OPEN
PUBLIC SERVICES
NETWORK

OPSN REPORT

Lack of options: how a pupil's academic choices are affected by where they live

Contents

Open Public Services Network

RSA
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All our data is freely available for secondary use. Download at http://goo.gl/I8ld5a

Are there subject deserts in parts of the country?

Charlotte Alldritt

Roger Taylor

This project, kindly supported by Leeds City Council, compares data across regions and cities, to enable policy makers to understand the overall pattern of provision and attainment in their areas. We focus on the availability of GCSE subjects as a first step in considering the extent to which cities offer a range of academic opportunities to young people. While most places offer a fairly wide range of subjects (beyond mandatory English and Maths), our analysis shows that 'subject deserts' exist in certain parts of the country. This potentially limits young people's options for further study and/or in their career choices.

> **Want to be a doctor, but can't get access to three sciences at GCSE? Then catching up at A Level or applying to medical school without a particular subject makes access to this profession – already limited in its social diversity of intake – more difficult still.**

We have focused on the variability of the opportunity to take GCSEs as an indicator of variation in educational opportunity. However, we recognise that for many pupils, alternative qualifications and pathways are key to unlocking their employment potential. We have also included an analysis of access and take-up of BTEC science to complete the picture. We look to future projects to examine this further, and actively support efforts in the Department for Education and Business, Innovation and Skills to welcome secure linkage of National Pupil Database, FE college data, school destinations and HMRC data. Only then can we get a clear understanding of how well our education and skills systems are preparing young people to be happy, resilient and productive citizens.

Our analysis raises a number of concerns about the impact of education policies on the opportunities open to young people. There is concern that the accountability regime – in which schools are rated on the number of points they achieve in exams – can incentivise schools to offer more limited opportunities to children in an effort to maximise the school's rating at the expense of the child's future. Children from more deprived areas tend to get poorer grades than children from more affluent areas. Schools in these areas can improve their chances of better grades by only offering less demanding courses. Evidence that this may be occurring can be seen, for example, in the much lower rates of enrolment for triple science GCSEs in more deprived areas.

The data analysed here are for the three years to 2013 and predate the reform of the accountability regime following the review of vocational qualifications by Alison Wolf[1]. These reforms mean that many of the qualifications that were regarded as less demanding no longer count towards the school's performance. We will be returning to this question later this year to assess the impact of these changes on the levels of enrolment in GCSEs in 2014.

Another issue raised by the analysis is the role of local education authorities (LEAs) in shaping education services within a region. The data show that within some areas there may be no schools offering the opportunity to study triple sciences or modern languages. As responsibilities have been devolved to individual schools, LEAs may not be able to require changes. However, they may be able to play a vital role in bringing people together and co-ordinating activities across a region to provide the widest possible opportunities to children.

Acknowledgements

OPSN would like to thank Leeds City Council and the Children's Services department, particularly Clare Walker and Peter Storrie, for their help for their continued expertise throughout. We would also like to thank Paul Charman and Dave Thompson at FFT[2], and Alex Kafetz, Melissa Clements and Ashling Allen at ZPB Associates[3]. Finally, thanks to Joe Hallgarten and the RSA[4] and their continued support of OPSN as a thought leader in the emerging world of open data powering creative, productive public services and communities.

[1] https://www.gov.uk/government/publications/wolf-recommendations-progress-report

[2] http://www.fft.org.uk/

[3] http://zpb-associates.com/

[4] http://www.thersa.org/

Information that will start conversation and shape better public services

Leeds CITY COUNCIL

Providing access to open data is something that Leeds City Council is very passionate about, as demonstrated through our Leeds Data Mill project.[5]

We see this as a great opportunity for not only making data available, but allowing people to look at data in a different way. This new approach to data can enable people to come up with new ideas and solutions for addressing city issues, be that traffic congestion or identifying safe places for children to play. It's in this context that we have recognised the opportunity to link up with the OPSN in the city education data project.

As a child-friendly city we in Leeds are committed to improving the learning opportunities available to our young people and to supporting them to make the learning choices that are right for them. The quality of young people's learning will shape their adult lives, helping to determine their commitment to ongoing learning and influencing their employment prospects. We must provide the best opportunities for our young people to prosper, achieve and contribute as part of a growing Leeds economy and an evolving Leeds community.

In supporting OPSN with this piece of work we are helping contribute to stimulate conversations in schools and at national and local levels on what is the right learning offer for our children and young people. We are committed as an authority to making information available, not in order to presume answers but to start conversation, and to help shape better public services. It is vital to collectively inform and contribute to how we deliver the best opportunities for our young people.

Employers and those providing further and higher education must help to inform decisions. Schools will continue to consider and deliver what is in the best interests of the young people and communities they serve. Young people and parents need to understand the choices available and where they lead post-16.

Our case study (page 30) demonstrates a positive journey being made by John Smeaton Academy in Leeds, which has re-shaped its science curriculum offer and has a keen focus on work readiness through excellent links with businesses.

We hope this work contributes to conversations at all levels on science and language in the GCSE curriculum, and then into broader debates on the learning offer. Should we regard modern foreign language as an academic speciality or more realistically in 21st-century Britain as an expectation for all young people? Is science at GCSE about opening minds and encouraging insight that will lead some to follow science through to university and beyond, or is it also the basis of a range of post-16 learning and career opportunities for others?

Given the changes schools are addressing and their desire to do well for their young people we hope this work provides ongoing and useful insight that can help inform local decisions on the curriculum offer and in doing so have a positive impact on the opportunities, aspirations and outcomes for children and young people in Leeds and across the country.

Councillor Judith Blake, Deputy Leader of LCC and Executive Member for Children and Families
Tom Riordan CEO, Leeds City Council

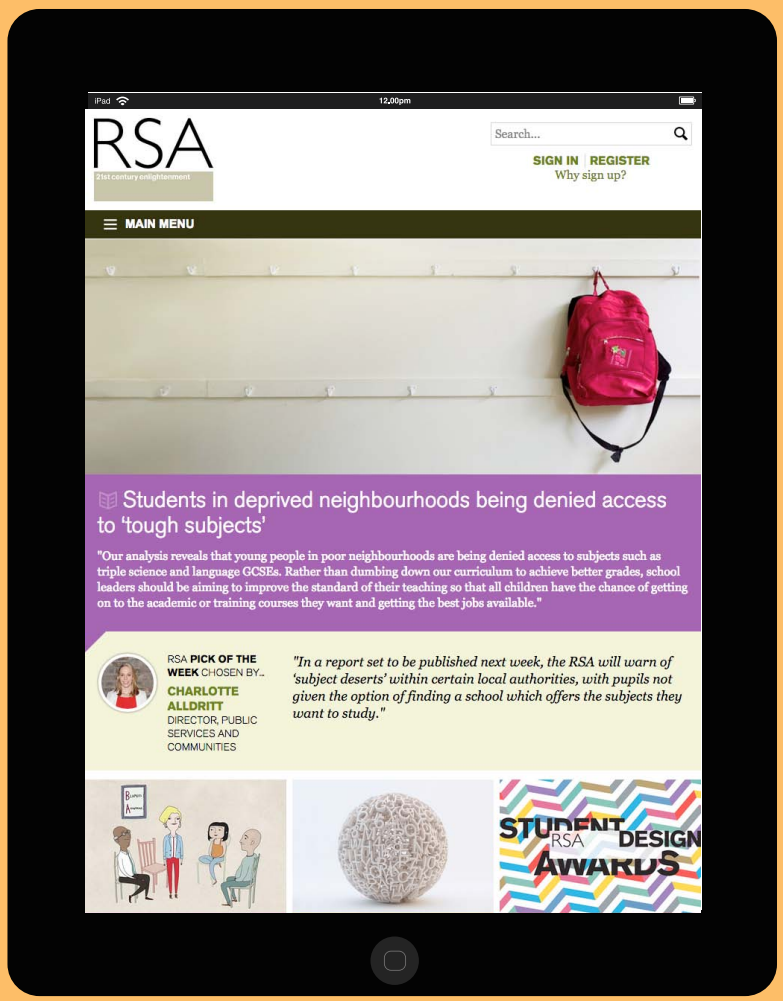
we are child friendly Leeds

[5] http://www.leedsdatamill.org

Want to access our data? Read more on the RSA website

Roger Taylor, Chair of OPSN and RSA Fellow, said: "These data show that children's educational opportunities are defined by where they live."

Download data: GCSE enrolment data 2013-14



Unequal opportunities

- The curriculum a pupil will be taught in an English school varies according to whether they live in a wealthy or poor neighbourhood.

- In North East Lincolnshire half the schools entered no children for triple science. In Medway, Knowsley, Slough, Kingston upon Hull and Newcastle more than a third of schools do not enter any pupils for triple science. In contrast, in Sussex and Cumbria every school has at least some pupils taking GCSEs in three sciences.

- Children in Knowsley are half as likely to be enrolled for a science GCSE as children in Buckinghamshire.

- Children in Kensington are four times more likely to be enrolled for a language GCSE than children in Middlesbrough where, on average, only one child in every four takes a language GCSE.

- Children are most likely to be entered for an art GCSE in Portsmouth and least likely in Kingston upon Hull, where it is four times less likely.

Re-presenting data in engaging formats

The Open Public Services Network is committed to publishing information to inform public understanding and scrutiny. By presenting existing data in an intelligent way, and creating new analysis and datasets, we aim to enable researchers and policy makers to compare the performance of public services, hold them to account and lobby for changes and improvements.

This report, supported by Leeds City Council, pays particular attention to enrolment for GCSEs and the variation in different local education authorities (LEAs). Our main focus has been on the sciences, as little access to one or more sciences at GCSE can curb or at least make harder careers choices in the future such as medicine, biochemistry and life sciences. We are using enrolment as a proxy for access. Where schools have low uptake rates, it may of course mean that subjects were available but no or few pupils decided to take them. This is unlikely, and begins another debate about why these are not being promoted or encouraged.

We present our analysis of the access data, and as ever make the full dataset available for others to explore and draw their own conclusions.
www.thersa.org/opsn

We invite comment and raise a number of emerging issues and questions throughout the report. We hope headteachers and governors will find this interesting and use the information to plan curriculums and staffing numbers in the future, and LEAs will use it to ensure they are giving pupils under their care the best possible access to the widest range of subjects.

There is no set criteria for how a pupil chooses which GCSEs to take. Pupil choice and school choice are normally the limiting factors. Most schools implement some kind of selection criteria, e.g. pupils must do at least nine GSCEs including English and Maths. They must do at least one humanities subject, a language and a science, and then have four free choices. There are also limitations, as this report shows, on what the school is able to offer. They might not, for example, have the teaching staff for music or a particular language.

Also, for the last few years, some LEAs have had relatively little input into school improvement, so this analysis, while interesting, needs to be interpreted with care. We also have not looked at the impact of large academy chains.

A substantial part of this report looks at the uptake of three science GCSEs and we have used the shorthand "triple science" to refer to this. We measured this to gain an understanding of each school's approach but recognise this does not necessarily measure its commitment to science.

For example, some strong academic schools are not offering triple science at GCSE but will at A Level. Additionally, schools offering triple science don't always have the highest percentage of pupils participating in science. Some schools have committed to core and additional science and take-up is high. Some schools offer triple science to a small class but overall have low core/additional science take-up. As ever, more data is required before conclusions can be made. We need to understand the impact at A Level and on university choices. For example, is there an evidence base that not offering triple science has an impact?

It is expected that we will see changes in the results in future years as schools remodel their curriculums in response to national changes, including accountability. As a result this work will potentially become even more valuable, especially for school leaders' understanding of changing patterns. Specifically, the impact of first entry needs to be seen; while being about school and LEA accountability it can change which subjects schools offer to pupils and this may effect young people's pathways into learning and jobs. The OPSN is committed to updating this dataset next year.

Note on taxonomy:
We have used subject groups defined in the RM education school finder[6]. This groups the wide number of GSCEs available into 18 clusters of subjects. 'Science', for example, includes additional science, applied science, astronomy, biology, chemistry, environmental science, geology, physics, science (core), and double award science.

Note on deprivation quintiles:
We have used percentage of pupils receiving free school meals as a proxy for understanding the deprivation of each LEA. This is standard practice when analysing education data (it is used by the Department of Education[7]). We have quintiled this information to be able to compare LEAs. Those in quintile one are in the most deprived segment and those in quintile five the least derived.

[6] http://home.rm.com/schoolfinder

[7] https://www.gov.uk/pupil-premium-information-for-schools-and-alternative-provision-settings

Access to triple science

Access to triple science

- → Is there a correlation between deprivation and access to triple science?
- → What role is there for LEAs, and what levers are available, to ensure sufficient access to triple science?
- → How do we define sufficient access, and are there alternative routes that young people might follow that keep opportunities open?

For our first piece of analysis we have identified, per LEA, the number of schools where no pupils at all were enrolled. This severely limits access and opportunities for students, limiting post-secondary educational opportunities. Science equivalents are addressed later in this paper. This analysis does not investigate schools selecting to offer core and additional science.

In only 41 (n = 151) LEAs did every school have at least one pupil enrolled for three science GCSEs in 2013. This is in contrast to North East Lincolnshire, where half of the schools did not have a single pupil enrolled for three science GCSEs.

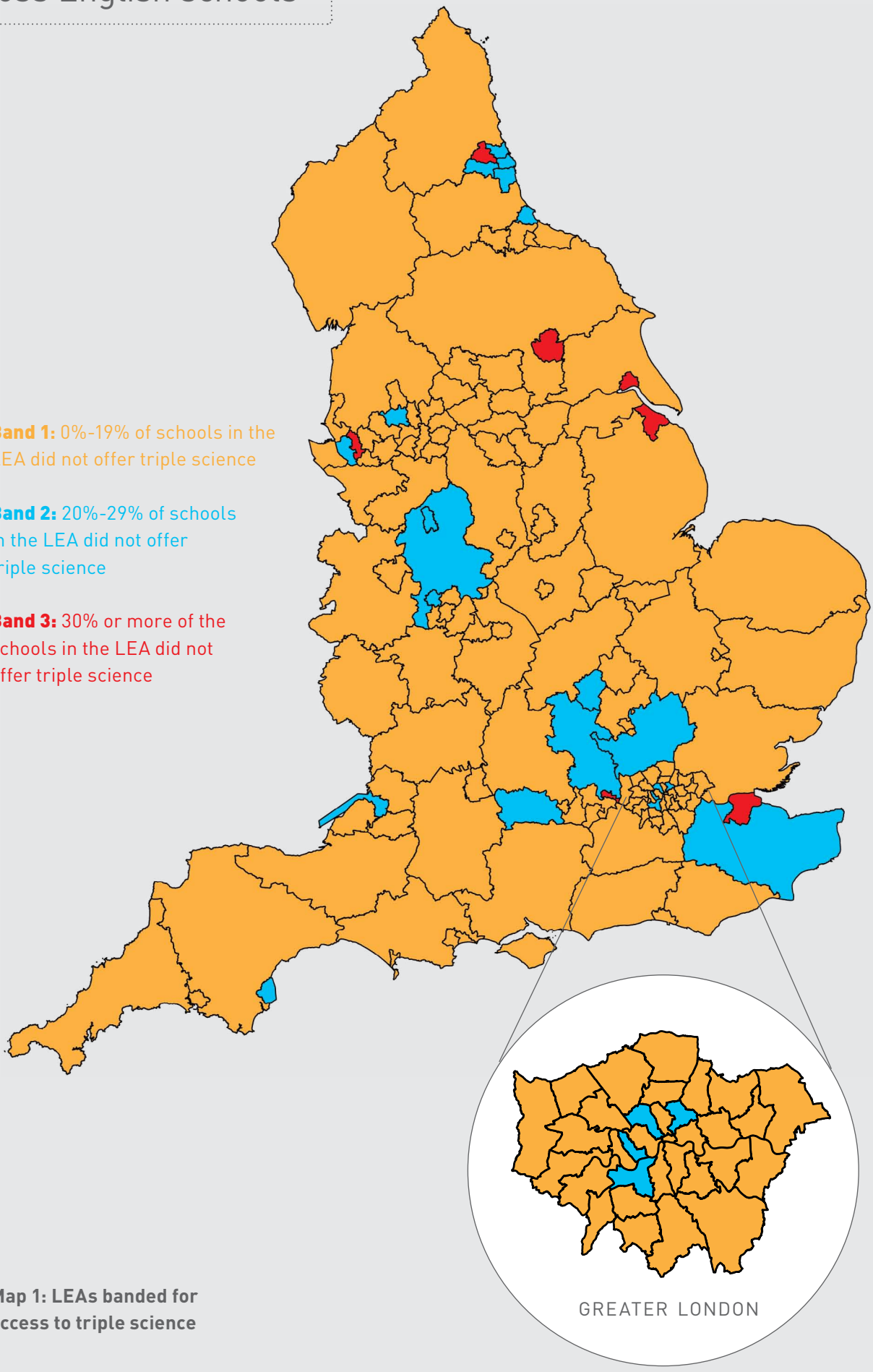
Generally, the larger the local authority school system, the more likely it is to have at least one pupil enrolled in triple science. Kent is an anomaly in this trend as, while it is the largest local authority, 27 per cent of its schools have no pupils enrolled in a triple science. In six areas, more than a third of schools did not have pupils taking three science GCSEs. These six are Medway, Slough, Newcastle upon Tyne, City of Kingston Upon Hull, Knowsley and North East Lincolnshire.

Access to triple science across English schools

Band 1: 0%-19% of schools in the LEA did not offer triple science

Band 2: 20%-29% of schools in the LEA did not offer triple science

Band 3: 30% or more of the schools in the LEA did not offer triple science



Map 1: LEAs banded for access to triple science

Education, skills and devolution

Thoughts from the OPSN

Devolution has been one of the key political and policy themes over the past 12–18 months. The Scottish Referendum brought the agenda to the fore at a national level. For the first time in a generation questions were being asked about the concepts of nationhood, the future of the UK and the legitimacy of 'who governs'. Discussion was not restricted to the halls of Westminster, but played out on city streets and in country pubs. Devolution struck at public consciousness.

The potential for devolution to cities and local authorities was also increasingly recognised. The RSA's City Growth Commission was at the forefront of this debate, and all three political parties responded with commitments to allow places to take greater control of their economic development. A deal announced in November 2014 between the Chancellor and Greater Manchester, so-called 'Devo Manc', marked a significant step forward in decentralising economic and social policy.

What does this mean for education and skills policy? At present it is not clear. Greater Manchester and the Sheffield City Region have secured additional freedoms to align skills provision with their local labour markets. Still questions remain as to what this will mean for the autonomy of further education colleges, the role of the Skills Funding Agency and those cities and counties not granted additional powers. Given the Government's commitment to the autonomy of free schools and Academy trusts, questions also remain as to what city-regional devolution means for pre-16 education and pathways for young people into further training or study.

This report has mostly referred to data about GCSEs, one – but not the only – type of qualification. These data raise important policy issues, including: is there a correlation between deprivation and access to triple science? What role is there, and what levers are available, for city-regions and/or local authorities to ensure sufficient access to triple science across their areas? How do we define sufficient access, and how can we understand whether there are adequate, alternative routes that young people might follow? How can we use data to empower young people to make the most appropriate choices for themselves throughout their education and training?

This report has demonstrated what can be done with existing data, and identified areas for further analysis. We encourage other organisations – including Local Enterprise Partnerships, Combined Authorities and LEAs – to use these data, available on the RSA website. For more information, visit the City Growth Commission website.[8]

Charlotte Alldritt Director of public services and communities, RSA

[8] http://www.citygrowthcommission.com

Regional variations in enrolment

We looked at pupil enrolment for three subjects groups: pupils who took three science GCSEs, pupils who took at least one science GCSE, and pupils who took at least one modern language GCSE. The aim is to further investigate curriculum breadth and options offered in each LEA. We are using enrolment as a proxy for access. Where schools have low uptake rates, it may of course mean that subjects were available but no or very few pupils decided to take them. This is unlikely, and of course begins another debate about why these are not being promoted or encouraged.

Access to triple science

First, we looked across LEAs at the number of pupils who enrolled for three sciences. There is a 35 per cent variation across England, with more than a third of pupils registered at the best LEAs but this falling elsewhere to as low as 11 per cent. In Sutton (Outer London), almost half of students (46 per cent) are taking three science GCSEs. This is in contrast to Knowsley (Northwest), where only one in ten pupils is in enrolled in three sciences.

Ten of the top 20 LEAs are from the least deprived areas of the country, and the only two from the most deprived are inner London. In the top 20, 35 out of every 100 students (36 per cent) is taking three science GCSEs. Conversely, nine of the bottom 20 are from the most deprived quintile.

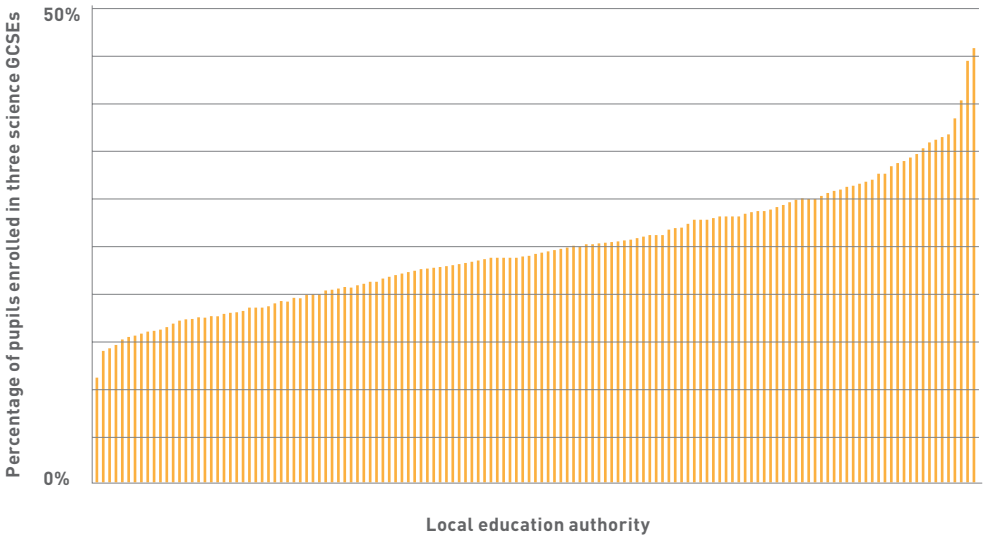


Chart 1: Percentage of pupils per LEA enrolled in three science GCSEs

↓ Download data: GCSE enrolment data 2013-14

LEA	Deprivation Quintile	Region	Percent entered for triple science
Sutton	5	Outer London	46%
Buckinghamshire	5	South East	45%
Bournemouth	4	South West	40%
North Yorkshire	5	Yorkshire and Humber	38%
Hammersmith & Fulham	1	Inner London	37%
Kingston upon Thames	4	Outer London	36%
Cambridgeshire	5	East of England	36%
Rutland	5	East Midlands	36%
Wirral	2	North West	35%
Bexley	4	Outer London	35%
Reading	3	South East	34%
Northumberland	4	North East	34%
Richmond upon Thames	3	Outer London	34%
Lewisham	1	Inner London	34%
Wokingham	5	South East	34%
Central Bedfordshire	5	East of England	33%
Hertfordshire	5	East of England	33%
Gloucestershire	5	South West	32%
Brent	2	Outer London	32%
Bath and NE Somerset	5	South West	32%

Table 1: Best 20 LEAs for pupils enrolled in triple science

Oldham	2	North West	17%
Manchester	1	North West	17%
Camden	1	Inner London	17%
Nottingham City	1	East Midlands	17%
Havering	4	Outer London	17%
Middlesbrough	1	North East	17%
Isle of Wight	3	South East	16%
St Helens	3	North West	16%
Sandwell	1	West Midlands	16%
Sunderland	2	North East	16%
Blackpool	1	North West	16%
Newham	1	Outer London	16%
Coventry	2	West Midlands	16%
Stoke-on-Trent	2	West Midlands	16%
North East Lincolnshire	2	Yorkshire & Humber	15%
Salford	2	North West	15%
Hartlepool	2	North East	14%
Barnsley	3	Yorkshire & Humber	14%
City of Kingston-Upon-Hull	1	Yorkshire & Humber	14%
Knowsley	1	North West	11%

Table 2: Lowest 20 LEAs for pupils enrolled in triple science

Access to at least one science

Second, we have examined by LEA the percentage of pupils enrolling for at least one science. Numbers are much greater here, with at least half of pupils taking at least one science even in the poorest performing LEAs. As with triple science, Knowsley in the Northwest has the lowest level of any science GCSE enrolment (51 per cent). The Isles of Scilly have the highest level, at 100 per cent. Rutland (East Midlands) is the highest on the UK mainland with 96 per cent.

Nine of the top 20 LEAs are from the least deprived quintile. Conversely, six of the bottom 20 are from the most deprived areas whereas no LEAs in the bottom 20 are in the least or lower middle deprivation quintile.

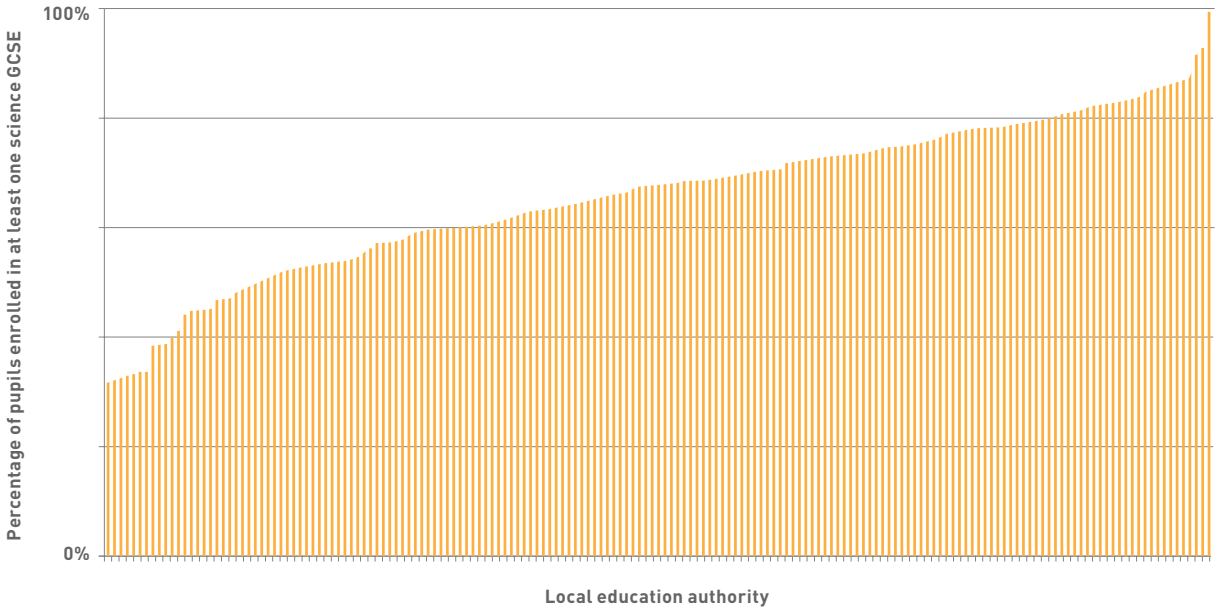


Chart 2: Percentage of pupils per LEA enrolled at least one science GCSE

↓

Download data: GCSE enrolment data 2013-14 http://goo.gl/l8ld5a

LEA	Quintile	Region	Percent entered for at least one science
Isles of Scilly	5	South West	100%
Rutland	5	East Midlands	96%
Dorset	5	South West	96%
Harrow	2	Outer London	93%
Buckinghamshire	5	South East	93%
Norfolk	4	East of England	92%
Kingston upon Thames	4	Outer London	92%
Leicestershire	5	East Midlands	92%
Westminster	1	Inner London	92%
Hammersmith & Fulham	1	Inner London	91%
Bracknell Forest	5	South East	91%
Islington	1	Inner London	91%
York	5	Yorkshire and Humber	90%
Stockton on Tees	3	North East	90%
Barnet	2	Outer London	90%
East Riding of Yorkshire	5	Yorkshire and Humber	90%
Ealing	1	Outer London	90%
Swindon	4	South West	90%
North Yorkshire	5	Yorkshire and Humber	89%
Havering	4	Outer London	89%

Table 3: Best 20 LEAs for pupil enrolled in at least one science

Torbay	3	South West	70%
Wakefield	3	Yorkshire and Humber	70%
Bradford	2	Yorkshire and Humber	70%
Gateshead	3	North East	70%
Liverpool	1	North West	69%
Plymouth	3	South West	69%
Walsall	2	West Midlands	69%
Sandwell	1	West Midlands	67%
Durham	2	North East	67%
Manchester	1	North West	67%
Salford	2	North West	67%
City of Bristol	2	South West	67%
Isle of Wight	3	South East	65%
Nottingham City	1	East Midlands	64%
Newcastle upon Tyne	2	North East	64%
Halton	1	North West	64%
City of Kingston-Upon-Hull	1	Yorkshire and Humber	62%
St Helens	3	North West	61%
North Lincolnshire	3	Yorkshire and Humber	61%
Knowsley	1	North West	51%

Table 4: Lowest 20 LEAs for pupils enrolled in at least one science

Science equivalents

BTEC qualifications and OCR Nationals are particular types of work-related qualifications that are available in a wide range of subjects. Many have been designed in collaboration with industry, so they can equip pupils with the skills and knowledge that employers are looking for. The qualifications offer a mix of theory and practice and can include an element of work experience.[5]

They can be a valuable alternative for pupils who don't want to go to university or who want to start their career early, as they can take the form of, or be part of, a technical certificate, which is one of the key components of an apprenticeship.

We have looked at the spread of BTEC/OCRs by measuring the percentage of pupils entered by LEA for 2013. This ranged from five per cent of pupils in Rutland to half of pupils in North East Lincolnshire, 50 per cent (Northeast) and Knowsley, 63 per cent (Northwest).

For comparison, in Rutland 36 per cent of pupils enrolled for three science GCSEs and 96 per cent of pupils did at least one science GCSE.

In North East Lincolnshire, 15 per cent of pupils enrolled for three science GCSEs and 71 per cent of pupils did at least one science GCSE.

In Knowsley, 11 per cent of pupils enrolled for three science GCSEs and 51 per cent of pupils did at least one science GCSE.

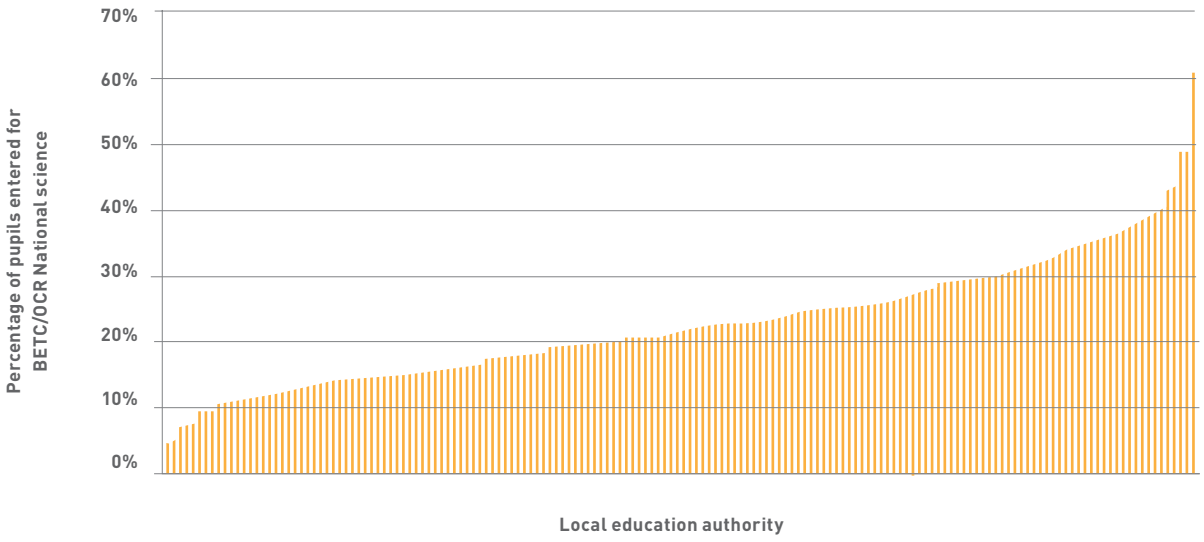


Chart 3: Percentage of pupils entered for BTEC/OCR national science in 2013

[5] http://www.nidirect.gov.uk/btecs-ocr-nationals-and-other-vocational-qualifications

LEA	Deprivation Quintile	Region	Percentage entered for BTEC/OCR
Knowsley	2	North West	63%
North East Lincolnshire	3	Yorkshire and Humber	50%
Bracknell Forest	4	South East	45%
City of Kingston-Upon-Hull	3	Yorkshire and Humber	45%
North Lincolnshire	3	Yorkshire and Humber	42%
South Tyneside	3	North East	41%
Salford	2	North West	40%
Sandwell	2	West Midlands	40%
Nottinghamshire	5	East Midlands	40%
Birmingham	1	West Midlands	39%
Nottingham City	5	East Midlands	38%
Peterborough	4	East of England	38%
Durham	4	North East	37%
Thurrock	5	East of England	37%
Walsall	2	West Midlands	37%
Bolton	2	North West	37%
Plymouth	4	South West	36%
Stoke-on-Trent	4	West Midlands	36%
Medway	5	South East	36%
Doncaster	2	Yorkshire and Humber	34%

Table 5: Best 20 LEAs for pupils enrolled in BTEC/ OCR National science in 2013

Isles of Scilly	3	South West	0%
Rutland	4	East Midlands	5%
Kensington & Chelsea	1	Inner London	7%
Dorset	4	South West	7%
Buckinghamshire	3	South East	7%
Norfolk	5	East of England	9%
Hertfordshire	5	East of England	9%
Luton	3	East of England	10%
Westminster	1	Inner London	10%
Cornwall	5	South West	10%
Wigan	2	North West	11%
Sheffield	2	Yorkshire and Humber	11%
Bath and North East Somerset	3	South West	11%
Stockton on Tees	3	North East	12%
Islington	1	Inner London	12%
Poole	4	South West	12%
Surrey	5	South East	12%
Bedford Borough	3	East of England	13%
North Yorkshire	3	Yorkshire & Humber	13%
Oxfordshire	5	South East	13%

Table 6: Lowest 20 LEAs for pupils enrolled in BTEC/OCR National science in 2013

With modern foreign languages, which include French, German and Spanish, seven out of ten students in Kingston Upon Thames are enrolled in a foreign language GCSE. Seven out of 20 of the top LEAs are in the least deprived quintiles, though six out of 20 of the bottom LEAs are considered least deprived. This implies that this does not necessarily explain why students take or not enrol in a foreign language GCSE. Similarly, in both the top and bottom 20, there are four LEAs from the most deprived areas of the country. The range is 24 per cent to 69 per cent.

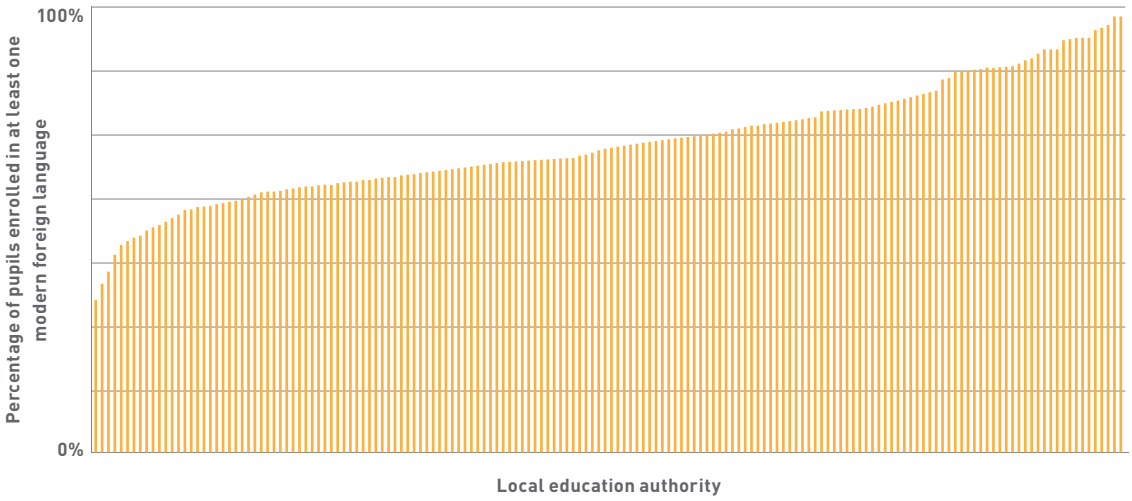
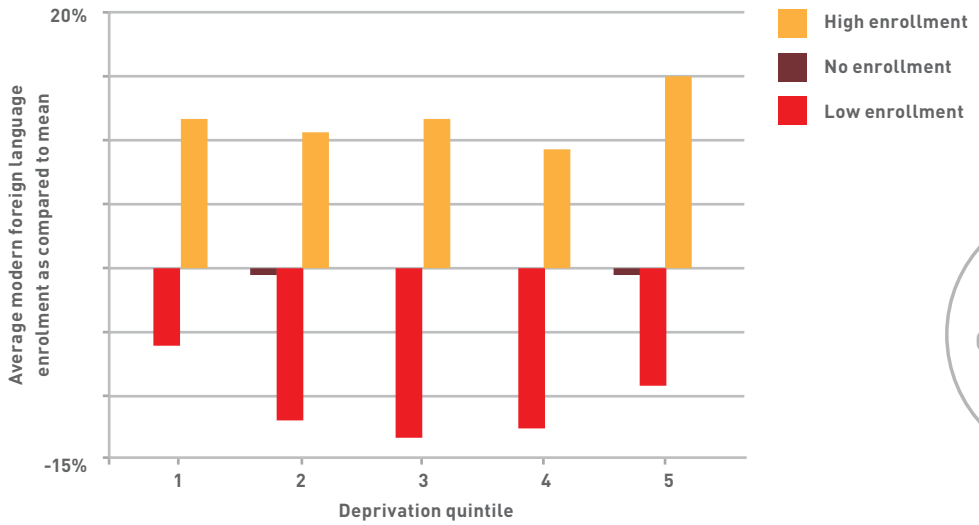


Chart 4: Percentage of pupils per LEA enrolled for at least one modern foreign language



Download data: GCSE enrolment data 2013-14

Chart 5: High, low and no enrollment in modern foreign languages

This chart looks at the spread of enrolments in modern foreign languages across each economic quintile. There appears to be good enrolment representation across the country, though the middle quintile is less likely to enrol students in a foreign language than the most deprived areas. For example, for quintile five (most deprived), the spread of schools was between just less than ten per cent below average to 15 per cent above average.

LEA	Deprivation Quintile	Region	Percentage entered for modern foreign languages
Kingston upon Thames	4	Outer London	69%
Kensington & Chelsea	1	Inner London	68%
Hammersmith & Fulham	1	Inner London	67%
Enfield	1	Outer London	67%
Brent	2	Outer London	66%
Richmond upon Thames	3	Outer London	66%
Hounslow	2	Outer London	65%
Wandsworth	1	Inner London	65%
Westminster	1	Inner London	65%
Barnet	2	Outer London	64%
Sutton	5	Outer London	63%
Harrow	2	Outer London	63%
West Berkshire	5	South East	62%
Hackney	1	Inner London	62%
Newham	1	Outer London	62%
Camden	1	Inner London	61%
Ealing	1	Outer London	61%
Redbridge	3	Outer London	61%
Hertfordshire	5	East of England	61%
Croydon	2	Outer London	60%

Table 7: Best 20 LEAs for pupils enrolled in at least one modern foreign language

Derbyshire	4	East Midlands	40%
Wolverhampton	1	West Midlands	40%
East Sussex	4	South East	39%
Walsall	2	West Midlands	39%
Bedford Borough	3	East of England	39%
Barking & Dagenham	1	Outer London	39%
City of Kingston-Upon-Hull	1	Yorkshire & Humber	38%
Knowsley	1	North West	38%
Cumbria	4	North West	38%
Wakefield	3	Yorkshire & Humber	37%
North East Lincolnshire	2	Yorkshire & Humber	36%
Blackburn	2	North West	36%
Isle of Wight	3	South East	35%
Blackpool	1	North West	34%
Oldham	2	North West	33%
Doncaster	3	Yorkshire & Humber	33%
Redcar and Cleveland	2	North East	32%
Sandwell	1	West Midlands	28%
Barnsley	3	Yorkshire & Humber	27%
Middlesbrough	1	North East	24%

Table 8: Lowest 20 LEAs for pupils enrolled in at least one modern foreign language

Subjects per pupil

Number of GCSEs per pupil varies greatly across the country

For our third set of analyses we have looked at the number of GCSEs per pupil in each LEA for science and modern foreign languages. This shows us how many pupils had access to science and languages which, while not core subjects (i.e. English and Maths), are studies to give a broad curriculum.

Science

This ranges from fewer than one (0.97) science GCSE per pupil in Knowsley in the Northwest to more than two in Redbridge, Ealing, Harrow, Cambridgeshire, Hammersmith & Fulham, North Yorkshire, Richmond upon Thames, Kingston upon Thames, Rutland, Sutton, Buckinghamshire and Isles of Scilly.

There is some relationship with deprivation – that is to say that fewer science GCSEs per pupil tend to occur in poorer areas – but there are some notable exceptions. Not least Hammersmith & Fulham and Ealing, which are in the lowest quintile but have more than two GCSEs per pupil.

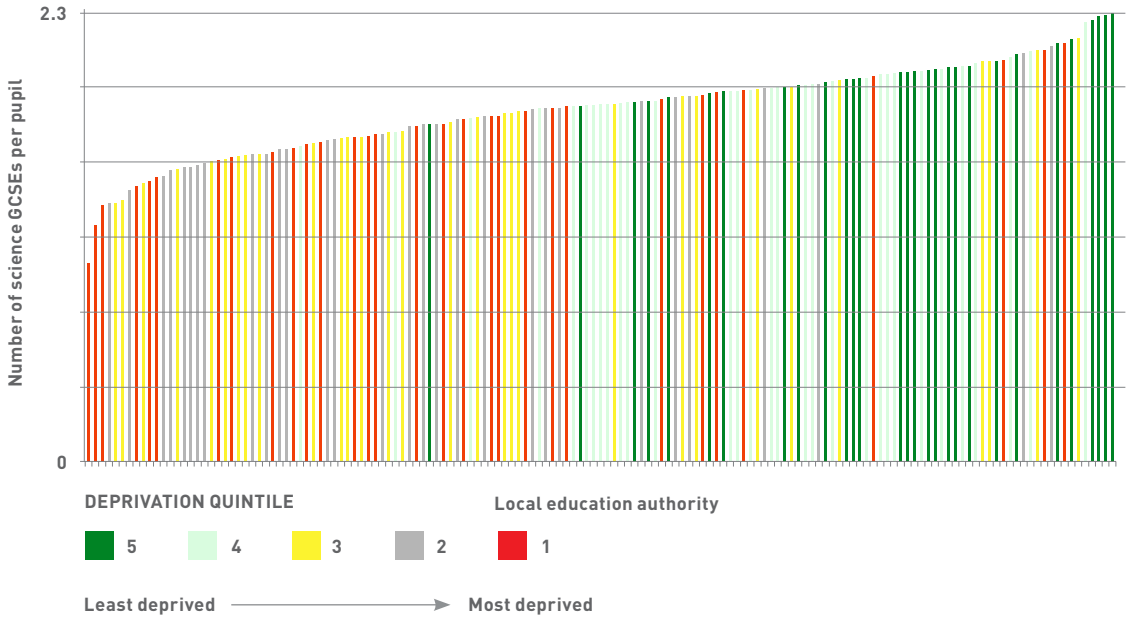


Chart 6: Number of science GCSEs per pupil with deprivation quintiles

Modern languages

The pattern for modern languages is more interesting. The number per pupil ranges from one in four pupils taking a language GCSE in Middlesbrough (0.24 entries per pupil) to nearly every pupil taking at least one language in Hammersmith & Fulham (0.90), Kingston upon Thames (0.93) and Kensington and Chelsea (0.98). There are a number of LEAs in the lowest deprivation quintile where more pupils are taking languages. This might be because areas of high deprivation tend to have a higher number of pupils with a background from another country or who may speak a language other than English other at home.

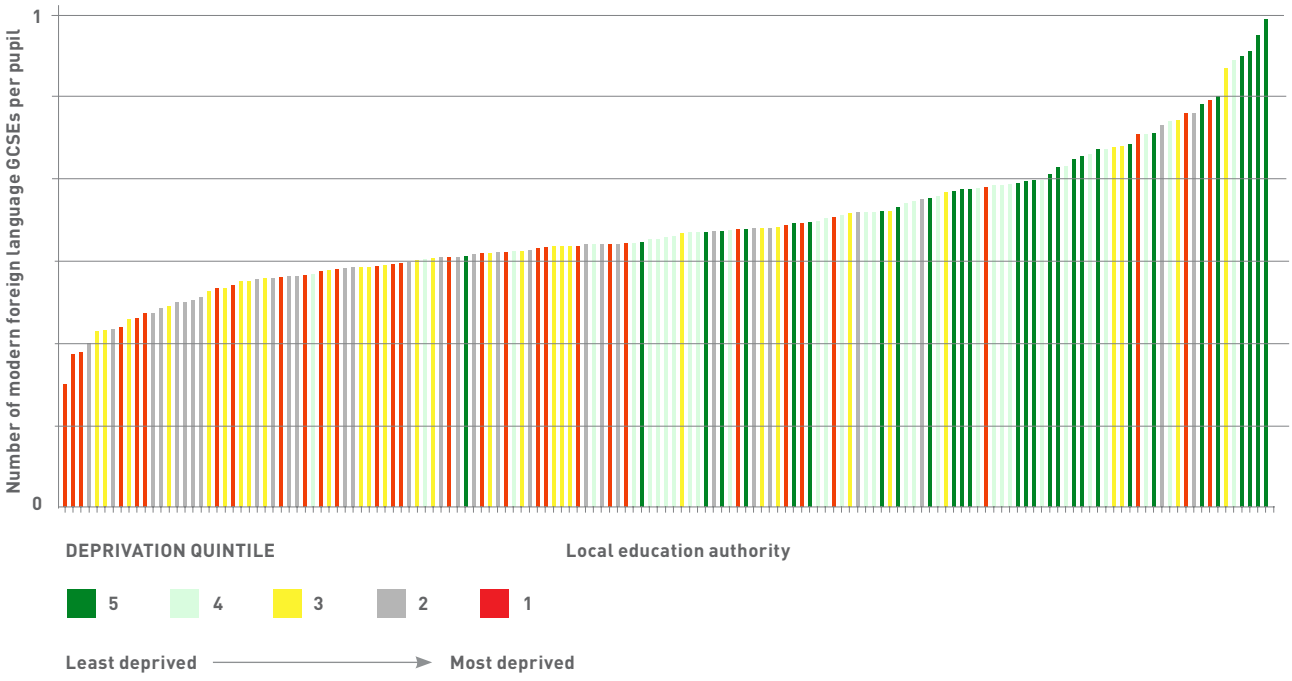


Chart 7: Number of modern language GCSEs per pupil with deprivation quintiles

Download data: GCSE enrolment data 2013-14 http://goo.gl/l8ld5a

Similar challenges, differing outcomes

Similar challenges, differing outcomes

We have included deprivation quintiles in this report to try to contextualise the analysis and recognise that different LEAs have different challenges in ensuring the best and most equitable education for the children in their care. However, as highlighted within each section, there are some exemplary LEAs which, despite being in the lowest deprivation quintile, have favourable outcomes (for the subject we have chosen).

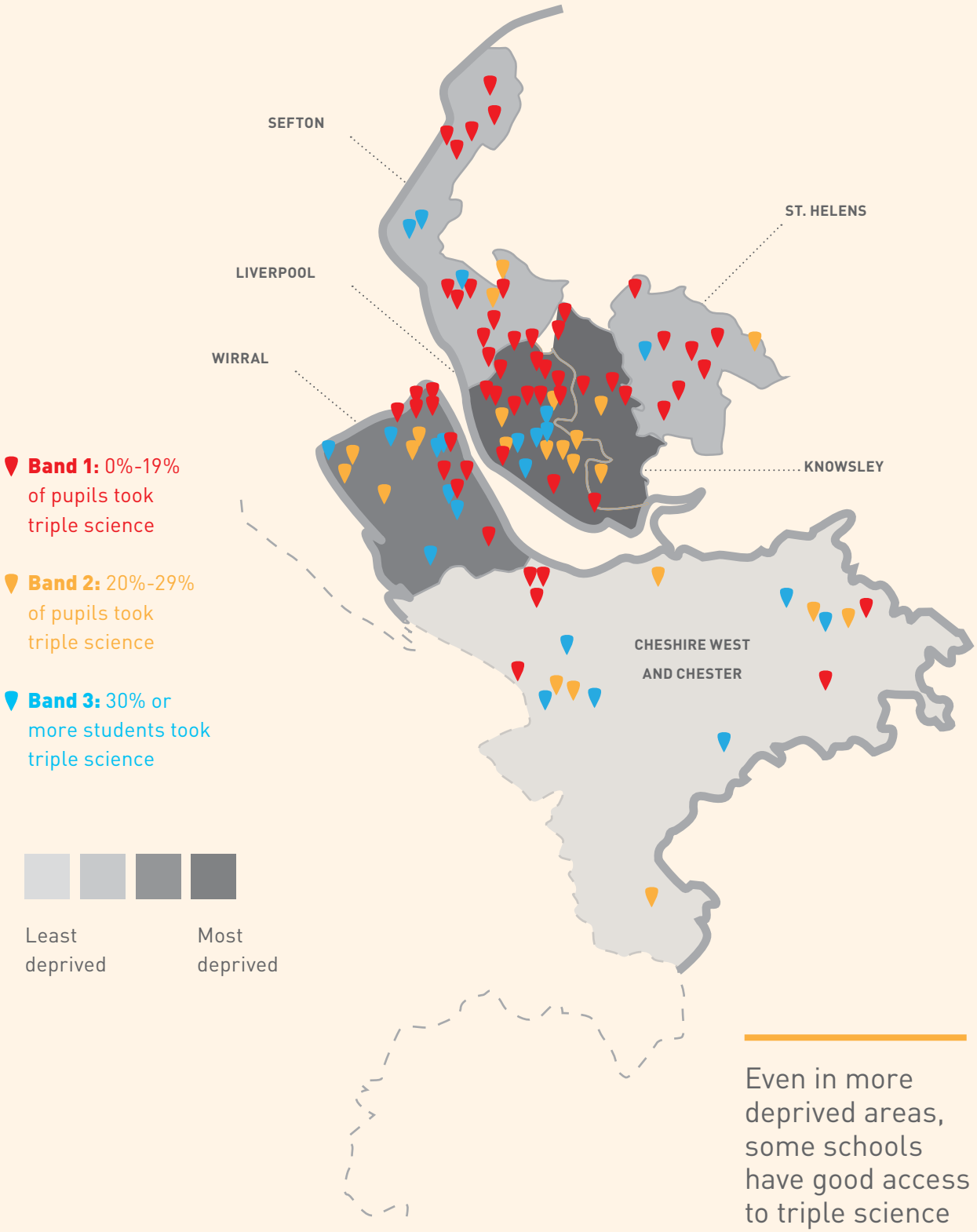
The starkest difference is perhaps between Hammersmith & Fulham in Inner London and Knowlsey in the Northwest. Both have the same number of schools (8 and 7 respectively) and a comparable number of free school meals (47 per cent versus 51 per cent) and yet the average number of science GCSEs per pupil (2.05) is more than double in Hammersmith & Fulham than in Knowsley (0.97). There are also three times the number of pupils enrolled for triple science in Hammersmith & Fulham.

	Hammersmith and Fulham	Knowsley
Schools	8	7
Region	Inner London	Northwest
Science entries per pupil	2.05	0.97
Percentage of pupils taking triple science	37%	11%
Percentage of pupils taking at least 1 science	91%	51%
Percentage of schools with no triple science	0%	43%
Language entries per pupil	90%	37%
Percentage of pupils taking at least one foreign language	67%	38%
Art and design entries per pupil	0.25	0.38
Percentage free school meals	47%	51%
Deprivation quintile	1	1

Table 9: A comparison of outcomes in Hammersmith & Fulham and Knowsley

We have also looked at the Merseyside metro area, which consists of six LEAs and differing outcomes with respect to whether triple science is offered across their schools.

Access to triple science across English schools



Even in more deprived areas, some schools have good access to triple science

Map 2:
Differing outcomes: Access to triple science in Merseyside

Case study

John Smeaton Academy, Leeds

Encourage students to choose subjects which match career ambitions

John Smeaton Academy is a comprehensive school with a sixth form serving the East of Leeds. The school was re-built in 1997 under the Building the Schools for the Future Initiative and has approximately 1,100 pupils. The proportion of students identified as eligible for pupil premium funding is high and is more than twice the national average. Most students are White British. The remaining numbers of students originate from a range of minority ethnic heritages with a few who speak English as an additional language. The proportion of students supported at School Action Plus or with a statement of special educational needs is high. The school has a learning unit for students aged 11 to 19 with complex learning needs.

Since May 2012 John Smeaton has been on an improvement journey since falling into Special Measures. As a result of this the school has seen significant changes. Since 2012 the school has had three monitoring visits, which have all demonstrated that they are making progress. John Smeaton became an Academy in January 2013 and became part of the United Learning trust of Schools and supported in this by Rodillian Academy in South East Leeds, which successfully undertook an improvement journey itself. In addition, John Smeaton is part of and supported by the Seacroft Manston Cluster. Clusters are a locality based way of working in Leeds, centred around a high school(s) and feeder schools in an area and working closely with the local Children's Centre. The Cluster Leader covers the role of Targeted Services Officers on behalf of Children's Services, Children's Social Care and Youth Services. The Cluster bodies commission services locally to support the needs of children, young people and families within their locality.

One of the key changes since 2012 has been around the curriculum and a much stronger focus on science. For many years leading up to the school going into Special Measures the only opportunity to study science was through B-Tec. Feedback from parents and students was that this was not providing the appropriate grounding for students to pursue further studies in the sciences. The school now offers biology, chemistry and physics at GCSE and A Level (with classes of between eight and 12 in each group). The school is clear with its students about the career paths at each stage and is encouraging students to choose groups of subjects which match their career and FE aspirations. Access to A Level sciences is dependent upon students achieving a B grade in core and additional science. In the past students have been accepted with lower GCSE grades, but success rates have been monitored and the entry requirements are now firmer to ensure that students are placed on appropriate courses.

Science is a key area in terms of recruitment, both locally and nationally and it has been of note that John Smeaton has recently appointed a new Head of Science with a physics specialism. The impact of this appointment is already being seen, with recent exam data showing improvements in outcomes, as well as positive feedback from students.

Again, as with the national picture, there is a need for more girls to be encouraged into science-based careers and contact has been made with Leeds University to allow support and mentoring for girls who are strong in these areas. There are also plans to bring successful women into school to work with girls to encourage them to follow science-based career paths.

The school has chosen to follow in the footsteps of John Smeaton himself and promote Engineering as a potential career option encouraging young people, where appropriate, to study subjects that will equip them with the skills and qualifications needed to move into these professions. One student is currently on placement with GSM Valtech in Wetherby, focusing on metal engineering and CAD design.

Forging links with local companies is seen as a key component of preparing young people for the world of work. Programmes which focus on 'employability' are in place with a range of organisations. Opportunities include workplace visits, pupil mentoring, interview skills – which involve students attending interviews at company offices – work experience and apprenticeships. The school actively engages with students to understand their aspirations and works hard to match young people with the right opportunities for work experience and so on. The links with business, particularly in Science, Technology, English and Maths (STEM)-related industries have been successful in presenting opportunities which students may not previously have considered. This has had a positive impact, with students changing their goals as a result of participating in these opportunities as well as, most importantly, raising their aspirations.

The school has participated in sector-related programmes facilitated by the Education Business Partnership at Leeds City Council and as a result has been successful at placing girls into work experience with O2 and Northern Gas.

The school provides a comprehensive package of student support to ensure young people are ready for learning and to support their progress through school and beyond into Higher Education, Further Education, apprenticeships or work. A very practical example of this support is the free breakfasts that are available in the school canteen to every student, every day. This epitomises the school's approach to reducing barriers to successful learning.

Methodology

We have used subject groups defined in the RM education school finder[9]. This groups the wide number of GSCEs available into 18 clusters of subjects. Science, for example, includes, Additional science, Applied science, Astronomy, Biology, Chemistry, Environmental science, Geology, Physics, Science (core), Science (double award).

To measure deprivation we have used percentage of pupil receiving free school meals as a proxy for understanding the deprivation of each LEA. This is standard practice when analysing education data (for example, it is used by the Department of Education). We have quintiled this information to be able to compare LEAs. Those in quintile one are in the most deprived segment and those in quintile five the least deprived.

Only mainstream State-funded schools are included in our analysis.

The data is based on 2013 GCSE results as per the Department of Education's national pupil database and analysed at the level of the 151 English local education authorities.

Analysis one: schools with no access to triple science. This includes all (mainstream State-funded) schools and entries in Biology, Chemistry and Physics. It measures the percentage of state-funded mainstream schools at which no pupils were entered for GCSE triple science in 2013.

Analysis two: which areas are most and least likely to enter pupils. This includes all (mainstream State-funded) schools and all science GCSEs as defined by the RM education school finder. It measures the percentage of pupils entered for GCSE triple science in 2013; the percentage of pupils entered for one GCSE in science in 2013; the percentage of pupils entered for BTEC/OCR in 2013 and percentage of pupils entered for GCSE modern foreign languages in 2013.

Analysis three: subjects per pupil. This includes all (mainstream State-funded) schools and all science GCSEs as defined by the RM education school finder. It measures the mean number of entries per pupil (school) for science and modern foreign languages.

[9] http://home.rm.com/schoolfinder

About OPSN

The Open Public Services Network (OPSN) is a programme of work 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.

OPSN is committed to using open data to create more effective and efficient public services in the UK. By presenting information to the public in an engaging way, OPSN enables public service users, professionals, regulators and policy makers to answer a range of questions about the quality of provision: are our local public services delivering their intended outcomes? How does their quality compare against similar organisations? Is their performance improving over the longer term?

Our first major project examined the quality of secondary education data published in England and can be read on the RSA's website.[10]

In 2015 we will also be publishing information about A Level performance and mental health services.

OPSN believes that the State should not have a monopoly on the answers to these questions. Nor the ability to determine which questions can be asked in the first place. Instead, we think that many different interpretations of the data are needed to address the different perspectives and requirements of parents, pupils, teachers and others involved in education.

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[10] http://www.thersa.org/action-research-centre/current-projects/open-public-services-network/empowering-parents,-improving-accountability

Last year, OPSN published our first major project, Empowering Parents, Enabling Accountability. We worked with The Guardian to build an online tool to create – for the first time – a dynamic set of information on schools' GCSE attainment data. This tool means that parents and pupils can ask their own questions of the data to find results that are relevant to them, whether by particular subject or geographical area. Rather than relying on a blanket five A*–C measure, interested members of the public, teachers and policy makers can understand how well schools are performing given pupils' prior attainment, demographics and other contextual factors.

The feedback we have had – from the Department for Education to headteachers – has been very positive. The collection, analysis and communication of data need not be a bureaucratic headache. Done well, data empowers and creates a learning system. Our interest in education continues and we will be publishing similar analyses of A Level results in 2015.

We would like to thank the Fischer Family Trust for their work on the analysis of education data used throughout. Also, ZPB for writing and editing the report and Design to Communicate for the design and infographics. We are also grateful for the generous support provided by Leeds City Council and the RSA.

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