

OPSN REPORT

EMPOWERING PARENTS, IMPROVING ACCOUNTABILITY

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We would like to thank Dave Thomson, RM Education and Fischer Family Trust for their work on the analysis of education data used throughout, and Alex Kafetz and Gita Mendis from ZPB for copy writing and editing this report.



WELCOME

from Simon Lebus

The coalition government's transparency agenda has made much previously inaccessible data freely available. The education sector in particular has benefited, as it has been able to build on the foundations laid by Ofsted and the active commitment of a government department that has been at the more progressive end of the spectrum in its approach to comparative data.

I was therefore delighted to be asked by the Open Public Services Network to chair its reference panel, set up to consider how the data that is now available can be presented in a way that is easy to use, and that will help parents, teachers and governors make informed judgements about how secondary schools and colleges are doing.

The questions we wanted to answer included: what is the best way to analyse the data? How can we make it easily understandable? And, crucially, what other information do we think it would also be useful to see made available?

This report is the first stab at trying to answer these questions. We have sought to devise ways of presenting the data that we hope will make it informative, accessible and sufficiently user-friendly for parents and pupils to find the best

→ 1ST

THIS REPORT
MARKS OUR FIRST
MAJOR PROJECT
AND EXAMINES
THE QUALITY OF
EDUCATION
DATA PUBLISHED
IN ENGLAND

school for them, and for schools and colleges to understand their performance and, where relevant, identify whether there are steps that might be taken to improve the quality of what they are doing. If government adopts and builds on the approaches to presenting data that we have suggested, we believe it will help to empower parents and pupils by giving them some of the information they need to make decisions about their education.

This transparency can support a richer and more multi-dimensional approach to accountability than is offered by the current exam results league tables and Ofsted report-based regime. This can only benefit the education sector and future generations.

I would like to thank the members of the reference panel for their valuable and enthusiastic contributions to the project, RM Education and the Fischer Family Trust for the data analysis, and ZPB for writing and editing the report and organising the panel and the research.

OPSN is committed to continuing its work on developing more informative data and better quality metrics for the education sector. This report is therefore envisaged as the first of many. We are grateful to the Guardian for producing a website where all the data can be accessed.

I hope all of you will embrace our approach and begin to use the information we have presented to hold schools to account and make informed decisions.

Simon Lebus, Chief Executive of Cambridge Assessment

INTRODUCTION *from the RSA*

The Open Public Services Network grew out of work by the 2020 Public Services Commission, which looked at the long-term pressures and opportunities facing public services in an era of austerity and social and demographic change.

Some of what we found was daunting. The challenges facing public services are stark, not just because there will be less money but also because of the pressure of rising demand. By 2030, an additional six per cent of GDP will have to be spent on public services simply to meet the social costs of an ageing society and maintain existing cross-party social commitments.

But there also grounds for optimism. Particularly these were to be found in the growing expectation of greater control over their lives and citizens services they use. Online technologies and open data are key facilitators for this.

Through our Commission and our subsequent work on 2020 public services at the RSA, we have been developing an approach to public service reform based on what we call social productivity. The focus is on unlocking the potential of citizen

and social resource through improving the quality of the relationship between people and their services. In an environment in which money is short and demands are growing, mobilising a wider range of social capacity to create more productive individual and community relationships will be critically important.

A two-step change process

For that potential to be fulfilled, we need to see a change process with at least two distinct steps. Step one is the provision of better data, which can empower citizens through greater accountability, a clearer voice and more informed choice.

Encouragingly, change on this front is happening at an impressive pace. Already, the public can see in more detail than ever before where its money is going, what is being done with it and – though this is considerably more difficult – what is

being achieved with it. Information from good data enables the public, individually and collectively, to scrutinise provision, challenging it to be more efficient, effective and responsive.

In some cases, open data will not only amplify citizens' voices, but drive their choices. Where they can do so, they will access or exit services partly on the basis of the information they receive.

Schools, more than most public services, have been at the frontline of publicly accessible performance information for many years, and are acutely aware of its benefits and pitfalls. Some of these pitfalls have related to the crudity of the data set before the public. Schools are complex institutions, charged with achieving a myriad of social and educational aims in dramatically different contexts. This report from OPSN offers a way of re-configuring complex data so that it can be genuinely useful to parents and other community members in terms of accountability, voice and choice. It describes a fresh approach to data presentation that draws on a large number of data sources to produce an accessible, rigorous and meaningful picture of school performance.

OPSN has demonstrated that the first step in transforming public services through better data is well under way. It is a

necessary preparation for an even more fundamental second step. We need to move from information for accountability to information for social collaboration; this is something the Commission, and now its legacy body in RSA's Action and Research Centre, terms information for social productivity.

The challenge for the future is to use data from services in a way that engages the public in a process of shared design and delivery, creating better outcomes not just for themselves, but for the wider public good. How could individuals respond to data on school exclusions in order to co-design more effective behaviour management policies? How could information on performance be shared regularly with the local businesses and cultural institutions capable of enriching the curriculum? How could parents use real-time pupil progress data to become more involved in their children's education?

We welcome this report, and look forward to the next steps for OPSN.

Ben Lucas, Chair of Public Services at the RSA and Principal Partner of RSA 2020 Public Services
Joe Hallgarten, Director of Education at the RSA

WHAT HAVE WE LEARNED?

Can data really tell us anything about the quality of teaching in our schools? In the first major report from the Open Public Services Network (OPSN), we have focused on the value and accessibility of available information about the quality of teaching in secondary schools. We have undertaken new analysis using information sourced from the Department of Education (DfE), to make it accessible to parents, carers, teachers and school governors.

We believe this is the start of a journey to make information about education more open and transparent. We recommend that more data is released, in order to drive improvement and enable the public to be better informed about the quality of teaching in schools.

What did we find?

There are a number of available datasets that can be used to understand the quality of many aspects of teaching in schools. We have analysed these data using statistical techniques applied in other public sectors to determine those schools where the performance is significantly better or worse than expected.

This includes:

- **Curriculum:** what is the breadth of subjects available at a particular school? (See page 20)
- **Pupil attainment:** what grades are pupils getting? (See page 25)
- **Pupil achievement:** are pupils making the expected progress? (See page 27)
- **Consistency:** are schools getting better or worse? (See page 24)

We commend the Department for Education for releasing so much data in a useable and accessible way.

There are, however, some areas where we are calling for more data to be released, in the following areas:

- **Ofsted information:** this should be released in an accessible format that enables analysis. At present it mainly exists by school in PDF format
- **Academies, free schools and private schools:** We need to ensure they will be compelled to release consistent information so all different types of schools can be compared
- **A national teacher survey:** this would be a helpful addition and could be used to fill gaps where information is lacking, for example on the quality of facilities and staff satisfaction
- **Parents' views:** this data could be captured where it doesn't currently exist, and better published and promoted where it does

Of these additional data sets, survey data - from both staff, parents and pupils - would perhaps do most to expand our understanding of education. Most of the data used in this report is based on performance in exams. Such data has important limitations. Measurement of qualifications is

never an exact science, comparison between different qualifications is even less exact and qualifications themselves do not tell the full story of a child's learning and achievement. Better comparative information about the views and experiences of those using schools would help us understand education more broadly.

However, the focus for this report is: what we can tell from the data we have available. Whatever the limitations, we have attempted to extract the most useful and comprehensible information that a parent or a pupil might wish to know about a school.

The report sets out how we have gone about this task. Alongside the report, we are publishing a data set with the relevant figures for every secondary school in the country. The data is available to anyone who wishes to make use of it and we encourage media organisations, schools and others with an interest in the topic to take a look. We hope of the coming months to be able to work with others to find ways to share the information with parents and the public. As a starting point, the Guardian newspaper is creating a website that allows the public to view what the data says about schools in their area, which can be seen at www.guardian.co.uk/gcse-schools-guide.



PART 1

Where we are now

Parents have access to increasing amounts of information about school performance but they make only limited use of it. They regard the quality of the teaching and learning provided by a school as the single most important factor in choosing a school.¹ But the available information on school performance has had relatively little influence on the choices people make.²

→ **DATA**
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Government policy in England has promoted the publication of school exam results in order to better inform parents and hold schools to account. But, while data has been put into the public domain, little has been done to help parents make sense of it. Data is sometimes produced in a format that is of limited use to the public, often presented in ways that are hard to interpret.

Despite 21 years of work on making data public, the public has not engaged well with it. Research by Fiona Millar and Gemma Wood found that parents wanted to choose schools using a much larger set of criteria than that covered by exam league tables. They concluded: “[Parents] exercise choice but within clearly understood limits; they have a strong preference for local schools and want those schools to offer good teaching, well-managed behaviour and a broad curriculum, which develops pupils intellectually, socially and emotionally.”

Their conclusion was that parents need information more regularly and much more of it. This includes information on teaching quality, and the progress on particular groups of pupils. Millar and Wood stressed that parents wanted much better information to understand the progress of their own child in school.

Millar and Wood’s analysis highlights the dangers of overemphasising the role of school choice as the main driver of parental interest in information about their children’s schools. It is equally important as contextual information for parents and children wanting to understand their own or their child’s educational progress.

Use of information is not limited to choosing one school over another. It also plays a role for parents in knowing how to support their child’s education, and being able to engage in an

informed manner in supporting the development of their local school. As a tax-funded system that plays a central role in shaping our society, every citizen has an interest in understanding how well schools function. More and different data is being published in different ways, but conclusions are not always clear. Also, the diversification of different types of state-funded schools, such as academies or free schools, means that not all are subject to the same data collection and publication requirements. Ofsted has called for lay school governors³ and, more generally, tax payers, businesses, and citizens to have better information and be able to play an informed part in enabling local accountability.

These findings are in line with the conclusions of the 2020 Public Services’ Trust report *Online or In-line: The future of information and communication technology in public services*.⁴ It was this report which formed the genesis of OPSN. The publication called for more data on primary and secondary education to be released; for citizens to consent to sharing more data; and for online data to empower citizens to make more informed choices and hold providers to account. But equally, information about schools and a child’s progress at school can help parents and children to understand how their choices, in the broadest sense, and their actions are likely to affect their educational outcomes. There has been a concerted effort across many governments to open up the data in the education sector, and England now has some of the richest datasets available in the world. However, there are major problems in interpreting the data and making it understandable and accessible. Published data needs to be turned into information and presented appropriately, adequately and sufficiently. This is what OPSN has attempted to do in this report.

→ **EVERY**
CITIZEN HAS
AN INTEREST IN
UNDERSTANDING
HOW WELL
SCHOOLS
FUNCTION

A brief history of school performance tables

→ 1991

John Major's government introduces the publication of school performance tables. Introduced in the parents' charter, hailed as "the start of an information revolution to extend parental choice and raise standards,⁵" there were five key elements:

- A report on a child's progress at least once a year
- Regular reports on a child's school from independent inspectors
- Performance tables for local schools
- A prospectus or brochure about individual schools
- An annual report from the school's governors

→ 1994

Gillian Shephard, Secretary of State for Education says:

"Parents, pupils, employers and the wider community now have access to three years of reporting on the performance of education institutions. This is the foundation of a 'national treasure trove' of information."

→ 2003

Tony Blair's Labour government, expanded the initiative by publishing data that attempted to show the value a school can add. 'Value added' measures attempt to quantify not only the success of pupils in passing exams but the difference the school made to that pupil. (See page 27 for more information on this⁷).

By measuring the gain in learning during the time the child was at the school (value added) and by adjusting these results to take account of the social background of the child (contextual value added), these measures try to isolate the impact that the school has had on the child's education.

The then School Standards Minister, David Miliband, said:

"We have always said that we will listen to the views of heads, teachers and parents about how the performance tables can provide a more comprehensive and rounded picture of school performance. Including value added information does just that."

→ 2011

The coalition government released the most comprehensive set of data to date.

Secretary of State Michael Gove said:

"This is one of the exciting things the coalition government is doing: empowering parents, the profession and wider public to judge schools in the way they consider appropriate."

What is available now?

There is now more data than ever from the DfE, see <http://data.gov.uk/publisher/department-for-education> and we can identify broadly four sets of information. In addition to information on schools there is also data on higher education, which is gathered to help students make informed choices. This includes the National Student Survey¹⁰ data, Destinations of Key Stage 4 and Key Stage 5 pupils¹¹ and Times Higher University ranking.¹²

→ **Exam performance data.** A national database of all key stage exam results within the state sector and all GCSE and A-level results in the state sector is maintained by the DfE and used to produce a wide range of measures.

→ **Pupil characteristics data.** Other data about pupils including attendance, exclusion, special educational needs status or whether or not they receive free school meals.

→ **Ofsted inspection results.** The national inspectorate of schools, Ofsted, publishes reports and ratings of all state schools nationally. This includes multiple ratings of a school's performance.

→ **School characteristics data.** Such as spend, workforce and staff absence rates.

At the moment, this data is not easy for a parent choosing a secondary school for their child to use to answer their questions. The information is complex and sometimes hard to locate and is often in multiple locations.

A vigorous academic debate also continues about the value of some of these measures and their relevance to understanding a schools current performance.¹³ The debate has focussed on issues such as:

- The predictive power of indicators and the level of confidence that parents can have that the data allows them to accurately discriminate between schools. School exam performance tables reflect what happened with the pupils who have recently left the school. These may not be a reliable indicator of future performance.
- The level at which data can be made available and the relevance of different measures to different pupils. Aggregate measures across a whole school may disguise such significant variation by subject or pupil group that they fail to reflect the experience of many pupils.
- The degree to which the data is distorted by practices - sometimes referred to as 'gaming' - such as increasing the numbers of children taking exams that are known to have higher pass rates but may carry less value among employers or higher education institutions.
- The extent to which data is comparable. Variation in inspection standards and inspection regimes over time can make it hard to know if two inspection reports allow a fair comparison between two schools.
- Technical debates about different approaches to measuring value added such as which variables to include in understanding the context for the pupil, e.g. the inclusion of free school meals (FSM) or adjusting for school level variables.



PART 2

Our approach

The OPSN has convened an expert group to provide advice to parents, the public and the media on how performance data could be used to better describe the quality of education provided by different schools. Members met three times in the summer and autumn of 2012 to discuss this challenge, the data available, and how it could be presented and analysed in the most useful way.

With expertise from RM Education and the Fischer Family Trust, Teach First and the Association of School and College Leaders (ASCL), a subgroup of data experts tackled some of the problems that the data throws up and made some recommendations as to how best present it. These were reviewed by the wider group. The starting point for the group was a recognition that, while further research on the information needs of parents and pupils would be of value, there is already a substantial body of information that sets out a coherent picture of what information parents might wish to see. Our focus was therefore on attempting to see how far the information currently available could be used to address those needs. This report outlines our conclusions and sets out some of the challenges we have put back to schools and the DfE.

The group agreed to work to the following underpinning principles:

- We will use the most accurate and timely data and metrics.
- We will illustrate this with the simplest possible presentation – but not at the price of using less accurate information.
- We will strive to present data in a way that enables people to find information relevant to their circumstances.
- We will use value terms/meaning rather than numbers.
- We will use data from all available data sources.
- We will provide guidance on how far information can help answer questions and, equally, the extent to which it cannot.

Please note that the views expressed in this report are those of the reference group and not necessarily of their organisations. Our reference group has been recruited with experience across the education sector, including teachers, governors, data specialists and journalists.

Framing the questions

Our aim for this project is to try to help parents and the public make sense of what the data available says about the quality of education provided by a school. This is not the same thing as looking at the overall quality of schools. Most parents would rate the happiness of their child at school as just as important as the quality of the education they receive. Finding a school that is right for their child is what parents want, and the quality of the education provided is no more than one element of the experience of going to school for the child.

We have limited our focus to the issue of the quality of education received at schools as understood by questions such as:

- 1 How well does the five to seven years of secondary schooling improve their pupils knowledge and skills?**
- 2 How far does it equip pupils with the qualifications to succeed after leaving school?**

This is broader than the question of the skill with which teaching is conducted in the classroom. It encompasses issues such as the learning environment in the school and the leadership of the teaching staff. But it is narrower than the question, 'Is it a good school?'.

→ THE OFSTED DATA DASHBOARD

The School Data Dashboard was launched in 2013 and provides a snapshot of school performance at Key Stages 1, 2 and 4.¹⁴ The dashboard can be used by school governors and by members of the public to check the performance of the school in which they are interested.

The School Data Dashboard complements the Ofsted school inspection report by providing an analysis of school performance over a three-year period. Data can be filtered by key stage or by topic:

- Expected progress
- Attainment
- Attendance
- Narrowing the gap between disadvantaged and other pupils

We welcome Ofsted's publication of these data. For parents, it provides a simple and clear presentation of data and uses a similar banding technique to that recommended in our report. However, it is our opinion that a more statistically valid banding could be applied to the data (see page 23 for more information on this). We would also like to see the dashboard expanded to information beyond core subjects. Our reference panel believes the dashboard has a few anomalies but we hope these are 'teething problems' which Ofsted can iron out in future releases.

Ofsted has also launched Parent View, which asks for opinions on 12 aspects of schools, from the quality of teaching to dealing with bullying and poor behaviour.¹⁵

→ LEARNING FROM HEALTHCARE

The Department of Health has done more than the Department of Education to understand how information about public services can be made accessible and useful to the public. It has invested significantly in making information more accessible to the public through NHS Choices.¹⁶

There has also been considerable research in the health field into how to make performance data more intelligible to the general public. In 2010, The Kings Fund studied how patients and the public used data to choose health services. It found that people did not have consistent preferences about what data was important, and suggested that publishers of information could influence what information people considered by making some aspects (e.g. safety or quality indicators) more visible.

It concluded: “The way information is presented can make a difference to how it is used.¹⁷”

It also recommended that certain ways of presenting information were helpful in making it meaningful to the public, most of whom struggle to make sense of statistics. In particular, it highlights the need for easy-to-interpret, labels such as ‘poor’, ‘good’ and ‘excellent’, or ticks and crosses.

Popular data comparison websites that look at car insurance or cheap flights are good examples of well-thought-out information presentation. If labels of this sort can be used in a consistent fashion it becomes more easily understood and of use.

These questions have different answers for different people. Some people will place greater emphasis than others on the “quality of education” in their views as to what they look for in a school. Within the area of quality of education, schools will differ in their strengths and expertise. Some may be better at demanding more from higher achieving pupils, others may be better at helping children with special educational needs. Some may be stronger in sciences, others in physical education. Some may have a narrower focus in their curriculum, others may emphasise the need for breadth.

The fact that schools are different and have different areas of expertise can be lost in the league tables. In this report we have not been able to consider how best to address the needs of every different group of parents. But we have been able to set out some principles and suggest some useful ways of interpreting the information.

We also decided to limit our attentions to secondary schools and to focus particularly, but not exclusively, on education between the ages of 11 and 16. We have done this in order to illustrate how we believe data can be made more accessible. We believe the same principles can be applied to primary education.

Our focus

In our first meeting we discussed what types of information we felt would help inform parents about different aspects of a school. The debate narrowed the list of factors down to four different aspects of the school.

→ FACILITIES	Does the school have the necessary resources in terms of classrooms, IT resources, sports facilities, laboratories as well as dedicated spaces for subjects such as music, art, drama, design and technology? Outdoor spaces and room for clubs and extra-curricular activities are also important.
→ CLIMATE OF LEARNING	What is the behaviour and attitudes of both pupils and teachers at the school and their degree of commitment to teaching and learning? What is the level of discipline in the school? The ability and skills of teachers were considered in this context but the more important issue was felt to be the degree of commitment among staff both to their pupils and to the organisation they worked for. The ideal was a school with a stable, motivated staff and effective leadership.
→ CURRICULUM	What subjects do children study? How broad is the curriculum? How much variety does it offer? How demanding is it?
→ PUPIL OUTCOMES	How well do pupils perform in exams? Where do they go after school in terms of employment or further education? How much of a difference can we say that the school has made to the child's grades? How consistent is the school across different academic areas and over time?



PART 3

What can data tell us about the quality of education?

Of the four potential areas of interest identified by the group as relevant to understanding the quality of education, some can be addressed more readily using data than others. Inevitably the focus of stage two of the work focussed on those areas where the data was of most value.

Facilities

On the question of facilities, the use of school prospectuses to provide information was thought helpful. Ofsted reports also sometimes capture information about this aspect of a school. But the consensus was that no amount of published information could substitute for the evidence of your own eyes. If parents wish to have information on these aspects of a school to inform choice, the advice is straightforward: go and visit it.

Climate of learning

Little of the information available about schools gives much indication of the climate of learning. Ofsted reports include a judgement on the quality of teaching. This was introduced in

2012. Ofsted inspectors consider the extent to which:

- The teaching in all key stages and subjects promotes pupils' learning and progress across the curriculum.
- Teachers have consistently high expectations of pupils.
- Teachers improve the quality of learning by systematically and effectively checking pupils' understanding in lessons, and making appropriate interventions.
- Reading, writing, communication and mathematics are well taught.
- Teachers and other adults create a positive climate for learning in which pupils are interested and engaged.
- Marking and constructive feedback from teachers contributes to pupils' learning.
- Teaching strategies, including setting appropriate homework, together with support and intervention, match individual needs.¹⁸

Good discipline and low levels of absenteeism may reflect a good climate of learning. Rates of pupil absence¹⁹ are published for all

schools, including authorised absence, unauthorised absence and persistent absence (missing 15 per cent of registrations). These data are available for every state-funded school in England and can provide some insight into this aspect of a school. Some members of the group expressed concerns at risks of over-interpretation of this information because of the potential impact of factors such as illness or inaccessibility of schools on absence rates.

Staff sickness absences rates and staff turnover rates were also thought to be potentially useful for understanding staff morale and commitment. These data are currently not published. We recommend that the DfE makes this information publicly available. This would also allow the possibility of combining these data to signal where pupil discipline or staff morale was weak.

→ DIRECTLY ASSESSING STAFF, PUPIL AND PARENT ATTITUDES THROUGH SURVEYS CAN BE A MORE EFFECTIVE WAY OF UNDERSTANDING THE LEARNING ENVIRONMENT AT A SCHOOL

Participation of staff in extra-curricular activities was also seen as relevant. However this is not captured in any currently available data and may not be easy to capture accurately.

Directly assessing staff, pupil and parent attitudes through surveys can be a more effective way of understanding the learning environment at a school. Ofsted collects information from parents as part of the school inspection process. In addition, many schools conduct their own surveys of parents. Publication of this information would be useful.

It would be made even more useful through the adoption of standard approaches to gathering information on key issues to allow comparison between schools. The patient and staff survey programme in the NHS²⁰ has been a powerful way to understand the perceptions of healthcare services. In

particular, staff surveys have provided a useful indicator of problems within hospitals. Questions such as whether staff would recommend their hospital to a relative or friend have been valuable indicators of the culture within an organisation. We would advocate the DfE funding a (sampled) survey for all teachers to understand their perception of the school in which they work.

Curriculum

There is a great deal of information available about the range of subjects taught in schools through exam performance data. While exams do not cover all areas of education within a school, we can expect most areas of teaching to be reflected in the exams pupils choose to take. Consequently, exams taken can provide a useful indicator of the breadth of the curriculum.

Making sense of the data requires categorising subjects. In 2012, GCSEs were taken in 124 subjects ranging from the 'conventional' (English, Maths and Science) to less popular subjects (such as Law or Healthcare). To make sense of this, we needed a taxonomy of subject groups.

We adopted a taxonomy used by the RM School Finder website, from education technology firm RM Education.²¹ This was designed to present subject-level attainment data for more than 100 GCSE subjects published by the DfE for all secondary schools in England.

The 100+ subjects have been collapsed into 18 groups. (The classification is shown in Appendix 1. Further categories would have to be added to incorporate vocational qualifications, such as the Applied Art and Design). Using this, we can start to profile schools in terms of the number of pupils taking specific subjects, and whether, compared to other schools, more or fewer pupils tend to do exams in any particular subject.

In addition to looking at these subject areas separately, there were some areas where combinations of subjects were important.

Three in particular were identified as additions by the reference group:

- Can pupils take triple sciences?
- Can pupils study both geography and history?
- Can pupils study French and German/multiple foreign languages?

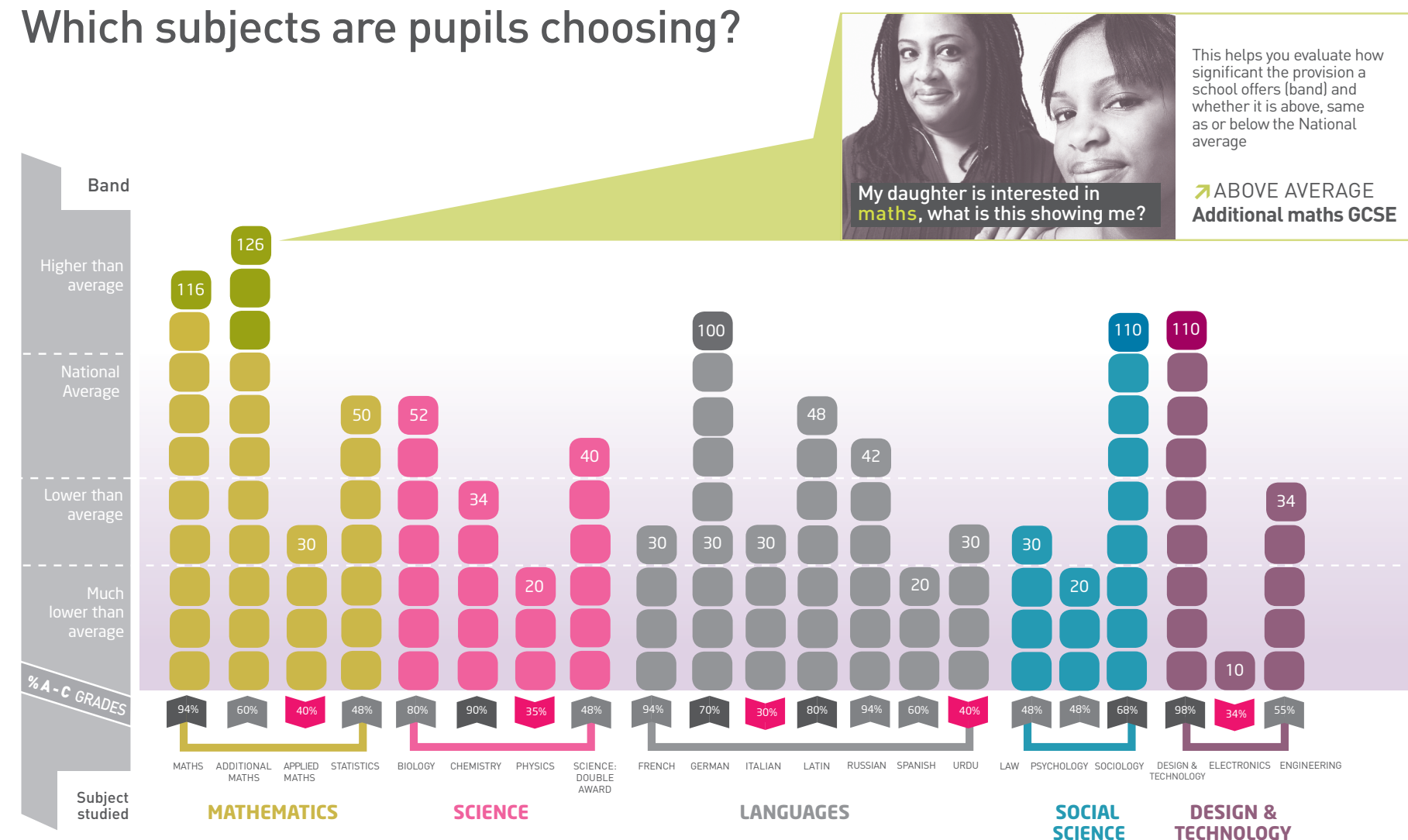
To make sense of this information, we banded schools, based on the extent to which rates of pupils taking a particular subject varied from national average rates. These bands needed to take into account variation between schools and subject groups in the number of entries per pupil.

We found reasonable bands were produced by standardising entries per pupil at school level around the national mean and standard deviation for each subject group. Other than in minority subjects and mathematics (in which there is less variation in entry patterns between schools), this method defines around 60 to 70 per cent of schools as average in each subject group.

It would be possible to use this data to give an assessment of the level of challenge that the curriculum represents. There are a number of methods used to assess the relative difficulty of different subjects.²² From this it would be possible to give an indication of the extent to which the pupils at a school tended to opt for more or less challenging areas of study. We took the view that this was an interesting area for further development but that there were a number of concerns about current approaches to quantifying this.

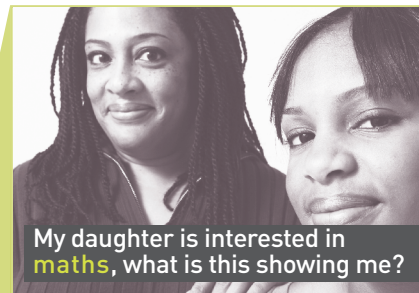
→ WE BANDED SCHOOLS, BASED ON THE EXTENT TO WHICH RATES OF PUPILS TAKING A PARTICULAR SUBJECT VARIED FROM NATIONAL AVERAGE RATES

Which subjects are pupils choosing?



REPORT 2013 ANYTOWN | UK

This helps you evaluate how significant the provision a school offers (band) and whether it is above, same as or below the National average



My daughter is interested in maths, what is this showing me?

→ WHAT CAN THE DATA TELL US?

Pupil outcomes

The focus on performance data for schools to date has been on exam results, though more recently linked datasets combining schools data with university and employment data have been used to try to understand longer-term outcomes.

While longer-term outcomes are important, they suffer even more than exam results in that there is a long time lag in measuring them and they will therefore say less about the current education at a particular school. Consequently, we have focused our attentions on understanding exam results. We welcome efforts to understand longer term outcomes.

Currently school exam performance data is presented in the following ways:

ATTAINMENT:
THE ACTUAL RESULTS A PUPIL RECEIVES FOR THEIR GCSES, E.G. THREE AS AND FIVE BS

ACHIEVEMENT:
WHETHER THE PUPIL HAS MADE THE EXPECTED PROGRESS, E.G. THEY ATTAINED THREE AS AND FIVE BS, BUT WERE EXPECTED TO ATTAIN EIGHT AS, SO HAVE 'NOT ACHIEVED'

Metric: what are we measuring?

- Threshold measures: the number of pupils passing a set threshold, e.g. the percentage of pupils getting five A*-C grades
- Point scores: these assign a set number of points for different grades achieved, which are then averaged across pupils to give the average points per pupil

Grouping: whom are we including?

- For the whole school
- For a subject
- For an attainment group such as pupils who arrived at the school with high levels of previous attainment, or relatively low levels

Outcome: what is being realised?

- The absolute level of grades achieved
- The improvement in grades achieved between a start and end point (value added)
- The improvement in grades achieved, adjusted for external factors (contextual value added)

We decided to focus on three aspects of the measurement of pupil outcomes.

Each of these ways of looking at the data has its strengths and weaknesses depending on the intended use. For example, threshold measures have been created primarily to enable the DfE to hold schools to account. Its relevance to pupils depends on their own expected grades. For a child expecting to achieve results significantly above grade C, a threshold measure based on the number of pupils who achieved a grade C or above may be of limited relevance. In attempting to interpret this data in a meaningful way to parents, we agreed on the following key points:

Show absolute attainment and value added. It is important to understand both the absolute level of attainment by pupils at a school and to understand the difference the school has made. Absolute attainment is important because it conveys the level at which children in the school are working. However, whether this represents the expected level of achievement may reflect characteristics of the pupils taught, such as their prior attainment, which is beyond the control of the school. For this reason, it is equally important to try to understand as far as possible the impact the school has had on these results. More intuitive terms to refer to these different aspects of exam results are also needed, such as pupil progress.

→ WHAT CAN THE DATA TELL US?

→ PARENTS NEED TO KNOW NOT JUST HOW A SCHOOL PERFORMED IN THE LATEST LEAGUE TABLE BUT PERFORMANCE OVER A NUMBER OF YEARS

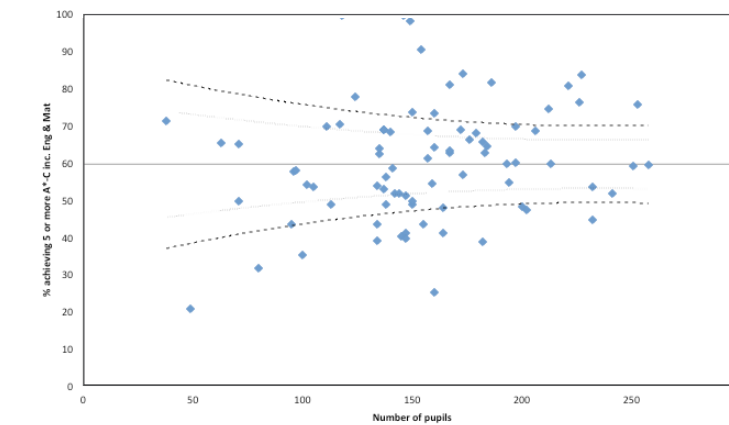
Highlight significant differences. Parents need to understand when different results from different schools are significant and worth noting and when they are not. Schools' value added scores are published with confidence intervals, but this does not reflect the fact that in a process such as education we would expect a wide dispersion of results from different institutions. In health, this problem has been addressed in analysis of patient outcomes for different hospitals by using control charts.

This technique, originally developed to allow for the expected level of variation in different manufacturing processes, has proved powerful in understanding variation in outcomes of public services.²³

We have adopted this approach to our understanding of variation across schools.

Example of a control chart: Percent of pupils achieving 5 or more A*-C at GCSE including English and maths, 2012 for Lancashire*

Percent of pupils achieving 5 or more A*-C at GCSE including English and maths, 2012



Show consistency and trends. Parents need to know not just how a school performed in the latest league table but how it has performed over a number of years. Although we have not tested the degree to which consistency of past performance is a predictor of future performance, it was felt important to know whether the most recent results were in or out of line with recent history.

Highlighting significant differences To highlight significant differences we have adopted the banding approach (using control limits as set out above in the discussion on curriculum). We have examined differences between school averages and national averages and tried to determine whether these are due to chance (or random variation), or that the statistical analysis shows a significant difference.

We have applied 95 per cent control limits to the data to identify schools with outlying results. This means the probability of a school being plotted outside the 95 per cent control limits due to chance is less than five per cent. This helps us take into account the extent of random variation in exam performance. Statistically schools in our upper or lower bandings have a differing level of performance to schools in our average banding. To increase this certainty we have also banded the data using 99 per cent control limits. Examining the 2012 data and among state-funded secondary schools, 39 per cent of schools within 95 per cent control limits and 43 per cent beyond 99 percent control limits based on the percentage of pupils achieving 5 or more A*-C grades including English and maths.

This approach allows us to turn complex statistical data into easily understood evaluative labels indicating how the figures for any particular school compare. Thus the five bands can be labelled:

- Much higher than average (above the 99 per cent control limit)
- Higher than average (above the 95 per cent control limit)
- Average
- Lower than average (below the 95 per cent control limit)
- Much lower than average (below the 99 per cent control limit)

More evaluative labels are easier to understand. Words such as excellent, good, average, poor and very poor are far easier for the public to grasp. However, these labels tend to raise objections from schools on the grounds that they fail to convey the degree of uncertainty around the interpretation of statistical data. Star ratings or colour ratings simply indicating bands from one to five are often less contentious.

The labelling system used to grade exams (A, B, C, D and E) are better at conveying a degree of uncertainty. However, using them in this context to reflect school performance may be confusing and might be seen as representing actual grades achieved by children at a school. In part three of this report, we illustrate some options in the labelling of bands. The simplicity of Ofsted's rating system is attractive to ministers, with suggestions that it could be translated into other areas of public services.²⁴

Consistency – are schools getting better?

To understand the consistency of results at a school we have looked back over four years. Adapting the approach used in banding performance, we have looked at whether the performance each year is significantly better or worse than previous performance at 95 per cent or 99 per cent levels of confidence; that is, whether confidence intervals around the school's performance do not overlap year-on-year at these levels of confidence.

We have agreed a set of rules to identify positive or negative trends in performance, as follows. Schools that have improved at 99 per cent confidence levels over a three-year period and have at least two years in which attainment improved significantly at 95 per cent confidence are labelled 'improving rapidly'.

This label is also used for schools which have shown a year-on-year improvement each year and have improvement at 99 per cent confidence over a three-year period and have moved into a better performance band over the four-year period.

This is compared to the national rate of improvement. For instance, imagine that a school improves from 58% to 60% but the national average improves from 50% to 55%. The school's rate of improvement (2%) is below the national rate of improvement (5%).

For this school, the 'improvement' used in calculations would be - 3%. Schools that show improvement at 95 per cent levels of confidence are labelled Improving. Where schools show both periods significant improvement and periods of significant decline over we have used the label Volatile. Declining and Declining Rapidly are the converse of Improving and Improving Rapidly. Stable describes the remaining schools.

When this approach is applied to the most recent exam performance data, it results in a slightly higher proportion of schools categorised as 'declining' or 'rapidly declining' than 'improving' or 'rapidly improving'. Previously higher achieving schools, which have less scope to improve, are less likely to be categorised as 'improving' or 'rapidly improving' than previously low attaining schools.

Measures of overall attainment used in this report

	WHAT IT TELLS YOU (AND WHAT IT DOESN'T TELL YOU) WHAT PERCENTAGE OF CHILDREN GET GRADE C OR ABOVE IN ENGLISH AND MATHS	WHAT WE HAVE DONE	DIFFICULTIES IN INTERPRETATION
PER CENT 5 OR MORE A*-C INCLUDING ENGLISH & MATHS	The figure is the number who get at least a grade C or equivalent in five subjects but in reality every child who achieves grade C in English and Maths also gets at least three other grade C or equivalent qualifications. For that reason, this should be regarded purely as a measure of per cent of children getting grade C or higher in English and Maths. This is the chief accountability measure used by the DfE on the basis that this is the minimum threshold to which an education should ideally bring all children	We have banded schools according to whether they are significantly better or worse on this measure and also categorised schools according to their rate of improvement compared to the national rate of improvement	Any GCSE or vocational equivalent qualification counts towards the three additional grade Cs required to pass this metric. This makes comparison difficult since, firstly, there is little point in comparing a school which does well at vocational qualifications with one that does well at academic qualifications. Also, some vocational qualifications are considered less demanding than the GCSE exams. To the extent this is true, it means we are not comparing like with like
AVERAGE POINT SCORE (ALL QUALIFICATIONS)	Schools are given points for each exam pass with most points for an A and fewest for a G. Unlike the threshold measure, this measure gives schools credit for every grade achieved	As above	As above, this measure combines GCSEs and vocational qualifications. However, the measure is heavily influenced by numbers of GCSE and equivalent qualifications entered hence often tells you more about quantity than quality. Some vocational qualifications are considered equivalent to four GCSEs. Numbers of entries, and therefore average point scores, therefore tend to be higher at schools that enter large proportions of pupils for such qualifications
CAPPED ('BEST 8') AVERAGE POINT SCORE	With this measure, children only get points for their best eight exams. This makes the focus on doing well in exams rather than doing lots of exams	As above	As Above. The impact of number of entries is somewhat reduced but not completely removed. A capped APS is more a measure of quality than quantity

Measures by subject used in this report

	WHAT IT TELLS YOU (AND WHAT IT DOESN'T TELL YOU) WHAT PERCENTAGE OF CHILDREN GET GRADE C OR ABOVE IN ENGLISH AND MATHS	WHAT WE HAVE DONE	DIFFICULTIES IN INTERPRETATION
PER CENT OF PUPILS WITH A*-C GRADE AT GCSE	How many children got at least a Grade C. Grade C is considered the minimum level of achievement for progression to level three (A level and equivalent) study	We have banded schools according to whether they are significantly better or worse on this measure and also categorised schools according to their rate of improvement compared to the national rate of improvement	This information may be useful to parents and children who are interested in an academic rather than a vocational education and who know which subjects they are likely to want to study. It enables you to identify a school which has significant numbers of pupils studying subjects and which consistently achieve good grades
PER CENT OF PUPILS WITH A AND A* AT GCSE	How many children got an A or A*. For more academically able children this threshold may be more interesting		
AVERAGE POINTS SCORE (GCSEs ONLY)	The average level of achievement for pupils in this subject		
THE PER CENT OF PUPILS TAKING THIS SUBJECT	How many children at the school take GCSEs in this subject		

Measures of achievement used in this report

	WHAT IT TELLS YOU	WHAT WE HAVE DONE	INTERPRETATION
PER CENT MAKING EXPECTED PROGRESS IN ENGLISH	Whether pupils make a minimum level of progression between leaving primary school and doing their GCSEs in English and Maths. Unlike the 5 A*-C measure, this measure, in theory, takes account of the level of ability of pupils when they start at the school. However, in reality, the principal determinant is how well less able pupils do in getting past the C-grade boundary with the result that these figures correlate very closely with the 5 A*-C measure above and provide little additional information	We have identified if any schools are significantly and consistently higher or lower than expected on these measures	Although this measure superficially takes account of pupil's prior attainment when they start at secondary school, those with higher levels of prior attainment are more likely to make expected progress. Consequently, schools that do well on this measure are, in the main, those who do well on the 5 A*-C with English and maths measure. Breaking these data down by attainment group to see how well different cohorts of pupils are performing can be more informative.
PER CENT MAKING EXPECTED PROGRESS IN MATHEMATICS			
FFT SFX MODEL OF CONTEXTUAL VALUE ADDED FOR MEAN GCSE GRADE	This looks at whether children do better or worse at GCSEs than the average rate for similar children at similar schools in terms of their abilities when they start at the school, their home background, and the type of school they attend	We have identified whether schools have performed significantly better or worse than expected on this measure over the past three years	Children from less affluent backgrounds and those with lower levels of prior attainment tend to do less well in exams. In effect this measure makes allowance for this, which may be appropriate when trying to understand how well a school is doing but can also be inappropriate if it leads schools to set lower expectations for children from poorer backgrounds. The capped point score measure includes all qualifications but the mean GCSE grade measure looks only at GCSE exams, not at vocational qualifications.
FFT SFX MODEL FOR CONTEXTUAL VALUE ADDED FOR CAPPED POINTS SCORE			

→ UNDERSTANDING VALUE ADDED MEASURES

THE TABLE BELOW SHOWS SIGNIFICANCE STATES FOR ATTAINMENT AND VALUE ADDED BASED ON FIVE OR MORE A*-C GCSES INCLUDING ENGLISH AND MATHS IN 2011/12

To understand the difference that a school has made, we felt that the correct approach was to make allowances for any factors known to influence the outcomes for pupils and which are not within the control of the school or of the state education system. The last point is important. Some schools might have better resources than others and it might be felt that the school with fewer resources is at a disadvantage.

However, to make allowances for this would be to make allowances for the very thing we are trying to capture. On the other hand, to the extent that the home background of the child is known to influence educational outcomes, we do want to make allowances. Schools can be differentially effective, i.e. more effective for some groups of pupils than others.²⁵

CVA measures are a specific type of value added measure which are intended to allow fairer comparisons between schools with different pupil intakes. Some students face barriers that prevent them doing well in tests and examinations. But all pupils are capable of making progress and it is important that schools are given recognition for the work that they do with all their pupils. CVA attempts to do this by determining an 'expected' result for each pupil and then comparing this to their actual result. The value added score for each pupil is the difference (positive or negative) between the two. However CVA was derived from pupil level characteristics and performance but wasn't ever intended to be used as a pupil-level measure.

Value added and contextual value added (CVA) scores have been criticised both for being hard to interpret and because there is a risk that they might signal an acceptance that poor outcomes for some socially deprived pupils are inevitable.

For this reason, the coalition government has abandoned the use of CVA measures but has increased the volume of information available.²⁶

		VALUE ADDED		
ATTAINMENT		Significant -	Not Significant	Significant +
	Significant -	355	428	185
	Not Significant	369	459	352
	Significant +	104	493	276

Significantly - = significantly below average
Significantly + = significantly above average



PART 4

Where next?

We hope that this report is the start of a long term process of making information about education available in ways that are more useful to parents and that help children to make better decisions about their education.

As part of this project, we have created a data set about schools which provides a new perspective on their performance allowing for the first time people to see:

- Rates of uptake of different subjects at GCSE
- Performance at A grade by subject
- Where differences in performance are significant and consistent

The data set created will be made available for download from the OPSN website and we would invite anyone trying to provide information about schools to parents and children to use it.

The Guardian newspaper have already created a website based on the analyses which provides parents with a new approach to finding out about schools in their area.

There were many other analyses we could have done that would have been of interest such as:

- Metrics designed to assess the success of schools with children who have special educational needs
- Information about the subjects and performance of schools at 'A' Level
- Longer term outcomes for pupils such as they types of employment or university courses that children go on to

We hope in time to be able to extend the range of information we can make available.

We hope to develop ways of presenting data that help people make decisions not only about which school they attend and which subjects they study but also decisions about what goals they set themselves.

OPEN PUBLIC SERVICES NETWORK

The Open Public Services Network (OPSN) is a not-for-profit organisation based at the RSA. It provides independent assessment of information designed to monitor and assess the performance of government and public services.

Its aims are:

- To provide independent assessment of information designed to monitor the performance of government and public services.
- To make information about public services accessible in ways that help users of those services achieve better outcomes.

OPSN aims to improve the debate surrounding the quality and value of information available to the public about education, health and other key services. It develops new and better ways to measure impact and value for money in ways that make sense to and engage the public.

We are committed to supporting the delivery of the most efficient, effective and highest quality public services that we can afford. OPSN will advocate and showcase better use of information and technologies, especially online communication tools, to improve public understanding and use of public services.

This report is our first major project and examines the quality of secondary education data published in England.

ABOUT RM EDUCATION

RM Education is the UK's leading education technology provider. We've been helping deliver technology-enabled learning for nearly 40 years by developing, manufacturing, installing and managing hardware, software, IT networks and services, and classroom resources all specially designed for education.

Our UK customers include schools, colleges, local authorities and the DfE. We also work with awarding organisations in the UK and around the world. We have thirty years of experience in the field of education data, providing data collection, analysis and dissemination services, as well as e-assessment results analysis tools and school management information systems. Notable projects include:

- The RAISEonline portal, used by over 22,000 schools for interactive analysis of school and pupil performance data
- The Educational Performance Analysis System (EPAS), provided for the National Consortium for Examination Results and their membership of 155 local authorities
- Processing, matching and analysing school performance and contextual data for national performance tables

- Management of the OECD Teaching and Learning International Survey (TALIS) and the PISA 2015 programme for the Department of Education
- RM School Finder, which combines data from the DfE, OFSTED, Ordnance Survey and schools to provide answers to the top 6 questions parents usually pose themselves when considering which school to apply to for their children
- Integris MIS, the UK's leading cloud based Management Information System used by over 2000 UK schools

In a typical 12 month cycle we collect, match and process some 27 million exam results and deliver over one million online reports to schools and local authorities in England.

We would like to thank all members of our reference group for giving up their time to attend the meetings and comment on drafts of the report and RM Education, Dave Thomson and Fischer Family Trust for their work on the analysis of education data used throughout.

Also, Alex Kafetz, Gita Mendis, Jennifer Nemeth and Zoe Bedford from ZPB for writing and editing the report and organising the panel and the research, and to Alison Eddy at Design and Purpose, for design and infographics.

Finally we are very grateful to our main supporters: Cambridge Assessment, RM Education, Fischer Family Trust and The RSA.



Appendix 1

Subject groups used in RM Education School Finder²⁷

ART AND DESIGN

Applied Art and Design
Art and Design
Art and Design (3d Studies)
Art and Design (Critical Studies)
Art and Design (Fine Art)
Art and Design (Graphics)
Art and Design (Photography)
Art and Design (Textiles)

BUSINESS STUDIES AND ECONOMICS

Applied Business
Business Studies Single
Business Studies and Economics
Economics

DESIGN AND TECHNOLOGY

D&T Electronic Products
D&T Engineering
D&T Graphic Products
D&T Product Design
D&T Resistant Materials
D&T Systems and Control
Design and Technology
Electronics

ENGLISH

English
English Language
English Language and Literature
English Literature
English Studies

GEOGRAPHY

Geography

HISTORY

Ancient History
History

HOME ECONOMICS

Catering Studies
D&T Food Technology
D&T Textiles Technology
Home Economics
Home Economics: Child Development
Home Economics: Food
Home Economics: Textiles
Hospitality and Catering

ICT

Applied Information
Communication Technology
Computer Studies/Computing
Information and Communications
Technology

LANGUAGES

Arabic
Bengali
Chinese
Classical Greek
Dutch
English for Speakers of Other
Languages
French
German
Gujarati
Hindi
Irish
Italian
Latin
Modern Greek
Modern Hebrew
Other Classical Languages
Persian
Polish
Portuguese
Punjabi
Russian
Spanish
Turkish
Urdu
Welsh (Second Language)

MATHEMATICS

Additional Mathematics
Applications of Mathematics
Mathematics
Methods in Mathematics
Statistics

MEDIA AND FILM STUDIES

Film Studies
Media/Film/TV Studies
Media: Communication and
Production

MUSIC

Music

OTHER

Applied Engineering
Classical Civilisation
Construction
Construction and the Built
Environment
Engineering
General Studies
Health and Social Care
Leisure and Tourism
Manufacturing
Motor Vehicle Studies
Office Technology

PE

Applied Physical Education
Physical Education/Sports Studies

PERFORMING ARTS

Dance
Drama and Theatre Studies
Expressive Arts and Performance
Studies
Performing Arts

RELIGIOUS EDUCATION/ STUDIES

Religious Studies

SCIENCE

Additional Applied Science
Additional Science
Applied Science
Astronomy
Biology
Chemistry
Environmental Science
Geology
Physics
Science (Core)
Science: Double Award

SOCIAL SCIENCE

Humanities: Single
Law
Psychology
Social Science: Citizenship
Sociology

Appendix 2

Variables used to calculate value added, as determined by the FFT

- Average KS2 Fine_Grade test result
- (KS2 Fine_Grade)²
- KS2 TA Differential
- KS2 English Differential
- Gender
- Month of birth
- KS2 maths differential
- Pupil Special Education Needs (SEN)
- Pupil English as an Additional Language (EAL)
- Pupil Free School Meal (FSM)
- Pupil ethnic category (and a binary factor encompassing those categories defined as being at risk of underachievement)
- Pupil at the same secondary school since KS2
- Pupil joined the secondary school other than in September
- School mean KS2 Fine_Grade
- School KS2 Fine_Grade standard deviation
- School FSM rank
- School Geodemographic Factor (GDF) rank
- Pupil Interactions (with KS2 Fine_Grade)
- Pupil and school interactions (mostly with pupil KS2 Fine_Grade)
- School interactions

Footnotes

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- ¹¹ www.education.gov.uk/researchandstatistics/datasets/a00210491/destinations-ks-4-5-pupils
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- ¹⁵ <http://parentview.ofsted.gov.uk>
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- ¹⁷ Choosing A High-Quality Hospital: The way information is presented can make a difference to how it is used www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/Choosing-high-quality-hospital-role-report-Tammy-Boyce-Anna-Dixon-November2010.pdf
- ¹⁸ See www.ofsted.gov.uk/resources/framework-for-school-inspection for more information
- ¹⁹ www.education.gov.uk/rsgateway/DB/SFR/s001090/index.shtml

- ²⁰ www.nhsstaffsurveys.com/cms/
- ²¹ <http://home.rm.com/schoolfinder>
- ²² www.cemcentre.org/attachments/SCORE2008report.pdf
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- ²⁵ For a discussion see <http://ftp.iza.org/dp5839.pdf>
- ²⁶ www.guardian.co.uk/education/2011/dec/19/school-league-tables-gcse
- ²⁷ Subject group taxonomy used in RM School Finder (<http://home.rm.com/schoolfinder/>). Please note this does not represent the full range of data within RM School Finder which in 2012 included: School Performance Tables - Key Stage 2, 4 and 5 (DFE, January 2012); School Inspection Data to June 2012 (Ofsted, June 2012); Edubase Database of Educational Establishments (DFE, March 2012); GCSE Subject Results (DFE, March 2012); October 2011 School Census (DFE, March 2012); postcodes with geographic location (Ordnance Survey); and towns with geographic location (Ordnance Survey).

→OPSN

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