

Using data to drive school improvement



Prepared by GradeMaker, in association with FFT Education

1 Executive Summary

This paper provides a short overview of the growing, global impact of data in education, referencing the work of the OECD, developments in Germany, the USA and the UK. It provides a detailed view of the UK educational data revolution, describing the key flows of data around the system, explaining how data is used at school and government level and providing an example screenshot of a set of reports now routinely used by schools.

The picture it describes is one in which data analysis is now a vital support to the work of head teachers, school subject leads, inspectors, local or regional planners, and central government. Data has become a critical tool in the process of school improvement. In the words of the former Chief Inspector in England, 'There can be no going back to the days when decisions were made on hunches and anecdotal information'.

It seems clear that the trend outlined will be replicated across the globe and that data will become central to school management and improvement around the world.

This paper draws on UK experience to recommend that data analysis technology is introduced in a phased manner, and sets out key steps for successful implementation.

This paper is developed in association FFT Education. FFT is GradeMaker's data partner and provides educational data analysis for schools across the UK. FFT makes 3,000,000 reports available to Head Teachers and other stakeholders each year.



FFT data services are
used in 20,000 UK

If an exam board or Ministry wishes to investigate the potential of data analytics in a national setting, we recommend it requests GradeMaker for a demonstration of cutting-edge data portal technology. An implementation proposal can then be brought forward which reflects Ministry requirements and the inherent potential of the available data sources.

2 The impact of data on education

Educational reform across the globe is increasingly driven by the smart use of data.

McKinsey, a firm of consultants, argues¹ that intelligent data analysis creates ‘significant opportunities’ to raise the quality of education, reduce administration costs and improve teacher skills. They say many of the ‘most valuable’ impacts are seen in the classroom and lead to improved educational performance. Their argument reflects international experience.

The head of the OECD’s PISA programme, Andreas Schleicher, has one of the broadest global perspectives on educational improvement. He suggests data can trump finance as an effective lever for change. ‘Data’, he says, ‘can be more powerful than administrative control of financial subsidy through which we usually run education systems’.

Data-driven programmes have already helped governments around the world to review the effectiveness of their school systems and deliver change. In **Germany**, for example, Schleicher says that data has ‘transformed some of the beliefs and paradigms underlying German education’ and played a significant part in driving improvement.

“There can be no going back to the days when decisions were made on hunches and anecdotal information.”

Christine Gilbert, former Chief Inspector of Schools, England

In the **USA**, there has been a similar focus on data for school improvement. Following a period of investment over the past 5 years, 41 American States now have significant data analysis systems in place to support school improvement². The same picture is true in the **UK** where improved performance data is now deeply embedded, driving change and improvement at school and classroom level. Section 3 sets out more detail on the UK experience.

Exam results – a key source of nationally significant data

In most settings, the examination body is the most important source of educational data. Exam Councils working in partnership with Ministries have the potential to fuel the data revolution. Exam Council results files offer a ready-made set of reliable data. They can be linked to data about schools (e.g. type, location) and pupils (e.g. gender). With this in place, rich opportunities open up for exam bodies to better serve schools, local government bodies, inspectors and national policy makers.

¹ Open data: unlocking innovation and performance, *McKinsey Global Institute* 2013

² <http://www.usnews.com/news/articles/2013/11/19/more-states-are-collecting-and-using-student-data-to-improve-education>

3 The UK data revolution

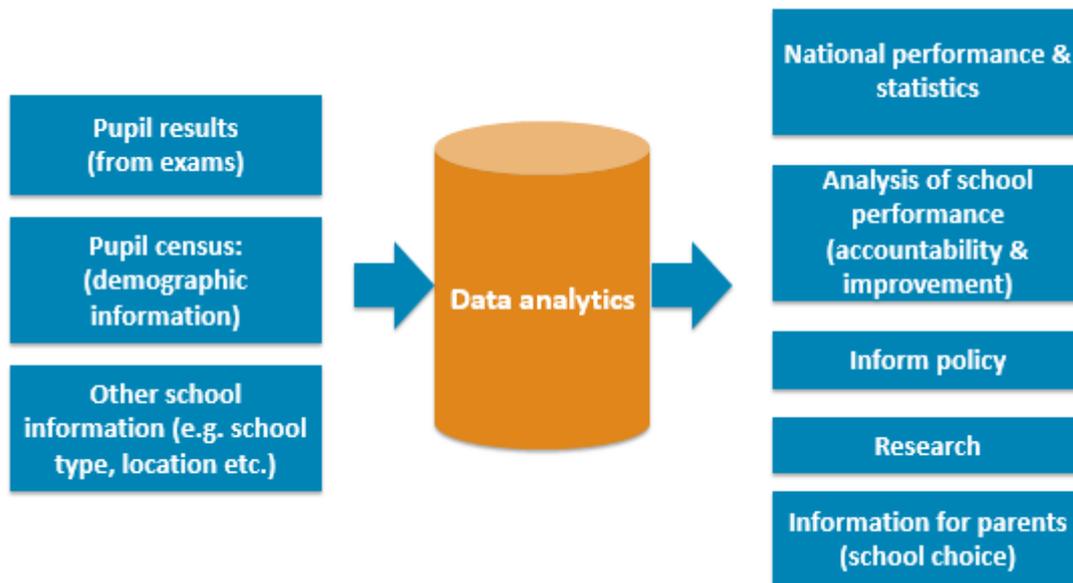
Data drives and informs school improvement in the UK at all levels.

Delivering this data-rich environment has been a consistent policy goal for over 10 years. In 2004 the then Education Secretary David Miliband said³ the system would ‘really achieve take off when there is a maximum use of data and benchmarks by all those with an interest in pupils’ progress’.

Former Chief Inspector of Schools Christine Gilbert reports that today ‘the intelligent use of data affects the work of all professionals involved in education’. Used in this intelligent way, she argues, data is ‘an essential tool as we work together to raise standards in schools and so improve the lives of the children attending them’.

How the data revolution works in the UK

The following diagram illustrates how the data cycle operates in the UK. Exam data is matched with data about students and schools to deliver insight for stakeholders at all levels.



Key users of data in the UK system are: Head teachers; Heads of department; Teachers; Inspectors; Ministry and regional education officials; Parents; Researchers and Policy Makers.

³ Personalised Learning: Building a new relationship with schools, *Department for Education* 2004

What a school-facing data portal looks like

Educational leaders at all levels in the UK now regularly access rich analyses of their schools and students to inform their work. The screen shot below exemplifies such a system. It is from a data portal supplied by FFT Education which is regularly used by thousands of schools in the UK. It illustrates the analytical way in which Head teachers can now think about improving their schools. This toolset is available as part of the GradeMaker system.

See how the school is doing by subject. Drill down to see the topic level or to set individual students' targets

See how much 'progress' students make from one phase of education to the next in each subject

Quick graphical view to highlight strengths and weaknesses

KS4 subject performance 2014

		Actual results			Pupil progress			
		Pupils	Average Point Score	% A*-C	% A*-A	Average Point Score	% A*-C	% A*-A
English and maths	English	50	32	22% ⬇️	0%	-0.3 ⬆️	-5%	-0%
	English Language	90	42	77%	14%	-2.7 ⬇️	-12% ⬇️	-10% ⬇️
	English Literature	89	43	89% ⬆️	11% ⬇️	-0.7 ⬇️	+6%	-13% ⬇️
	Mathematics	140	36 ⬇️	6%	14%	-3.0 ⬇️	-4%	-5%
Ebacc subjects	Biology	28						
	Chemistry	28						
	French	14						
	Geography	50						
	German	29						
	History	52						
	Physics	27						
	Science (Core)	111	34 ⬇️	41% ⬇️	2% ⬇️		-2.4 ⬇️	-14% ⬇️

'Traffic lights' highlight areas where a school's performance is significantly better or worse than others in the nation, region etc.

KS4 Achievement 2014

2014

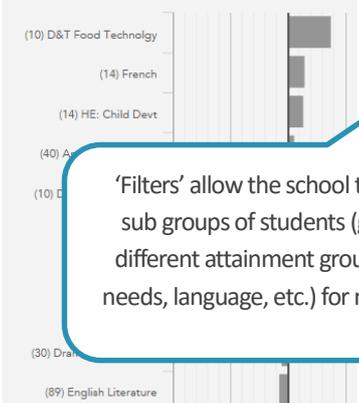
KS4

Indicators

Filters

Select a Pupil progress indicator from the table to display the data in the chart

Average Point Score



'Filters' allow the school to examine sub groups of students (girls/boys, different attainment groups, special needs, language, etc.) for more insight

Clicking on 'Filters' opens up tools to narrow the focus for more insight:

Gender ▾

FSM ▾

Prior Attainment ▾

Pupil Premium ▾

SEN ▾

EAL ▾

Ethnicity ▾

Apply

Cancel

+ Higher attainers

+ Middle attainers

+ Lower attainers

x Clear all

What is data used for?

Data now informs the life of schools in the UK at all levels:

1. Understanding school performance ('self-evaluation')
 - Identify strengths for the school and areas for improvement
 - Performance by subject and by pupil group
 - Understand trends in performance
 - Compare school performance to national benchmark
 - Actual results (attainment) and pupil progress (value added)
2. For school accountability and inspection purposes
 - Inspectors use school performance data alongside teaching and learning observation
 - Data is used to hold Head teachers accountable
3. To set challenging targets for the future
 - All schools set targets for each pupil in every subject
 - Government or district will set targets for the school
4. For in-school pupil tracking
 - Monitor and track the progress for current pupils (compared to targets)

At government level, data informs policy making across the full range of educational issues:

1. Analysis of national performance: trends and patterns
2. Improving the effectiveness of a school system as a whole
3. Comparing performance in UK schools to other countries (PISA)
4. Improving overall school performance or the performance of a student group
 - e.g. improving the performance of boys in science
5. Using data and evidence to inform the setting of policy and resources
 - e.g. directing additional funds towards students from poorer homes
6. Ensuring that examination standards are comparable and robust year on year

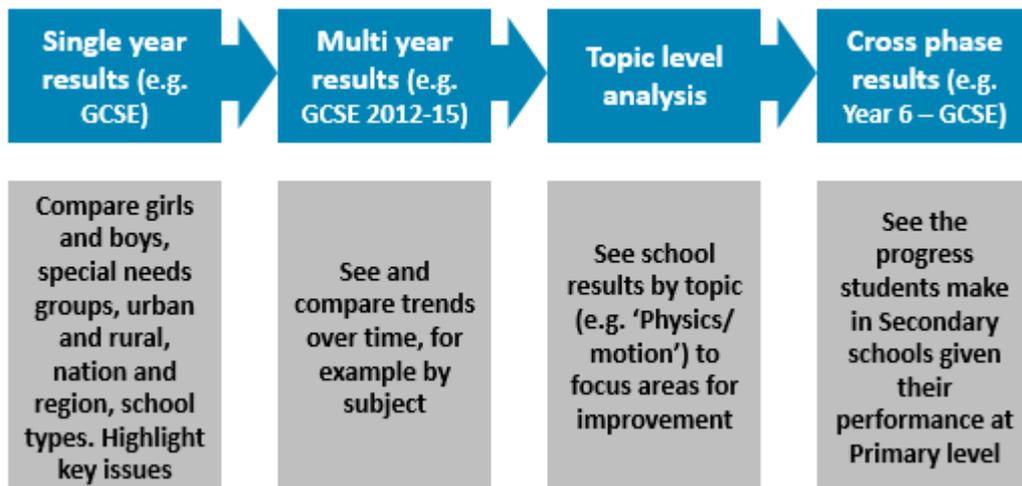
4 Successfully introducing educational data

The most effective strategy for successfully extending the use of educational data is to adopt a stepped approach. Simply providing all possible reports to all stakeholders up front runs the risk of causing confusion.

The best approach is to build data literacy and user confidence over time. This involves first introducing simple reports which all users will intuitively understand, to richer, more complex reports which offer deeper insight.

The diagram below shows how an example plan whereby reports can be added step by step to build user understanding and to ensure a successful introduction.

In this model data reports are rolled out beginning with simple 'snapshot' reports based on a single year's exam results, and building towards richer analyses.



Planning data implementation: moving from simple to more complex analysis. Note the diagram illustrates a principle only and actual plans would be agreed in consultation with the Ministry.

Systems like this can transform the quality of educational decision making.

How GradeMaker can help

GradeMaker can help in two ways.

First, working with our data partner FFT Education, we can help build and develop the fully matched national database linking pupil data with attainment data. FFT has been responsible for building and maintaining the UK national pupil database, and so has unparalleled expertise and tools to deliver this essential underpinning tool for educational improvement.

Second, we have existing nationally scalable technology and expertise in implementing data portals in education. This makes it very practical to introduce richer, school-specific data analysis support to help transform decision making across the educational sector. Our highly scalable portal, with logins for every school, can easily be adapted for your national setting.

It is also possible to introduce a specialist analytics system for Ministry and Regional experts to support policy making and planning. We can demonstrate such a system with your data if requested to do so. A system for Ministry users can be introduced very quickly.

To find out more:

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