

The Case for Change

November 2010

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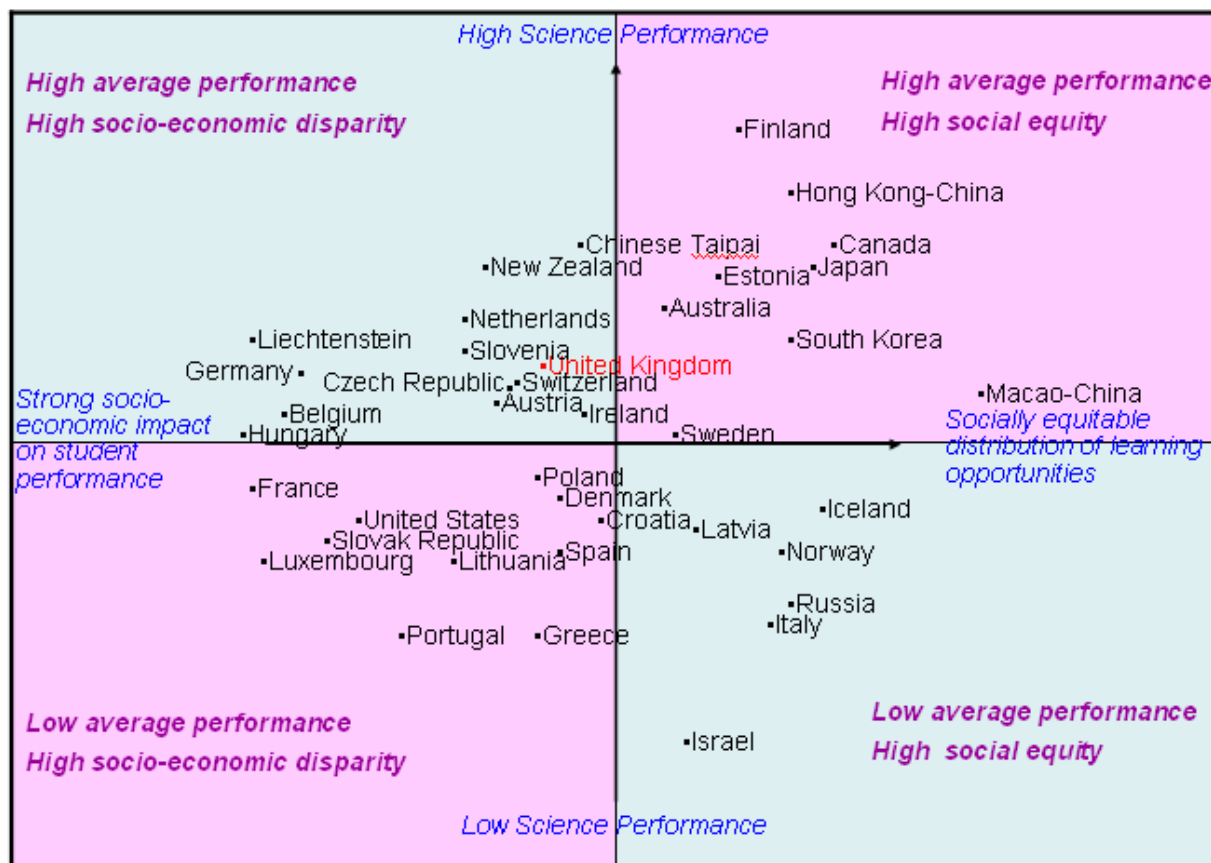
1. England's schools can be better. Over the past 15 years, a number of major studies have examined systematically how well students perform in literacy, mathematics and science in different countries of the world at different ages. These studies have begun to expose how well different education systems are doing – and have cast the education debate in this country in a wholly new light. In the latest round of tests of 15 year olds (PISA), England was 17th in reading, 24th in mathematics and 14th in science – ahead of countries like Spain, the USA and Italy, but still well behind, for example, Finland, Hong Kong and Canada.
2. At the top of the international league table in this round of tests was Finland. Our internal analysis suggests that if pupils in England had done as well as pupils in Finland, some 67% of young people would have achieved five A*-C GCSEs including English and mathematics in 2009, as compared to the 49.8% who actually did so in that year. Even in neighbouring countries, the international evidence shows that there can be dramatic differences in standards and expectations: for example, in Canada, 15 year olds are on average a full year ahead of their counterparts in the United States¹. In this country, the debate has focused too frequently on whether standards today match those of the past – but the real question is how to make the improvement necessary to match the best standards being achieved elsewhere, right now.
3. At the same time, the gap between rich and poor in Finland was much narrower than in England. England had one of the highest gaps between high and low performing pupils and a strong relationship between social background and performance. 13.9% of the variance in performance of pupils in England could be explained by their social background, as compared to just 8.3% in Finland and 8.2% in Canada. For a very long time in this country, the 'long tail of underachievement' has been tolerated; sometimes it has been seen as an inevitable consequence of a system which does a very good job for some. Too often in England it has been thought that there is a choice between an excellent system for the most able and one which serves the least able well; or else that in order to narrow gaps and expand the number who succeed, it is necessary to 'dumb down' the standards expected. But the international evidence shows that it is not so: in Finland, Canada, Japan and Korea, for example, not only are average standards higher than those here, but so too achievement gaps are narrower (see Figure 1).
4. So the evidence is clear. It is possible to have an education system in which many more young people achieve highly than in the past or the present. It is possible to have an education system in which the gap between the achievements of the richest and the poorest is narrower. And there is no trade-off between the two: it is possible to achieve both at once.
5. The evidence is clear on another point as well. Never has the quality of a nation's education system been more important than it is today. Of course, for the individual, it has long been vital. Education draws out our gifts, strengths and potential, makes life intrinsically more fulfilling, enables us to realise our goals and gives us greater control of our lives. Those who are better educated earn more and are less likely to be unemployed², are healthier and live longer³.

¹ Arne Duncan, 2010

² See for example, Greenwood, Jenkins and Vignoles, 2007

³ Feinstein et al, 2008

Figure 1



Source: Schleicher: *Is the sky the limit to educational improvement?* London, September 2010.

6. But now, shifts in technology and the global economy make the education of every child and young person more important than ever. In the past, there was a plentiful supply of unskilled and low skilled work in England. For many young people, even without much education, it was possible to look forward to a secure life in a stable community, with a stable job which even allowed some prospect of progression, through traditional training routes.
7. Today, the position is radically changed: many of the industries which once required these forms of labour have declined sharply in this country; and even in higher technology industries, much lower level work is now carried out overseas (see Figure 2, which illustrates the similar trend in the US). Around 44% of those in employment in the UK are in jobs that are most likely to require graduate level qualifications, compared to 19% who are in jobs most likely to require no or low level qualifications.⁴ The number of manufacturing jobs has more than halved in the past 30 years, from around 6,600,000 in 1978 to only 2,500,000 now, and the nature of the jobs has changed towards skilled work while there has been strong jobs growth in the professional, scientific and technical activities sector, from 768,000 jobs in 1978 to 2,352,000 now.⁵
8. This is the new economic reality: much more economic activity can be moved from one part of the world to another now than was the case in the past; where businesses are looking for low-skilled workers, they will tend to find them wherever in the world they cost least; and in high productivity industries, businesses will be prepared to move in search of the high level skills that they

⁴ Labour Force Survey, quarter 3 (July – September), 2010.

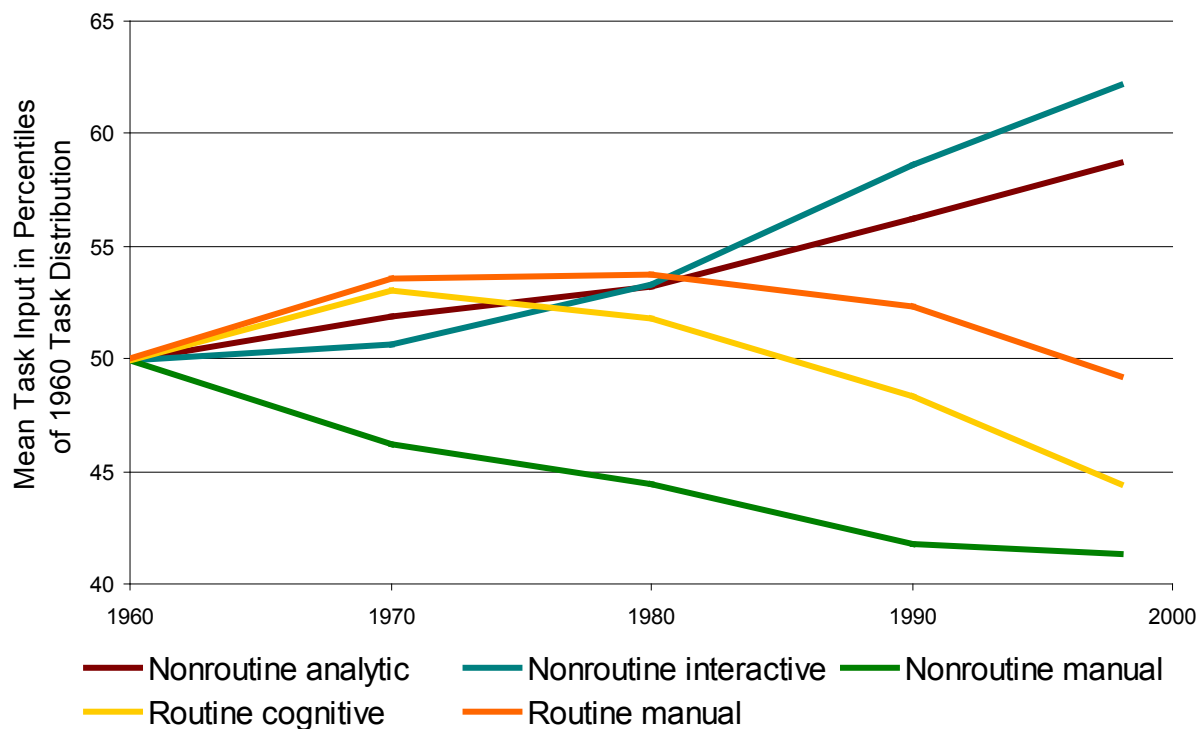
⁵ Office for National Statistics Labour Market Statistical Bulletin Historical Supplement

need. A highly educated population is therefore vital to our national prosperity; and the decline of low-skilled work means that for the cohesion of our society, we cannot afford for anyone to be left out. As President Obama has said: “the countries that out-teach us today will out-compete us tomorrow.”

Figure 2

How the demand for skills has changed

Economy-wide measures of routine and non-routine task input (US)

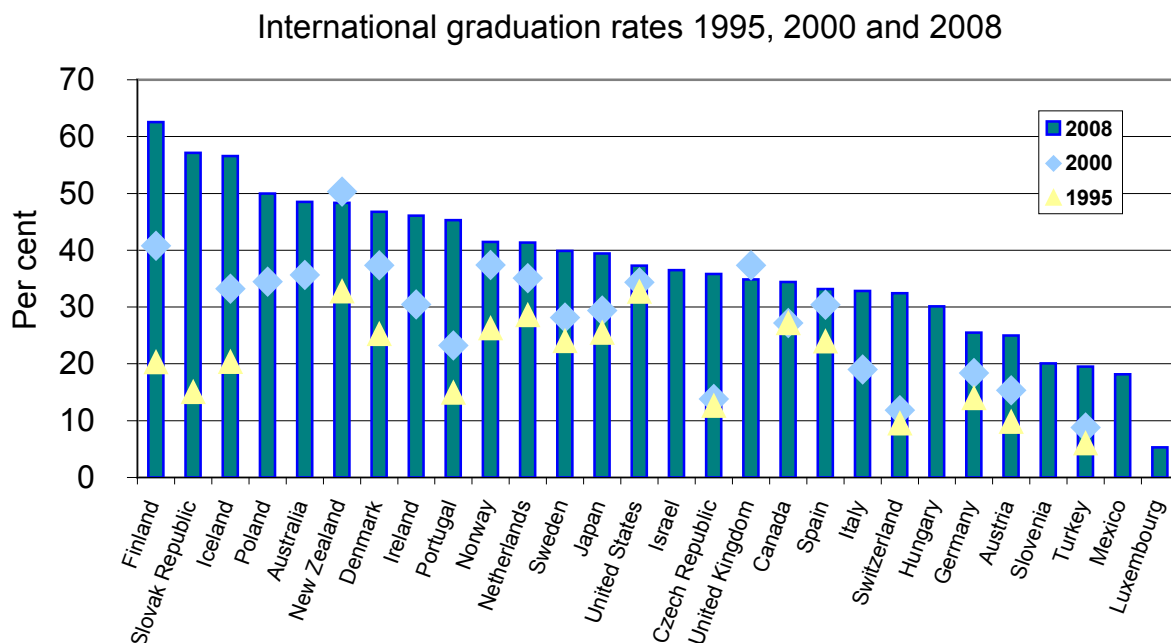


Source: Levy and Murnane, taken from OECD, 2010

9. So, not only can our education system be better and more equitable, but also our country needs it to become so. Across the globe, governments have recognised the urgent need to improve their education systems. Those that are performing at the highest levels now made significant reform a priority some time ago. In Finland, major reform began in the 1960s, and has continued since the 1980s with ongoing increases in local decision-making powers, and plans for further curriculum reform. And in many countries, including South Korea and Singapore, education reform was a central plank of generating the economic growth that has transformed their societies. In South Korea, upper secondary and higher education were rapidly expanded in the 1970s and 1980s through a centrally-led drive. In the 1990s, the next wave of reform emphasised deregulation and diversity in order to meet pupils’ needs better, while now there is further effort to increase schools’ operational autonomy and make more data available to parents and students. In Singapore, reform focused first on securing sufficient places and then focused on quality through a highly centrally-directed process, including prescription of lesson content and teaching. By the mid-1990s, the strength of the teaching profession had increased sharply, and the challenge was to make an effective system even better at meeting the needs of individual pupils. This led to a new approach of giving schools and teachers greater professional autonomy in order to promote greater innovation. Effective systems continue to reform in order to meet the challenges they face.
10. Industrialised Western countries held the lead in education in the middle of the 20th century: the United States had the highest rate of university graduation in the

world. Those that have stood still have now found themselves surpassed by countries which, having out-taught them, are now out-growing them economically. Now, spurred by the evidence from international studies of having lost their lead, these countries too are reforming fast. In the United States, the President has set the ambition that by 2020, America should again have the highest graduation rate in the world. To achieve this ambition, a major reform programme seeks to establish higher and more consistent standards, stronger data systems, better training, development and evaluation of teachers and more effective intervention in poor performing schools. But the countries which lead internationally at present are not standing still either: Finland, Singapore and others are continuing to reform, and are discussing approaches to reform with other high-performing jurisdictions.

Figure 3



Source: OECD, EAG2000, Table C3.1 and EAG2010, Table A2.3

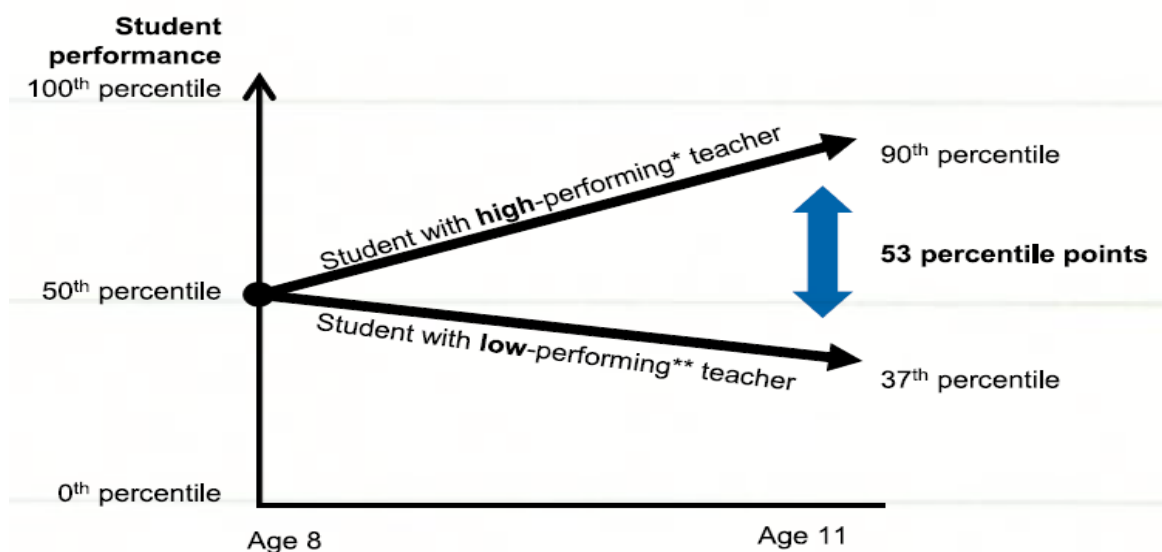
11. So our task is clear. We too must learn from those countries which out-perform us at present. We must reform with urgency, even as they continue to reform and improve. It is clearly important that as we learn from other countries, we do so in a sophisticated way: understanding that the ways in which different features of education systems interact with one another and with the broader society are very important. Nonetheless, there is now a significant body of knowledge from which to learn.
12. The context for reform in England is challenging. We face a record level of national debt, and the need to tackle it means that while school funding will grow slightly in real terms, it cannot grow faster. Meanwhile, pupil numbers are projected to rise from 2010 onwards, following a decade of decline. By 2014, we expect pupil numbers to be around 8% higher than in 2010.⁶ There are demographic pressures in the workforce as well: some 59% of heads are 50 or over, compared to 50% in 2000, with around one in four head teachers set to retire in the next three years.

⁶ DfE pupil projections, 2010

Good teachers are the most important feature of a successful education system

13. Providing good teaching is the most important thing a school can do for its pupils: pupil progress depends more on the quality of teaching than on anything else.
14. In US research⁷, an eight year-old consistently given a teacher in the top quintile of performance was found to perform 50 percentile points better three years later than a similarly performing eight year-old consistently given a teacher in the bottom quintile of performance. Internal Department for Education analysis suggests that this translates into a difference of between 6.7 and 7.9 National Curriculum points at key stage two – which is more than two years' progress.

Figure 4
The effect of teacher quality



*Among the top 20% of teachers **Among the bottom 20% of teachers

Analysis of test data from Tennessee showed that teacher quality affected student performance more than any other variable; on average, two students with average performance (50th percentile) would diverge by more than 50 percentile points over a three year period depending on the teacher they were assigned

Source: Sanders & Rivers, *Cumulative and Residual Effects on Future Student Academic Achievement*, McKinsey

15. Analysis of data in England⁸ shows much the same: good teachers make a substantial difference to overall attainment and progress, and this can be shown to be likely to have an impact on GCSE grades. Likewise, the DfES VITAE study⁹ shows that in relation to pupil progress, the influence of the teacher was more important than pupils' background characteristics.
16. So, the evidence is clear that improving average teacher quality has considerable potential for improving educational standards. The key question is therefore what should be done to improve teacher quality. The evidence

⁷ Sanders and River, 2006

⁸ Slater, Davies and Burgess, 2009

⁹ Day et al, 2006

suggests that at the national level, three strategies are effective: recruiting more of the most effective people; improving their initial training and induction; and improving the systems for their professional development.

Improving the recruitment and selection of teachers is a key step towards improving teacher effectiveness

17. In the highest performing systems internationally, including Finland, Singapore, Hong Kong and South Korea, teachers are consistently drawn from the top third of graduates¹⁰: in South Korea from the top 5%, in Finland from the top 10%. In Finland, more than a quarter of young people cite teaching as their top career choice¹¹ and there is significant oversubscription of teacher training courses. Selection for teacher education is rigorous at both the national and the university-specific level in ensuring that teachers have the academic background, experience and skills to be successful.
18. In this country, the proportion of entrants to initial training with a 2:1 degree or better has grown and has grown more sharply than in the overall graduate population. As a result, the average degree class of entrants to teacher training is better than the average for the graduate population, having been somewhat below average 10 years ago¹². Nonetheless 6% of trainee teachers had degrees below a 2:2 and England's ability to draw from the upper reaches of its graduate population remains significantly less than is seen in the highest performing systems: in England only 2% of first class honours graduates from Russell Group universities went on to train to teach on graduating.
19. Research in this country strongly suggests that subject knowledge as well as overall attainment is a key determinant of success, especially in the sciences and mathematics. In secondary schools¹³, teachers' expertise in physics (as measured by qualification) is the most powerful predictor of pupil ability in GCSE and A level physics after pupils' overall achievement. Similarly, in mathematics, pupils taught by teachers with a Masters in the subject do better¹⁴; and overall, teachers' preparation in their subject matter is positively associated with pupil performance¹⁵.
20. In this country, there has consistently been a shortage of teachers with degrees, especially good degrees, in the sciences and mathematics (which is likely here to be very closely correlated with subject knowledge). Some 16% of secondary mathematics lessons are not taught by a specialist; while only 21% of secondary science teachers have a chemistry degree, and only 19% a physics degree. It is clear, therefore, that there is scope for considerable improvement in the system by improving the proportion of teachers who have good subject degrees, especially in subject disciplines where there is a shortage.
21. There are also clear characteristics which can be identified before entry to teaching which are necessary for someone to make a good teacher. These are:
 - A high overall level of literacy and numeracy;
 - Strong interpersonal and communication skills;
 - A willingness to learn; and

¹⁰ Auguste et al, 2010

¹¹ Hopkins, 2007, cited in Whelan, 2009

¹² TDA performance profiles; HEFCE data

¹³ Smithers and Robinson, 2005

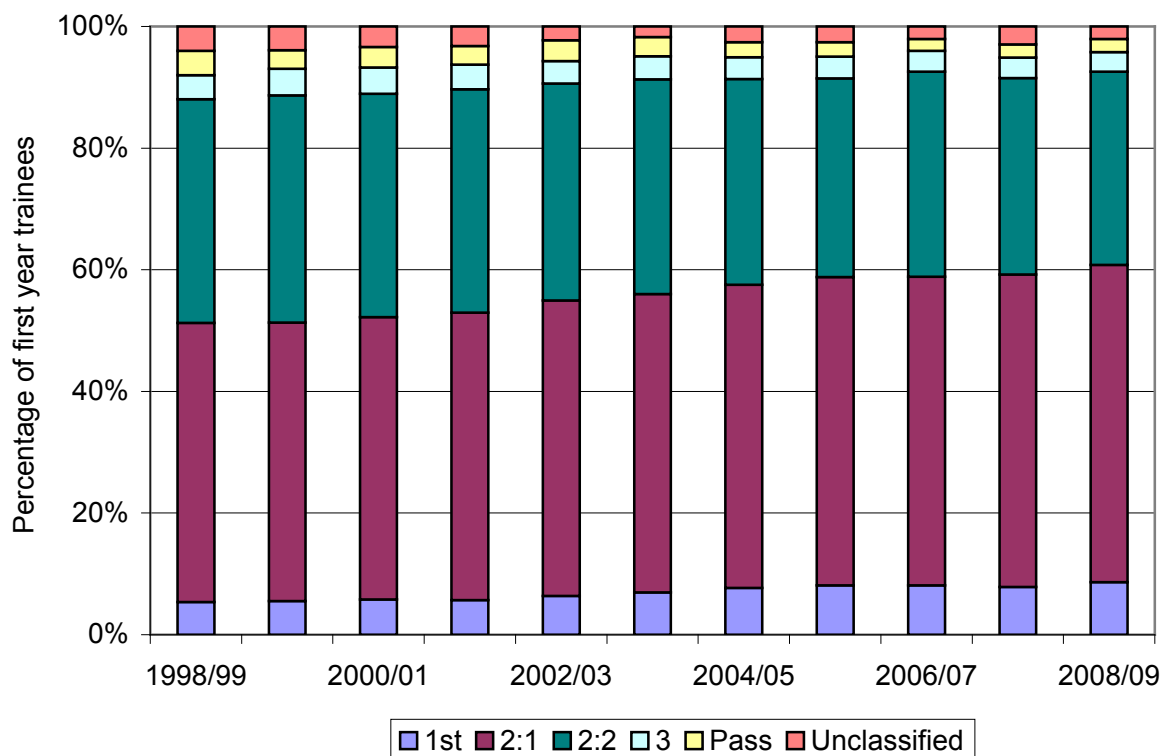
¹⁴ Goldhaber and Brewer, 1997; 2000

¹⁵ Wilson et al, 2001

- The motivation to teach.¹⁶

Figure 5

First year postgraduate trainees on mainstream initial teacher training courses by classification of their first degree



Years: 1998/99 to 2008/09
 Coverage: England
 Source: TDA's Performance Profiles

22. The most successful systems in the world have been effective in ensuring that entrants to teaching have had these common characteristics and the right level of subject knowledge as well as being drawn from the top tier of graduates. They tend to use these criteria to be selective about who may start teacher training rather than leaving selection until after teachers have graduated.¹⁷ The same lessons have been applied to charitable endeavours which focus on improving teaching – including Teach for America and, in this country, Teach First. Teach First draws exclusively from the highest achieving part of the graduate population, and selects on the basis not only of academic achievement in the main subject, but also literacy and numeracy and inter-personal skills. National evaluation of Teach for America has shown that participants are more effective than other teachers. And recent evaluation of Teach First¹⁸ shows that schools in challenging circumstances which employ Teach First teachers have seen a statistically significant improvement in their results. While the majority of teachers rate the status of teaching as medium (47%) or low (43%)¹⁹, Teach First is now consistently rated one of the top graduate recruiters²⁰.

23. It is clear from this evidence that there is scope to improve schools in England

¹⁶ Allington and Johnson, 2000
¹⁷ Barber and Mourshed, 2007
¹⁸ Muijs et al, 2010
¹⁹ GTCE, 2005
²⁰ E.g. voted 7th in Times Top 100 Graduate Employers

through systematically improving recruitment and selection of teachers. The English system can be improved through drawing more new recruits from the top echelon of graduates, including in particular improving recruitment of good graduates with degrees in shortage subjects and improving selection to ensure that it assesses the broad range of characteristics that are known to be required of teachers.

Better training and induction of new teachers will have an impact on teacher quality

24. High performing systems use four main approaches to help teachers to teach effectively:
- Building practical skills during initial training;
 - Placing coaches in schools to support teachers;
 - Selecting and developing effective instructional leaders; and
 - Enabling teachers to learn from one another.²¹
25. Teachers are found to develop the majority of their skills during their first years of training and practice. In England, however, teachers are not always confident on leaving initial training about some very important areas of professional practice. For example, only half of newly qualified primary teachers rated their training as good or very good in preparing them to teach reading, including phonics and comprehension. Newly qualified teachers trained on employment-based routes were significantly more positive (63% good or very good) compared to those who were postgraduate trained (53%) and those who were undergraduate trained (48%). Likewise, only two thirds of newly qualified primary teachers said that they were well or very well trained to establish and maintain a good standard of behaviour in the classroom – compared to 80% of those on the employment-based route.
26. It is crucial that during the period of training and induction, teachers are given plenty of opportunity to practise skills, that they are exposed to outstanding skills and receive plenty of feedback and coaching. In Finland this is achieved in part through the organisation of teacher training schools, which are fully operational, highly effective schools which are part of the faculty of education of universities.
27. In this country, there is evidence that university-based trainees see their training as too theoretical: 46% of BEd students thought this, as did 33% of primary and 19% of secondary PGCE students – compared to 12% of primary Graduate Teacher Programme (GTP) students and 10% of secondary GTP students²².
28. The approach taken by Teach First applies many of the lessons of high performing systems. To begin with, trainees attend a summer school for 6 weeks, in which they are taught many of the fundamentals of teaching. Trainees then spend the next school year as paid employees in school, teaching, observing other teachers, being observed, coached and mentored. They continue to be involved in events with their Teach First cohort, including training events and opportunities for wider leadership development. Evaluation of Teach First shows that it has not only been effective in attracting into teaching people who would not otherwise have applied, but also that half of trainees were 'outstanding' and some were 'amongst the most exceptional trainees produced

²¹ Barber and Mourshed, 2007

²² Hobson et al, 2009

by any teacher training route'²³

29. In countries where teaching already enjoys very high status, it is viable to fill teacher vacancies entirely through long university courses. In other countries, this is much less true, and in a number of countries, it has proved important to open up other routes to teaching. There are examples of this in Boston and Chicago in the US, for example, as well as England, where employment-based routes, including the GTP, provide around 20% of new teachers. Most systems have also found that the quality of applicants on these programs is higher than otherwise.²⁴
30. The evidence therefore strongly suggests that there is scope for improvement in the training of teachers. A sharper focus on the essentials of teaching, together with a shift in the balance of training routes, is likely to lead to improved performance.

A strong culture of professional development will raise standards

31. There is strong evidence from studies in the UK that a culture of classroom observation is an essential part of creating effective and useful Continuing Professional Development (CPD)²⁵. International evidence confirms that appraisal and feedback have a strong positive impact on teachers, and that an effective school system should have an approach to appraisal and feedback which provides incentives to teachers, rewards good performance and provides development opportunities where needed²⁶. The best performing systems in the world are characterised by high levels of lesson observation and ongoing, regular performance management.²⁷ For example, South Korea encourages teachers to open up their classrooms fully once or twice a month as a matter of routine so that any other teacher can come to observe their lessons.
32. A systematic review of research on professional development found that there are some key features of professional development which are linked to better achievement by children:
- Observation of teaching;
 - Feedback to teachers;
 - The use of external expertise linked to school-based activities;
 - Scope for teachers to identify their own CPD focus;
 - An emphasis on peer support;
 - Processes to encourage, extend and structure professional dialogue; and
 - Processes for sustaining CPD over time to enable teachers to embed practice in their classrooms²⁸.
33. There is also convincing evidence that collaborative professional development is more strongly associated with improvements in teaching and learning. Evidence from inspections has found that better sharing of good practice in teaching and learning within and between schools led to improvement²⁹.

²³ Ofsted, 2008

²⁴ McKinsey and Company, September 2007

²⁵ Rose and Reynolds, 2008; McCormick et al, 2008; Gray, 2005

²⁶ OECD, 2009

²⁷ Barber and Mourshed, 2007

²⁸ Cordingley et al, 2003

²⁹ HMIE, 2009

Collaborative CPD appears more likely to produce changes in teacher practice, attitudes or beliefs and in pupil outcomes³⁰. Sustained, embedded CPD is positively correlated with changes in teaching practice.³¹

34. Collaborative professional development is a feature of all high-performing systems. In Hong Kong, a School Support Network has been set up to help schools to implement system reform, and at least 50 of the expected 150 hours of professional development a teacher undertakes over three years is expected to be through collaborative work. Ontario made the approach of bringing professionals together to share practice and exchange ideas central to its improvement approach. Singapore, from the introduction of the 'Thinking Schools, Learning Nation' approach in 1997, developed school clusters to create a way for professionals to share practice across schools. More recently, it has strengthened 'Professional Learning Communities' which share and review practice collaboratively.
35. Similarly, the most effective chains of Charter Schools in the US adopt a collaborative approach to development. For example, the Aspire schools make joint lesson planning and professional development central to their approach. There is observation of lessons and joint professional work on planning lessons as a systematic part of the week. Evaluation is rigorous, using performance data. This has led to great consistency of practice between teachers and schools, created through sharing of practice. In the UK, Academy chains and other clusters of schools are also introducing shared professional development across chains of schools.
36. In China, teachers routinely form part of 'teaching research groups' throughout their careers. These typically meet formally for an hour a week, to share practice and ideas and to study teaching materials, collaboratively planning lessons and then reflecting on them. Comparative studies of primary mathematics teaching illustrate that through this approach, teachers with lower levels of education than in the US have nonetheless acquired a deeper conceptual understanding for the purposes of teaching³².
37. In the highest performing and fastest improving systems, it is routine for the most effective teachers to be given wider roles in supporting other teachers. This is seen, for example, in South Korea, Singapore, Hong Kong and Finland.
38. In England, there remains resistance in some places to open observation of lessons. There is a misconception in some quarters that direct observation of teaching should be limited to three hours per year. This can limit the ability of schools to adopt the approaches to professional development which are most effective: direct observation, feedback and reflection and review. In too many schools, CPD is still understood as focused on leaving the classroom to attend courses and passive in character³³, rather than the fundamentally classroom and practice-based approach which is known to be the most effective. There have been developments of leading schools and leading teachers, but these remain relatively unorganised and are not fully embedded in the system. Implementing change to increase lesson observation, strengthen collaborative CPD and the role of leading teachers would therefore be likely to lead to improvement in England's schools.

³⁰ Hustler et al, 2003; Bolam et al, 2003; Cordingley et al, 2005b

³¹ Boyle et al, 2004; Cordingley et al 2005a, 2005b, 2007; Hargreaves, 2003; Hopkins et al 2001; Ofsted 2006

³² Liping Ma, 1999

³³ Pedder, Storey & Opfer, 2008

Effective leaders are key determinants of success

39. Evidence in this country and abroad strongly suggests that leadership is second only to classroom teaching as an influence on pupil learning³⁴ and that schools are rarely more effective overall than their leaders. For example, Ofsted evidence suggests that 93 out of 100 schools with good leadership also have good standards of achievement, while only 1 out of 100 schools without good leadership will have good standards of achievement.³⁵
40. Inspection evidence highlights that the best leaders have an ability to communicate high aspirations and set clear and ambitious expectations for pupils and staff. Good leaders tend to have in common a certain limited number of characteristics, including willingness to learn, persistence in having high expectations, resilience and optimism³⁶. Many of these characteristics can be acquired over time, but some people are more able to acquire them to a higher level³⁷ and so both training and selection are both important issues.
41. Effective leaders have a strategic approach to improvement and take practical and rigorous action to address weaknesses³⁸. Leadership appears particularly important where a school faces significant challenges. In its publication '12 outstanding secondary schools excelling against the odds,' Ofsted notes that 'other schools can adopt the strategies of the successful schools, but they will only succeed if they are born of a deep sense of purpose and commitment, courage and ambition, stemming from the leadership of the school' and that 'the quality of leadership is paramount and no problem is insurmountable'. The OECD say that the evidence is that effective systems need principals who are trained, empowered, accountable and provide instructional leadership.
42. Crucial to strengthening leadership is to provide the right opportunities for leadership development and the right programmes to develop future leaders. Equally, new models of school leadership are developing which will provide opportunities for the best head teachers to extend their reach and have a wider impact.

Preparing and selecting leaders well makes a significant difference

43. England is relatively unusual in having a formal qualification requirement for headship. Among the highest performing systems, Ontario has a similar requirement, and although Singapore does not formally require a qualification, in practice heads are expected to have completed the NIE's leadership programme. Alberta highly recommends that principals should have completed a Masters degree in education or educational leadership.
44. In the most effective systems, whether there are qualifications or not, heads complete significant amounts of organised training for school leadership. For example, two thirds of Singapore principals say that they have had more than 400 hours of preparation for their role³⁹. In most high-performing systems, the

³⁴ Leithwood et al, 2006

³⁵ Ofsted inspection evidence, analysed in Barber, Whelan and Clark, 2010

³⁶ Leithwood et al, 2006

³⁷ Leithwood et al, 2008

³⁸ Ofsted, 2009

³⁹ Barber, Whelan and Clark, 2010

vast majority of principals complete either a pre-appointment programme or an extended induction programme⁴⁰.

45. Evaluation of the National Professional Qualification for Headship (NPQH) has been mixed. Many heads have been accepting of the need for a qualification, but concerned that to begin with NPQH was too paper based⁴¹. Subsequent evaluation has suggested that the level of time commitment away from school on courses was too heavy, and that more mentoring and a more systematic approach to placements would be beneficial⁴².
46. A focused reform of training and selection of heads has the potential to improve standards in England. This would involve focusing NPQH more on the key skills of leading schools, together with more practical experiences and structured learning from other schools. There is also scope to improve selection of candidates for NPQH or headship in order to ensure that the right candidates are more systematically identified.

There is scope to spread the impact of the best leaders more widely

47. Schools in England are increasingly introducing new models of school leadership. By some international standards, schools in England are relatively small: averaging around 400 students, as compared, for example, to 1500 in Singapore. This means that a greater proportion of the workforce goes on to headship in this country than in others: 1 in 18 teachers becomes a head in England (rising to 1 in 6 in primary schools). This compares to 1 teacher in 54 in Singapore⁴³.
48. There is great interest in this country in the potential for the best school leaders to extend their impact over more than one institution. In the United States, many of the best Charter Schools are part of chains (such as KIPP or Aspire) which have developed strong, common approaches to effective education and raising standards. In this country, there are now several Academy chains (such as Ark, Harris and ULT) many of which are showing particularly strong evidence of significant improvement in results – in some cases at twice the national rate⁴⁴.
49. At the same time, a number of head teachers of very effective schools have taken responsibility for leading more than one school. Some of these heads are now leading chains of schools or Academies (for example, those based on Outwood Grange and Kemnal Park and the Cabot Learning Federation). These too are proving particularly effective in raising standards.
50. The model of National Leaders of Education (NLEs), where outstanding heads of outstanding schools provide support to other heads and schools, has also proved highly effective in extending the impact of the best school leaders. Primary schools supported by NLEs during 2007/08 made improvements in the proportion of pupils gaining Level 4 in English and mathematics at key stage two, averaging ten percentage points, while schools nationally saw no increase over the same period. Secondary schools supported by NLEs during 2007-08 saw an improvement in GCSE pass rates over the two years (as measured by the percentage of pupils gaining five GCSEs at grades A*-C including English and

⁴⁰ Barber, Whelan and Clark, 2010

⁴¹ Smithers and Robinson, 2007

⁴² Crawford et al, 2009

⁴³ Whelan, 2009

⁴⁴ DfE internal analysis

mathematics), double the national average⁴⁵.

51. Evidence from this country and overseas therefore strongly suggests that there is scope to expand models which extend the reach of effective leaders. This includes both chains of schools (including those which bring new providers from outside the system and those which grow from excellent schools within the system) and school to school support models such as NLEs.

⁴⁵ Hill and Matthews, 2010

The most effective systems set high standards

52. In every high performing jurisdiction, there are mechanisms for setting high expectations of pupils and creating a coherent curriculum. There are different approaches to this in different parts of the world. In England, the National Curriculum has been an important part of setting standards and expectations. It has changed and evolved over time, varying in levels of prescription and in content. Levels of prescription from age 14 onwards have tended to reduce over time, though subjects and content have also been added for some age groups, and there has been a tendency to increase advice about organisation and teaching of the curriculum. At present, there are over 250 pages of guidance about the National Curriculum.

Effective systems set high expectations and create curriculum coherence

53. Analysis suggests that an important feature of high performing systems is that they achieve 'curriculum coherence'⁴⁶. A system achieves coherence in this sense when its national curriculum content, textbooks, teaching content, pedagogy, assessment and drivers and incentives are all aligned and reinforce one another. Concepts in subjects such as mathematics are consequently arranged in an appropriate, age-related hierarchy⁴⁷.
54. This analysis strongly suggests that a national curriculum cannot alone carry the weight of achieving curriculum coherence. Other factors which are relevant may include, for example: inspection, pedagogy, assessment and qualifications, funding, governance, accountability arrangements and so on. Coherence does not require centralised control by Government agencies, nor that there is top-down control, but it does mean that there needs to be some measure of control within the system. This can be achieved in different ways in different systems.
55. The nature of the content of the curriculum is also a significant factor in determining the success of a system. All high-performing systems emphasise the fundamentals of subjects and give them substantial time allocation⁴⁸. In Massachusetts, the 1993 Education Reform Act established knowledge-based standards for all grades and a rigorous testing system. Subsequently, there have been significant improvements in scores on the US-wide National Assessment for Educational Progress (NAEP) measure, to record-breaking levels⁴⁹. Introducing knowledge-based curricula has been effective in improving pupil engagement, literacy and formal discourse in speech and in writing⁵⁰; and in raising achievement in areas of particular deprivation⁵¹.
56. In a number of countries, including France and Germany, lower performance in international studies has led to a sharper focus on the basics in the curriculum. In some aspects of primary science and mathematics (though not in data handling), England's primary curriculum is narrower and less demanding than in high-performing countries⁵².
57. There is compelling evidence from a number of systematic reviews of

⁴⁶ Schmidt and Prawat, 2006

⁴⁷ Oates, 2010

⁴⁸ Oates, 2010

⁴⁹ Stern, 2009

⁵⁰ Johnson et al, 2001

⁵¹ Clavel and Merrifield, 2008

⁵² Ruddock and Sainsbury, 2008; Mullis et al, 2007

research on the teaching of reading. This work has agreed that systematic phonics instruction is more effective than the alternatives in teaching children to read⁵³. It is widely agreed that systematic synthetic phonics should be taught within a broad literacy curriculum.

58. Highly effective education systems have also been increasingly examining the likely needs of the future, and adopting a systematic approach to curriculum reform. This approach has included thorough examination of evidence about the needs of young people, benchmarking against other curricula internationally and care to avoid too frequent changes to the curriculum, instead establishing a cycle in which the curriculum may be thoroughly reviewed perhaps once a decade.
59. Against this evidence, there are clearly deficiencies in the curriculum in England. There is some evidence that the design of the curriculum does not promote coherence. One concern is a lack of focus on key elements of knowledge and a lack of clear description of content, leading to overly generic statements which do not sufficiently guide the sequence of teaching. Another is that there is confusion between content on the one hand and context and teaching method on the other. As a result, curriculum guidance inappropriately specifies how content should be taught, with the result that teachers are overly constrained in their practice. A third is that the alignment between curriculum and assessment does not promote coherence. There is also concern that the primary National Curriculum in mathematics and science is not as demanding as in some other jurisdictions, and that teaching of early reading does not always recognise the research evidence on systematic synthetic phonics.
60. The evidence therefore suggests that reform of the National Curriculum would be beneficial in raising standards. This should take full account of the international evidence about effective practice. Again in line with international best practice, there should then be substantial stability in the curriculum, to avoid the risks of overly frequent reform.

School systems can raise standards through detailed prescription, but this approach is self-limiting

61. In a number of systems, the approach to achieving curriculum coherence was initially based on a highly prescriptive approach. This was true in Singapore, for example, where in 1980 the Curriculum Development Institute of Singapore (CDIS) was established. This oversaw not only the curriculum, but also textbooks, teaching materials and lesson plans which were deployed by teachers. The CDIS made sure that every class of a particular age had the same resources, and also trained teachers in their use. This highly centralised approach to the curriculum was an important part of achieving progress up to the mid-1990s.
62. This approach altered from 1996 onwards, with the closure of the CDIS and the development of a new strategy: 'Thinking Schools, Learning Nation'. This freed teachers and principals substantially. It was seen as a necessary change if the ambition was to move beyond standards being achieved in the mid-1990s, to a system in which more pupils could achieve substantially more highly. It can be argued that with curriculum coherence firmly embedded in the culture of the system and the professionalism of teachers, and with an increasingly strong teaching force, the need for centralism was past, and could only limit the ability of teachers to extend all children (and perhaps ultimately limit the attractiveness of

⁵³ Ehri et al, 2000; Torgerson and Brooks, 2005; Torgerson, Hall and Brooks, 2006.

teaching as a profession).

63. Similar lessons can be drawn from the example of Finland, where there has been a national curriculum since 1881⁵⁴. The process of reform from the 1960s onwards was tightly controlled from the centre of government, including tight control of textbooks and teaching materials. Again, there was relaxation once there was curriculum coherence in place, with a strong and professional workforce to maintain this coherence.
64. In each of these cases (and in a number of other cases of reforming systems), the top-down approach was seen as necessary initially. Ultimately, however, it was seen to be limiting to the further development of the system. There is also a significant international trend towards greater curriculum autonomy in schools⁵⁵. Significant levels of curriculum autonomy have existed for at least a decade in a number of other currently high-performing jurisdictions as well, including New Zealand and the Netherlands, suggesting that current performance levels in these countries have been achieved while this has been the reality.

Highly effective systems do not prescribe how to teach

65. In the very early stages of developing and reforming a school system, it is common for states to adopt quite prescriptive strategies for improving teaching as well as for implementing the curriculum. This tends to be effective where teachers are relatively unskilled and not highly qualified, and can include detailed prescription of teaching method, materials and pedagogy as well as of curriculum content. These approaches can be seen today in a number of nations seeking to create improvement from a relatively low base, as well as in the past in a number of countries which today are very highly-performing.
66. However, high-performing systems do not tend to be prescriptive about teaching method in general. They rely instead on their workforce strategies to ensure that they have people with the right knowledge and skills, well trained and working with other skilled professionals collaboratively. Prescription about teaching method appears to be an effective approach to securing basic minimum standards, but ineffective as a strategy to encourage excellence.
67. This is likely to reflect the fact that in a workforce with low skills, despite the fact that the teachers will have more knowledge of their students than a central agency, it is possible to prescribe methods which on average improve performance. By contrast, highly skilled teachers will be able use their knowledge of their students to develop a refined approach which outperforms any central model. In addition, it is likely that teaching will tend to be a more attractive career to the most able if there is greater scope for them to exercise professional judgement.

Setting high expectations in assessment can raise standards

68. Internationally, the existence of external assessment improves achievement overall. Setting high expectations through assessment is strongly associated with higher achievement. Analysis of the standards set by US states for 'proficient' performance after the introduction of the No Child Left Behind Act found significant variation in level of challenge set, mapped against NAEP scores. Students in states setting high expectations make around 10% more

⁵⁴ Nurmi V 1990; Kantola J, Nikkanen P, Kari J & Kananoja T 1999, quoted in Oates 2010

⁵⁵ INCA, 1999; 2003

progress than students in states with low expectations⁵⁶.

69. In this country, there is significant debate about qualifications' standards. The evidence shows that economic returns to general qualifications (GCSEs and A levels) are greater than to other types of qualification. In 2009, 77% of teachers had confidence in the A level system⁵⁷. In a different survey of teachers, however, the most commonly stated reasons for increases in the number of A grades were pupils knowing more about what would be in exams (43%) and re-sits (20%)⁵⁸. A recent study found that 25-65% of those pupils who re-sat a module improved their grade, depending on the unit and the subject, but that the fact that the option of a re-sit was available may have lessened a pupil's resolve to do their best at the first attempt⁵⁹. In 2008, between two thirds and three quarters of students re-sat at least one unit⁶⁰.

Apprenticeships and vocational education can make a significant contribution

70. Systems with high levels of post-compulsory participation tend to have strong vocational and occupationally-specific routes. In some countries, including for example Singapore, vocational education at school leads on to high participation in vocational higher education. There is evidence that careful design of a system of vocational education can make a significant difference to participation: so-called 'mixed' systems where academic education has high prestige and there is no dominant vocational education/training route (as against 'dual' or 'state' systems) tend to have lower participation rates overall than other systems⁶¹.
71. The OECD has suggested that vocational education and training should provide young people with generic, transferable skills to support occupational mobility and lifelong learning; should engage employers and unions in curriculum development and ensure that skills taught reflect the needs of the modern workplace; should include a mix of programmes to reflect pupil and employer needs; and that the costs should be shared beyond secondary level between government, employers and pupils, according to the benefits⁶².
72. In England, there has been growing acceptance of vocationally related qualifications for entry to higher education (HE). The proportion of new entrants to HE with vocational qualifications has grown sharply over the last decade⁶³. Analysis of qualification returns in England shows that of vocational qualifications, Apprenticeships have particularly good returns: those with an Advanced Apprenticeship, for example, earn on average some 18% more than those qualified to Level 2⁶⁴. There is scope to apply lessons both from Apprenticeships and from other systems internationally to vocational education and training more broadly.

Increasing post-16 participation can yield significant benefits

73. In the most recent analysis of participation rates globally, the UK ranked 27th

⁵⁶ National Centre for Education Statistics, 2007

⁵⁷ Ipsos-MORI, 2010

⁵⁸ De Waal, 2009

⁵⁹ Vidal Rodeiro and Nadas, 2010

⁶⁰ QCDA, 2009

⁶¹ Finegold and Crouch, 1994

⁶² Hoeckel et al, 2009

⁶³ UCAS Statistics, 2010

⁶⁴ McIntosh, 2007

out of 30 countries⁶⁵ in relation to participation in education at age 17. However, participation is now starting to rise. There is strong evidence that continuing to participate in education post-16 has significant benefits to the individual – there are significant economic returns to qualifications at both Level 2 and Level 3⁶⁶. By contrast, there are very significant costs to the individual, the economy and society if young people spend a considerable period of time not in education, employment or training (NEET). Overall, estimates of the costs and benefits of full participation of all young people to age 18 (over and above 90% participation at 17) suggested that benefits would be of the order of £2.4 billion for each cohort of young people, discounted over their lifetimes (in 2016-17 prices), at a cost of around £774 million⁶⁷.

⁶⁵ OECD, 2009

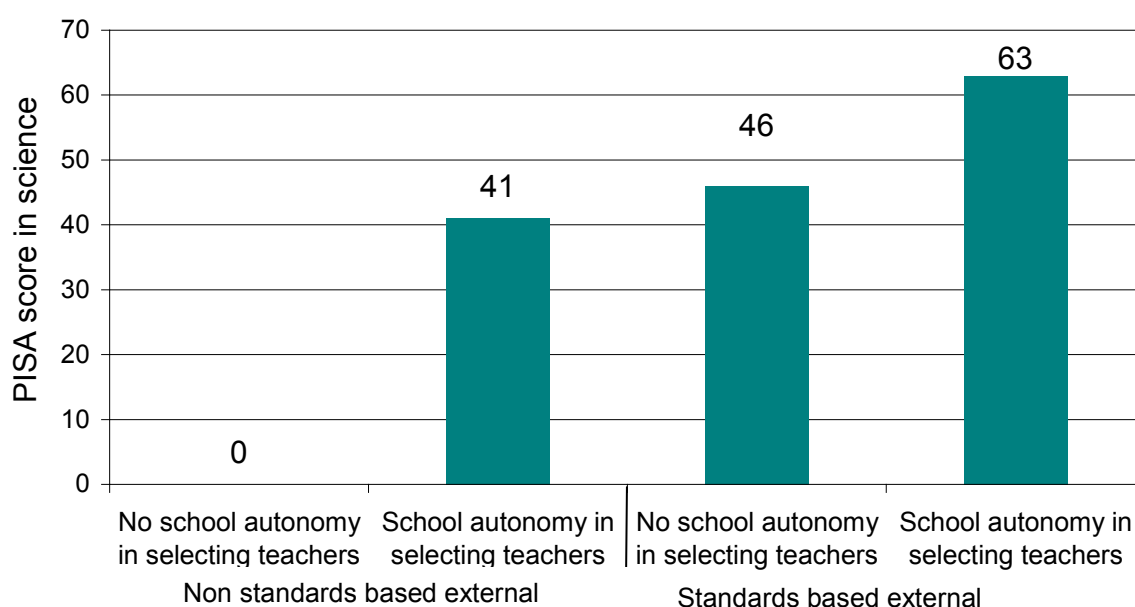
⁶⁶ McIntosh, 2007

⁶⁷ DCSF, 2008

The most effective systems combine high levels of school autonomy with effective accountability

74. There is strong evidence that the most effective systems in the world seek to combine significant operational independence for schools with effective accountability. OECD analysis of PISA data considered system factors affecting student performance. This found that school autonomy in selecting teachers for hire and standards-based external examinations were the two system factors which made the most significant positive difference to student achievement in PISA (see Figure 6). The combination of the two factors – autonomy and accountability – had an even greater positive impact on PISA scores (63 points on the PISA scale). A system in which schools are free to decide how things should be done and are then accountable for the results appears to be the most effective in raising achievement⁶⁸.
75. Internal analysis of this to translate PISA scale points into impact on GCSE results suggests that an improvement of 63 PISA points translates into an improvement of 57 GCSE points per pupil. This is equivalent to the difference between, for example, every pupil getting eight C grade GCSEs and every pupil getting seven Bs and one A⁶⁹.

Figure 6
School autonomy, standards-based examinations and science performance



Source: OECD, 2010

Across the world, greater school-level autonomy has been a key part of improving performance in more effective systems

76. There is strong evidence that children and young people do better when schools manage their own budgets and select their own teachers and, based on

⁶⁸ OECD, 2010b

⁶⁹ DfE, 2010

analysis of PISA results from 2000, schools' freedom to choose their own textbooks is also strongly related to higher pupil performance⁷⁰. Overall cross-country analysis shows that school autonomy has a beneficial impact⁷¹.

77. In some of the highest performing systems, there has been very significant school autonomy for an extended period. This is true in Finland, where high levels of autonomy were promoted from the late 1980s and strongly so through the 1990s, alongside a shift towards decentralised education management⁷². Finnish schools became increasingly accountable for learning outcomes, and were given freedom to establish optimal teaching methods and learning environments, taking leadership responsibility for educational development and school improvement. This flexibility enabled schools to learn from one another and make best practice universal, encouraging teachers and schools to expand their repertoire of teaching methods and individualising teaching to meet pupil needs⁷³.
78. There is similarly clear evidence that greater autonomy is beneficial within wider systems. For example, the more autonomous Charter Schools tend to perform better than public schools in the US⁷⁴. Likewise, in Sweden, Free Schools have higher achievement than other schools, having higher average points scores than state schools in most subjects, a higher proportion of pupils eligible to progress on to upper secondary education and having more pupils progress to higher education⁷⁵. Free School growth has a positive impact on municipality academic performance⁷⁶.
79. Likewise, in this country, Academies have made great improvements in performance at GCSE level. In the 63 Academies open long enough to have results in both 2008 and 2009, there was a 5 percentage point improvement in the proportion of pupils achieving 5 good GCSEs including English and mathematics – twice the increase seen nationally. Similarly, over a longer period, comparing Academy results in 2009 to those in predecessor schools in 2001, there was much faster improvement in Academies than in other schools (16.4 percentage points compared to 11.9 percentage points). Analysis also shows Academies outperforming a comparison group of similar schools, with similar characteristics and levels of attainment⁷⁷. The National Audit Office finds a 'clear lift' in performance after schools convert to Academy status⁷⁸.
80. There is also evidence that greater school autonomy benefits deprived pupils in particular. In the US, Charter Schools appear to close the attainment gap between advantaged and less advantaged pupils⁷⁹ and pupils have a higher probability of graduating and enrolling in college⁸⁰. Similarly, in England, City Technology Colleges (CTCs), the forerunner of Academies, have shown a particularly positive impact on the achievement of deprived children. In the 15 CTCs and former CTCs, the proportion of pupils eligible for free school meals who achieved five or more A*-C grade GCSEs including English and mathematics was just over twice as high as for all maintained mainstream

⁷⁰ Wössman and Fuchs, 2004

⁷¹ Wössman, 2003

⁷² Kivirauma et al, 2003

⁷³ Sahlberg, 2009

⁷⁴ Hoxby and Rockoff, 2004

⁷⁵ Sveriges Officiella Statistik, 2009

⁷⁶ Bohlmark and Lindahl, 2007, 2008

⁷⁷ DfE internal analysis, 2010

⁷⁸ NAO, 2010

⁷⁹ Hoxby et al, 2009

⁸⁰ Zimmer et al, 2009

schools. This success is being repeated in Academies: the attainment of pupils eligible for free school meals has risen faster than the national average and faster than in schools in other major interventions.

81. There is therefore a strong body of evidence in this country and internationally favouring greater autonomy for schools. Autonomy would appear to have particular benefits for disadvantaged pupils.

Schools, heads and teachers are highly accountable in the most effective systems

82. Research examining accountability and children's outcomes in high-performing systems has found that attainment is used as an outcome indicator in virtually all. Literacy and competence in the national language was important in virtually all systems. And virtually all systems used outcome data to monitor national standards, and the large majority to monitor schools⁸¹.
83. OECD evidence strongly suggests that the use of external assessment data is important for accuracy and effectiveness of accountability mechanisms. External assessment proves to be a more reliable indicator of future progress and success than teacher assessment⁸². And there is evidence that teacher assessment tends systematically to understate the achievement and progress of poorer children and those from minority groups⁸³.
84. Different jurisdictions take different approaches to accountability. Targets have tended to be shared widely with stakeholders and the broader public in a number of English speaking systems (including England, the USA and Canada). They have been less used in Asian and Eastern European countries, where performance data has largely been discussed within the profession. To some extent, these differences reflect differences of culture and expectation. What is clearly the case is that in high-performing systems, there is an effective mechanism for identifying and improving performance where schools are not doing well. And increasingly, there are effective systems in schools in high-performing countries for identifying children who are not performing well and intervening to support them effectively. These systems draw heavily on data.
85. In England, performance tables set out how well children do, school by school. In recent research, 71% of parents (and 59% of other respondents) said it was very important to them that parents and the public should know how well each school performs. And 87% of parents (and 82% of other respondents) agreed that the performance of each school in tests and exams should be published and publicly available⁸⁴.
86. There is evidence that if good performance information can be made available to parents of disadvantaged pupils at the time that they make a school choice, this can make a significant difference⁸⁵. Recent research⁸⁶ has considered whether the use of performance tables data is useful in predicting how well children will do. To the researchers' surprise, they find that the tables are indeed a good predictor of how well a child will do in future, and that 'parents should use performance information to choose schools'. They find that raw attainment is a much better predictor than a Contextualised Value Added score.

⁸¹ EPPI, 2008

⁸² OECD (2007) *PISA 2006: Science Competencies for Tomorrow's World, Volume 1: Analysis*, page 242ff.

⁸³ Strand, 2007, Thomas et al, 1998

⁸⁴ TNS, 2008

⁸⁵ Hastings and Weinstein, 2008

⁸⁶ Allen and Burgess, 2010

87. However, there is also concern about ‘gaming’ behaviour on the part of schools. At secondary level, this includes concern that schools have increasingly entered students for qualifications which count heavily for the performance tables but are less suitable for the individuals (the number of vocationally-related qualifications taken in schools has grown from 15,000 in 2004 to 575,000 in 2010⁸⁷); and that schools have focused on pupils who are ‘borderline’ on the five A*-C measure at the expense of others⁸⁸. There is scope to tackle some of these concerns through adjustments to the accountability system and to performance measures. Likewise, in primary schools, there is substantial concern about narrowing of the curriculum and over-rehearsal of tests⁸⁹, and a desire to find approaches to accountability and the measurement of performance which reduce this problem.
88. In relation to inspection, there is evidence that positive changes in performance follow inspection⁹⁰. There is also evidence that how schools respond to inspection is related to the quality of inspection, the quality of leadership of the institution and the implications of the inspection for the funding, esteem or staff of the institution⁹¹. Heads and others believe strongly that inspections should be targeted more sharply on satisfactory or inadequate schools, and that inspection recommendations should focus sharply on the actions a school should take to become good or better⁹².

⁸⁷ DfE analysis, 2010

⁸⁸ Burgess, 2005

⁸⁹ ARG and TLRP, 2009

⁹⁰ Ofsted 2009; Matthews and Sammons, 2004

⁹¹ Matthews and Sammons, 2004

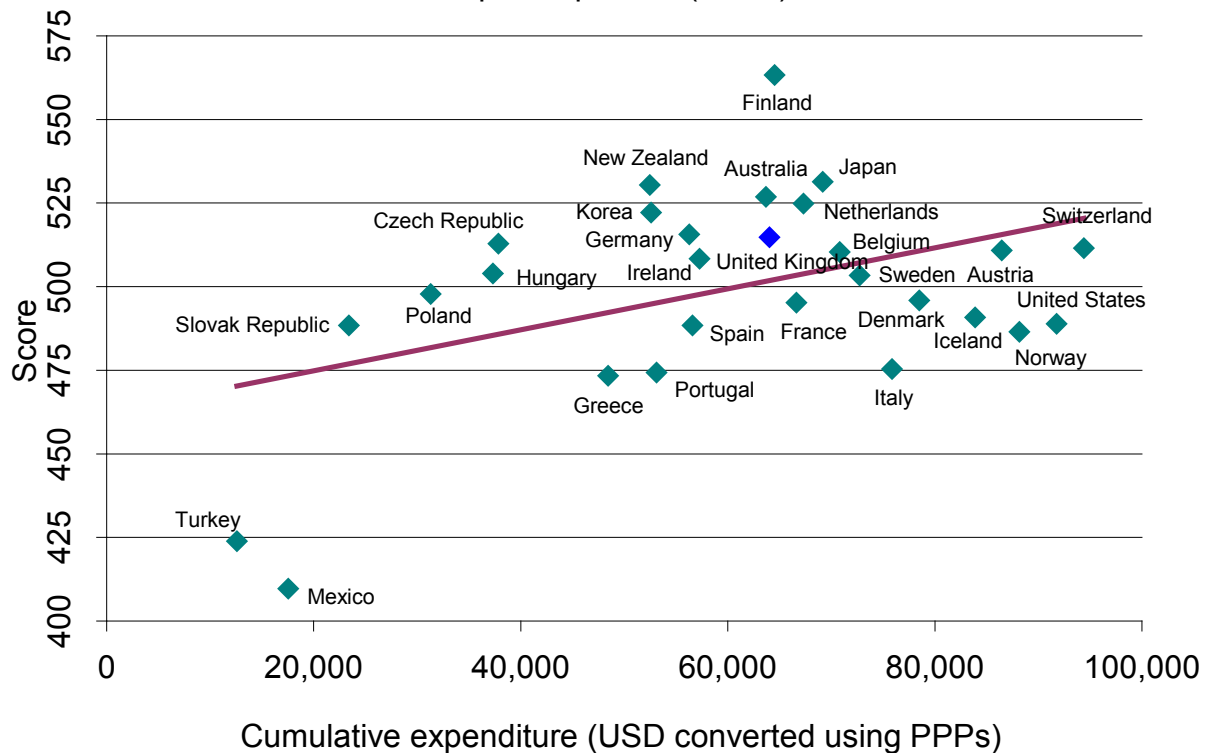
⁹² Ofsted, 2008

School funding is a crucial enabler of fairness

89. International evidence shows a positive relationship between the amount that is spent on education and the results achieved. The graph below illustrates this. However, it is also clear that at any given level of expenditure, there is a wide disparity between the most and least effective system as measured by PISA. For example, Norway spends substantially more per pupil than Finland, but achieves less well. The United Kingdom spends a very similar amount to Finland.

Figure 7

Relationship between performance in science and cumulative expenditure on educational institutions per student between the ages of 6 and 15 years, in USD, converted using purchasing power parities (PPPs)



Source: OECD, 2010

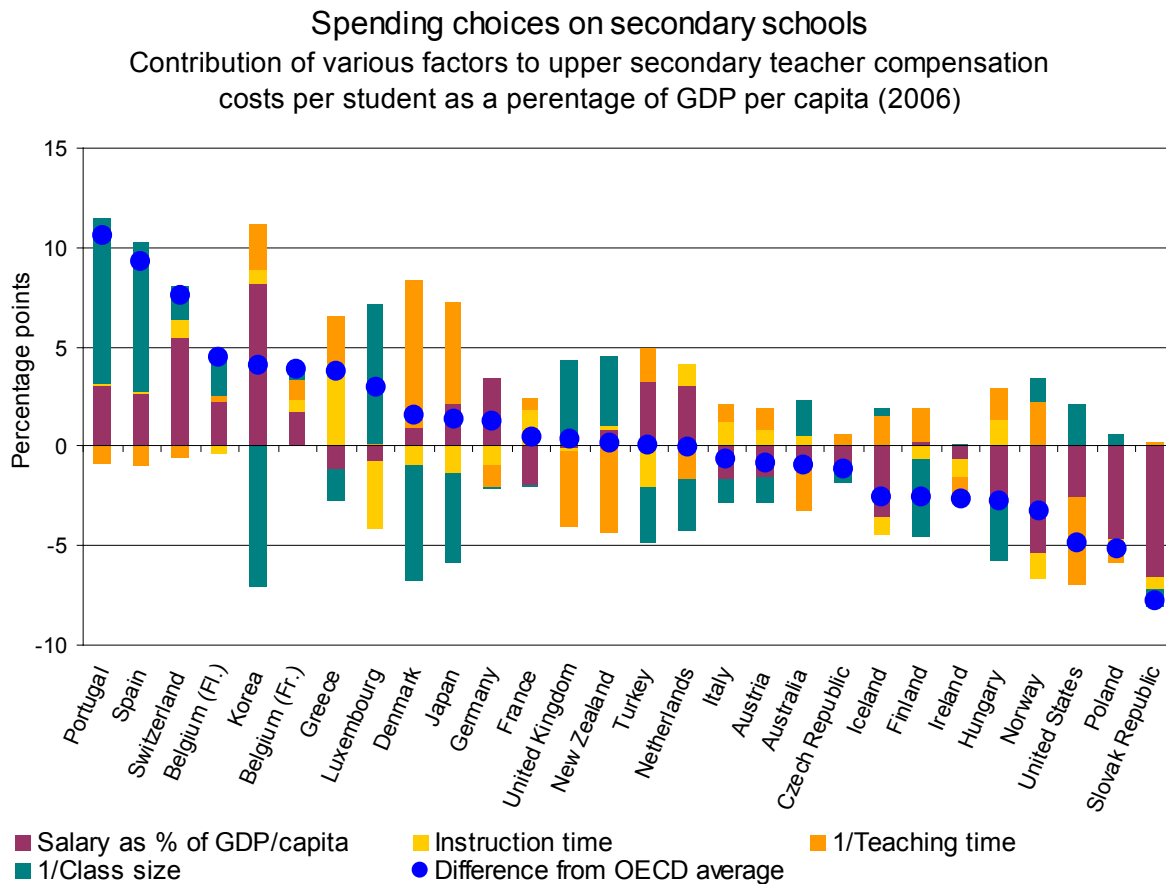
90. As important, therefore, as how much money is used to support a system is how the system is designed to ensure that the money is used well. Different systems use their resources very differently, making different prioritisation decisions. Equally, some systems are significantly more effective than others in promoting equity through the way that they use resources.

There are significant differences in how resources are used

91. Countries make very different choices about how they use resources. For example, Figure 8 shows how different systems have used resources on staffing. Korea, for instance, which spends well above OECD average as a proportion of GDP per capita on secondary teachers, pays teachers highly relative to GDP per capita, but compensates for this by having larger class sizes. Luxembourg spends at a similar level to Korea, but much of the money goes on small class sizes. Meanwhile, Finland spends less as a proportion of GDP per capita, and this is largely achieved by having larger class sizes than average. Overall, there

is some evidence that within the resources available, more effective systems tend to have fewer, better teachers through having larger classes but paying teachers more than less effective systems⁹³.

Figure 8



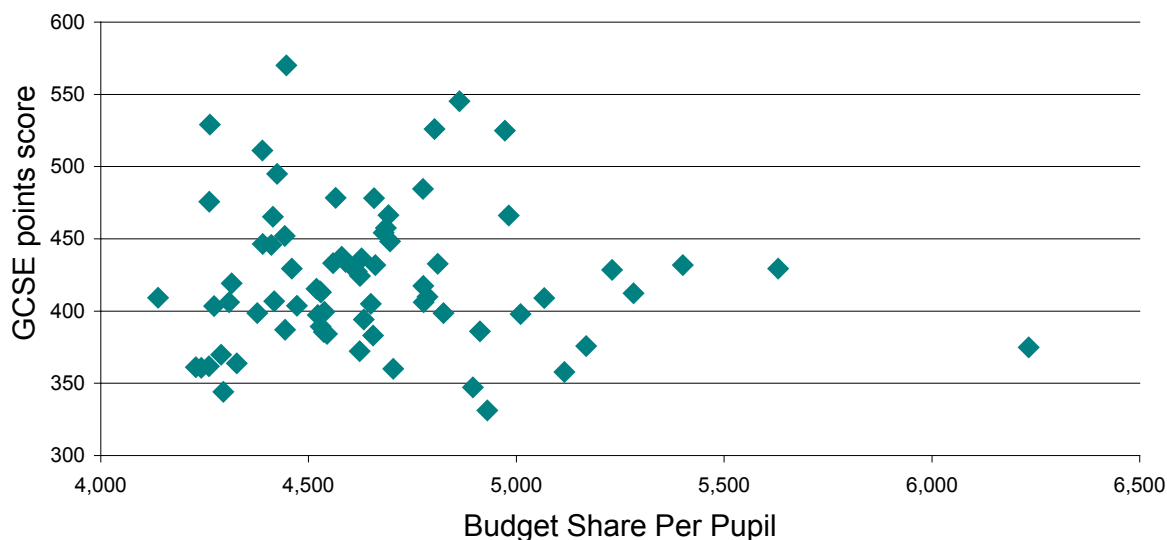
Source: OECD, 2010

92. In this country, more money has gone into schools overall, but without corresponding gains in performance in international studies. An important issue is that the distribution of resources has become increasingly unfair. At present, one school may receive up to 50% more funding than another school in similar circumstances serving a similar pupil body. This is illustrated in Figure 9, which illustrates budgets and exam performance of a group of similar secondary schools outside London, of a similar size and with similar levels of deprivation. As can be seen, the levels of funding range from a little over £4,000 per pupil, to over £6,000 per pupil. There is little or no association between achievement and funding level.
93. Of course, schools in this sample will have significantly different levels of prior attainment amongst pupils arriving at age 11 and other contextual differences, which will also have an impact on results. However, it is clear from these examples and from other evidence that effective leadership in using resources efficiently is as important as total quantum of resource. At both the level of the national system and the level of the individual school, effective approaches to using resources well have as much impact on attainment as overall funding levels. Even at a time of slower real terms growth in funding, there is scope to make very significant gains in achievement levels through effective implementation of change.

⁹³ Whelan, 2009

Figure 9

Variation in budget share plus grants against GCSE points score for secondary schools without sixth forms, 750-1000 FTEs, 9-13% FSM, non-London



Source: DfE Internal Analysis 2010

Funding can be used effectively to incentivise change and create equity

94. OECD analysis suggests that how resources are deployed can make a significant difference to the equity of the system. In less effective systems, highly skilled teachers tend to work in the most advantaged schools. In the most equitable systems, incentives, rules and funding encourage a fair distribution of teaching talent⁹⁴.
95. In this country, only 70% of the money that is intended by Government for the most deprived pupils is actually allocated to schools on that basis. The 'spend plus' funding methodology, which allocates funding on the basis of the previous year's funding, has been implemented to secure budget stability for schools. As a result, however, the funding system has become increasingly opaque and unresponsive, with the money that schools receive depending more on history than on the current composition of their pupil body. This means that the systems and incentives in this country do not encourage a fair distribution of teaching talent, and that there is scope to improve this incentive structure.

⁹⁴ Schleicher, OECD, 'The high cost of low educational performance', 2010

Conclusion

96. Evidence from international studies shows conclusively that it is possible for a school system to be simultaneously higher performing and more equitable than the current system in England. Analysis of the evidence from these international studies, from the design of the highest performing and fastest improving systems globally and from national evidence, shows that there is substantial scope for beneficial reform of the English school system.
97. Reform should seek to strengthen the recruitment, selection and development of school teachers and leaders. It should strengthen and simplify the curriculum and qualifications, to set high standards, create curriculum coherence and avoid prescription about how to teach. It should increase both autonomy and accountability of schools, and ensure that resources are distributed and used fairly and effectively to incentivise improvement and improve equity.

Bibliography

Allen, R. and Burgess, S. (2010). *Evaluating the Provision of School Performance Information for School Choice*. CPMO Working Paper Series No. 10/241.

Allington, R.L. and Johnson, P.H. (2000). *What do we know about effective fourth grade teachers and their classrooms?* The National Research Center on English Learning and Achievement, Report Series 13010.

Auguste, B., Kihn, P., Miller, M. (2010). *Closing the talent gap: Attracting and retaining top-third graduates to careers in teaching – An international and market research-based perspective*. McKinsey and Company.

Barber, M. and Mourshed, M. (2007). *How the world's best performing school systems came out on top*. McKinsey and Company.

Böhlmark, A. and Lindahl, M. (2007). *The Impact of School Choice on Pupil Achievement, Segregation and Costs: Swedish Evidence*, IZA Discussion Paper No. 2786.

Böhlmark, A. and Lindahl, M. (2008). *Does School Privatisation Improve Educational Achievement? Evidence from Sweden's Voucher Reform*, IZA Discussion Paper No. 3691.

Bolam, R. (2003). Presidential address to the International Professional Development Association Conference. October 31.

Boyle, B. (2004). 'What makes CPD effective?', *CPD Update, Optimus, Issue 63*, pp. 8-9.

Burgess, S., Propper, C., Slater, H. and Wilson, D. (2005). *Who Wins and Who Loses from School Accountability? The Distribution of Educational Gain in English Secondary Schools*. Discussion paper no. 5248. Bristol: Centre for Economic Policy Research.

Clavel, M. and Merrifield, J. (2008). 'Comprehensive Schools or Specialised Schools: a wide niche for 'Core Knowledge'?', *Journal of School Choice*, 2 (2).

Cordingley, P., Bell, M., Rundell, B. and Evans, D. (2003). *The impact of collaborative CPD on classroom teaching and learning*. Research Evidence in Education Library, London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Cordingley, P., Bell, M., Thomason, S., and Firth, A. (2005a). *The impact of collaborative CPD on classroom teaching and learning. Review: how do collaborative and sustained CPD and sustained but not collaborative CPD affect teaching and learning?* EPPI-Centre. London.

Cordingley, P., Bell, M., Evans, D., and Firth, A. (2005b). *The impact of collaborative CPD on classroom teaching and learning. Review: What do teacher impact data tell us about collaborative CPD?* EPPI-Centre, London.

Cordingley, P., Bell, M., Isham, C., Evans, D. and Firth, A. (2007). *What do specialists do in CPD programmes for which there is evidence of positive outcomes for pupils and teachers?* Technical Report. In: Research Evidence in Education Library. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Crawford, M., Earley, P., Weindling, D. and Jones, J. (2009). *An Evaluation Study of the Redesigned NPQH: A powerful guiding vision for the program*. National College.

Day, C., Stobart, H., Sammons, P., Kington, A., Gu, Q., Smees, R. and Mujtaba, T. (2006). *Variations in Teachers' Work, Lives and Effectiveness*. DfES RR743.

DCSF (2006) *School Workforce in England for 2006*:

<http://www.education.gov.uk/rsgateway/DB/SFR/s000681/index.shtml>

DCSF (2008b). *Education and Skills Bill 2008 Impact Assessment*. Accessed at:

<http://publications.education.gov.uk/eOrderingDownload/E&SkillsImpactAssessment.pdf>

DfE (2010a). *National pupil projections: future trends in pupil numbers*. OSR 15/2010.

<http://www.dcsf.gov.uk/rsgateway/DB/STR/d000940/index.shtml>

Ehri, L.C., Nunes, S.R., Stahl, S.A. and Willows, D.M. (2001) 'Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis'. *Review of Educational Research*, 71(3): pp393-447

Feinstein, L., Budge, D., Vorhaus, J. & Duckworth, K. (2008). *The social and personal benefits of learning: A summary of key research findings*. Centre for Research on the Wider Benefits of Learning.

<http://www.learningbenefits.net/Publications/FlagshipPublications.htm>

Finegold, D. and Crouch, C., Ryan, P. (ed) (1994). *A comparison of national institutions. Britain's Training Deficit* pp. 251-281. Avebury, Aldershot.

Goldhaber, D.D. and Brewer, D.J. (1997). 'Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity', *The Journal of Human Resources*, 32(3), 505-523.

Gray, S.L. (2005). *An enquiry into continuing professional development for teachers*. Esmee Fairbairn Foundation/Villiers Park Educational Trust/University of Cambridge, Cambridge.

Greenwood, C., Jenkins, A. and Vignoles, A. (2007). *The Returns to Qualifications in England: Updating the Evidence Base on Level 2 and Level 3 Vocational Qualifications* Paper No' CEEDP0089.

GTC (2005). *General Teaching Council survey of teachers 2005: Final report*. Slough: NFER.

Hargreaves, D. (2003). *Working laterally: How innovation networks make an education epidemic*. DEMOS, London.

Hastings and Weinstein (2008). 'Information, School Choice, and Academic Achievement: Evidence from Two Experiments'. *The Quarterly Journal of Economics*. November 2008, Vol. 123, No. 4, Pages 1373-1414.

Hill, R. and Matthews, P. (2010). *Schools Leading Schools II: the growing impact of National Leaders of Education*, National College.

HMIE (2009). *Learning together: lessons about school improvement. Her Majesty's Inspectorate of Education report on how schools get better*.
<http://www.hmie.gov.uk/documents/publication/ltlasi.pdf>

- Hobson, A. J., Malderez, A., Tracey, L., Homer, M. S., Ashby, P., Mitchell, N., McIntyre, J., Cooper, D., Roper, T., Chambers, G.N. and Tomlinson, P.D. (2009). *Becoming a Teacher: Teachers' experiences of initial teacher training, induction and early professional development. Final Report.* DCSF RR115.
- Hoeckel, K., Field, S., Justesen, T. and Kim, M. (2009). *Learning for Jobs OECD Reviews of Vocational Education and Training Australia.* Accessed at: <http://www.oecd.org/dataoecd/27/11/41631383.pdf>
- Hopkins, D., Harris, A., Singleton, C. and Watts, R. (2001). *Creating conditions for teaching and learning.*
- Hopkins, D. (2007). *Every School a Great School*, McGraw Hill, 2007. Cited in Whelan, F. (2009). *Lessons Learned: How Good Policies Produce Better Schools.* London: Fenton Whelan.
- Hoxby, C. and Rockoff, J. (2004). *The Impact of Charter Schools on Student Achievement: A Study of Students Who Attend Schools Chartered by the Chicago Charter School Foundation.* NBER conference paper.
- Hoxby, C.M., Murarka, S., and Kang, J. (2009). *How New York City's Charter Schools Affect Achievement. The New York City Charter Schools Evaluation Project 2009*
- Husbands, C., Shreeve, A., and Jones, N. (2008). *Accountability and children's outcomes in high performing education systems.* EPPI Centre. Institute of Education.
- Hustler, D., McNamara, O., Jarvis, J., Londra, M., Campbell, A. and Howson, J. (2003). *Teachers' Perspectives of Continuing Professional Development.* DfES RR429, London: DfES.
- Johnson, M.J., Janisch, C. and Morgan-Fleming, B. (2001). Cultural literacy in classroom settings: teachers and students adapt the core knowledge curriculum. In *Journal of Curriculum and Supervision*, Spring 2001, 16 (3), pp 259-272.
- INCA (1999). *Lower secondary education: an international comparison.* September 1999. http://www.inca.org.uk/pdf/lower_secondary_no_intro_99.pdf
- INCA (2003). *International Trends in Primary Education.* June 2003. http://www.inca.org.uk/pdf/thematic_study_9.pdf
- Kantola, J., Nikkanen, P., Kari, J. & Kananoja, T. (1999). *Through education into the world of work, Uno Cygnaeus, the father of technology education.* Institute for Educational Research University of Jyvaskyla. Cited in Oates, 2010.
- Kivirauma, J.; Rinne, R. and Seppanen, P. (2003). *Neo-liberal education policy approaching the Finnish shoreline?* Finland: Centre for Research on Lifelong Learning and Education.
- Leithwood, K., Day, C., Sammons, P., Harris, A. & Hopkins, D. (2006). *Seven Strong Claims about Successful School Leadership.* NCSL
- Leithwood, K., Harris, A. and Hopkins, D. (2008). 'Seven strong claims about successful school leadership'. *School Leadership & Management*, Vol. 28, No. 1. (2008), pp. 27-42.

- Liping, M. (1999). *Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in China & the United States*. Mahwah, N.J.: Lawrence Erlbaum Associates.
- Matthews, P. and Sammons, P (2004). *Improvement through inspection: an evaluation of the impact of Ofsted's work*.
- McCormick, R., Banks, F., Morgan, B., Opfer, D., Pedder, D., Storey, A. and Wolfenden, F. (2008). *Schools and continuing professional development (CPD) in England: 'State of the Nation' research project (T34718), Literature Review Report to the TDA*. TDA, London.
- McIntosh, S. (2007). *A Cost Benefit Analysis of Apprenticeships and Other Vocational Qualifications*. Department for Education and Skills. Research Report RR834 Sheffield 2007.
- Muijs et al (2010). *Maximum Impact Evaluation. The impact of Teach First teachers in schools*. An evaluation funded by the Maximum Impact Programme for Teach First Final Report
- Mullis, I., Martin, M., Olson, J., Berger, D., Milne, D., Stanco., G. (Eds). (2007). *TIMSS 2007 Encyclopaedia: A guide to Mathematics and Science Education around the world. Volume 1: A-L*. TIMSS & PIRLS International Study Center: Boston
- National Audit Office (2010). *The Academies Programme*. The National Audit Office
- Nurmi, V (1990). 'Education in Finland'. *International Journal of Educational Management* Vol 4 no2. Cited in Oates, 2010.
- Oates (2010). *Could do better: Using international comparisons to refine the National Curriculum in England*
<http://www.cambridgeassessment.org.uk/ca/Viewpoints/Viewpoint?id=135502>
- OECD (2010). *2010 Edition of Education at a Glance: Presentation*. London 6 September 2010
- OECD (2009). *Education at a glance*. Accessed at:
<http://www.oecd.org/dataoecd/41/25/43636332.pdf>
- OECD (2007). *PISA 2006: Science Competencies for Tomorrow's World*.
- Ofsted (2009a). *Ofsted Annual Report 2008/09*.
- Ofsted (2009b). *Twelve outstanding special schools: excelling through inclusion*. HMI 090171
- Ofsted, (2008b). *A focus on Improvement. An evaluation report: responses to Ofsted's consultation on proposed changes to maintained school inspections*.
- Ofsted (2008a). *Rising to the challenge: a review of the Teach First initial teacher training programme*. HMI 070170.
- Ofsted (2006b). *The logic chain: CPD in effective schools*.
- Pedder, D., Storey, A. and Opfer, V. (2008). *Synthesis report:*

Schools and continuing professional development (CPD) in England – State of the Nation research project (T34718). Cambridge University and The Open University. Training and Development Agency for Schools

Rose, J. and Reynolds, D. (2008). 'Teachers' continuing professional development: rooting practice in the classroom', *International Journal of Management in Education*, 2(1), 14–29.

Ruddock, G. and Sainsbury, M. (2008) *A comparison of the core primary curriculum in England to those of other high performing countries*. Slough: NFER

Sahlberg, P. (2007). 'Education policies for raising student learning: the Finnish approach'. *Journal of Education Policy*, 22 (2). Pp. 147-171.

Sanders, W.L., and Rivers, J.C. (1996). *Cumulative and residual effects of teachers on future student's academic achievement*. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

Schleicher, A. (2010). *The high cost of low educational performance*.

Slater, H., Davies, N. and Burgess, S. (2009). *Do teachers matter? Measuring the variation in teacher effectiveness in England*. CMPO Working Paper Series No. 09/212.

Schmidt, W. and Prawat, R. (2006). 'Curriculum coherence and national control of education: issue or non-issue?'. *Journal of Curriculum Studies*, 2006, Vol 38, No 6, 641-658.

Smithers, A. and Robinson, P. (2005). *Physics in Schools and Colleges: Teacher Deployment and Student Outcomes*, Carmichael Press: Liverpool.

Smithers, A. and Robinson, P. (2007). *School Headship: Present and Past*. National Union of Teachers.

Stern, S. (2009). *E.D. Hirsch's Curriculum for Democracy; A content-rich pedagogy makes better citizens and smarter kids*; City Journal Autumn 2009 <http://city-journal.org>

Strand, S. (2007). *Minority ethnic pupils in the Longitudinal Study of Young People in England (LSYPE)* DCSF

Sveriges Officiella Statistik (2009). – Accessed online
http://www.scb.se/default_2154.aspx

TDA (2008). *Training and Development Agency for Schools: PPD Impact Evaluation Report*.

Thomas, D.E., Bierman, K. L., Thompson, C. and Powers, C.J. (2008). *Double Jeopardy: Child and School Characteristics That Predict Aggressive-Disruptive Behavior in First Grade*.

TLRP (2009). *Assessment of significant learning outcomes*.
<http://www.tlrp.org/pub/documents/Daugherty%20RB75%20FINAL.pdf>

TNS (2008). *School Accountability and School Report Card Omnibus Survey (November 2008) Top Line Findings (DCSF Research Report 107)*. London: DCSF

Torgerson, C. and Brooks, G. (2005). *A systematic review of the use of phonics in the teaching of reading and spelling; DfES Research Report 711*. London: DfES; <http://www.standards.dcsf.gov.uk/phonics/>

Torgerson, C., Hall, J. and Brooks, G. (2006). *A Systematic Review of the Research Literature on the Use of Phonics in the Teaching of Reading and Spelling*. Department for Education and Skills, Research Report 711, University of York and University of Sheffield

UCAS Statistics (2010). www.ipd.org.uk

Whelan, F. (2009). *Lessons Learned: How Good Policies Produce Better Schools*. London: Fenton Whelan.

Wilson, S., Flodenk, R. and Ferrini-Mundy, J. (2001). *Does small really make a difference? A review of the literature on the effects of class size on teaching practice and pupils' behaviour and attainment*. SCRE.

Wößmann, L. (2003). 'Schooling resources, educational institutions, and student performance: The international evidence'. *Oxford Bulletin of Economics and Statistics* 65(2), 117–170.

Wößmann, L., and T. Fuchs. 2004. *What Accounts for International Differences in Student Performance? A Re-examination Using PISA Data*. CESifo Working Paper No. 1235. Munich, Germany: Center for Economic Studies. Retrieved May 20, 2005 from

Zimmer, R., Gill, B., Booker, K., Lavertu, S., Sass, T. and Witte, J. (2009). *Charter Schools in Eight States: Effects on Achievement, Attainment, Integration, and Competition*. RAND Research.

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