn't really working for those in more disadvantaged circumstances.

It must be noted that our analysis is at the school level and exploration at pupil level would be necessary before making any evidence based recommendation to change practice in schools. However, the suggestion from the analysis is that if the high percentage of teaching time allocated to core subjects and in administering practice tests is not directly impacting on test outcome, then perhaps some of that time should be directed elsewhere in curriculum provision to enrich pupils' school-learning experiences. If the use of expensive 'practice' tests does not improve test results then perhaps this money could be better spent elsewhere, it really could be seen as a 'waste of money'. The government implemented national initiatives do not create a significant impact on test outcomes either, but this should not be seen as their sole objective (even if it is the government's intention). Those projects which aim to improve social and cultural circumstances in highly deprived areas will impact over a wide range of factors. The impact of such initiatives will be very hard to evaluate and should ultimately improve test performance over a period of time. However research (Butler, 2004;Lupton,2004; Whitty,

2001) has shown that cultural and social changes are needed to change the profile of the labeled 'disadvantaged' schools and bring about the transformation required by the government. Worryingly after 10 years of a Labour government not only is the gap between rich and poor wider than when Labour came to office but this year's Ofsted Annual report confirmed that schools were not closing the social gap (Ofsted, 2007). Chief Inspector, Christine Gilbert reported that poorer children still had 'the odds stacked against them' with deprived areas still more likely to account for a persistent number of 'struggling schools more likely to be inadequate than those serving more affluent areas.' So despite a series of government initiatives to tackle social inequality in schools, Gilbert supplies a chilling footnote to our research by stating that 'the relationship between poverty and outcomes for young people is stark.' (Ofsted,2007).

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