



















OPSN Reference Group: Curriculum Breadth

In this note we illustrate some ideas for presenting information about curriculum breadth to parents.

Firstly we develop a classification of “subject groups”, firstly adopting that used by the RM School Finder website (<http://home.rm.com/schoolfinder>). This was designed to present subject-level attainment data for over 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 at Appendix 1. Further categories would have to be added to incorporate vocational subjects.

Table 1 shows an example of the classification for a single school. A dash indicates suppression¹. Three “difference” columns are shown, each demonstrating a different method of visualising data. In practice a single method would be shown based upon an agreed method of creating bands (see Section 2).

Table 1: Key Stage 4 Attainment and Entries by Subject Group, School A 2011

Subject Group	Pupils	Entries	Entries per pupil (School)	Entries per pupil (National)	Difference	Difference	Difference
Art & Design	216	51	0.2	0.3	0.0	 0.0	→ 0.0
Business Studies & Economics	216	17	0.1	0.1	0.0	 0.0	→ 0.0
Design & Technology	216	54	0.3	0.2	0.0	 0.0	→ 0.0
English	216	389	1.8	1.7	0.1	 0.1	→ 0.1
Geography	216	15	0.1	0.3	-0.2	 -0.2	→ -0.2
History	216	66	0.3	0.3	0.0	 0.0	→ 0.0
Home Economics	216	26	0.1	0.2	-0.1	 -0.1	→ -0.1
Information & Communication Technology	216	0	0.0	0.1	-0.1	 -0.1	→ -0.1
Languages	216	53	0.2	0.5	-0.2	 -0.2	↓ -0.2
Mathematics	216	294	1.4	1.1	0.3	 0.3	↑ 0.3
Media & Film Studies	216	67	0.3	0.1	0.2	 0.2	↑ 0.2
Music	216	10	0.0	0.1	0.0	 0.0	→ 0.0
Physical Education	216	27	0.1	0.2	0.0	 0.0	→ 0.0
Performing Arts	216	29	0.1	0.2	0.0	 0.0	→ 0.0
Religious Education/ Studies	216	162	0.8	0.3	0.4	 0.4	↑ 0.4
Science	216	346	1.6	1.7	-0.1	 -0.1	→ -0.1
Social Science	216	57	0.3	0.1	0.2	 0.2	→ 0.2
Other	216	0	0.0	0.1	-0.1	 -0.1	→ -0.1

¹ Data were suppressed by DfE if cell counts were based on either one or two pupils.

The curriculum mix at School A can be contrasted with that of School B (Table 2) where pupils were more likely to study languages.

Table 2: Key Stage 4 Attainment and Entries by Subject Group, School B 2011

Subject Group	Pupils	Entries	Entries per pupil (School)	Entries per pupil (National)	Difference	Difference	Difference
Art & Design	224	55	0.2	0.3	0.0	0.0	0.0
Business Studies & Economics	224	107	0.5	0.1	0.4	0.4	0.4
Design & Technology	224	17	0.1	0.2	-0.2	-0.2	-0.2
English	224	448	2.0	1.7	0.3	0.3	0.3
Geography	224	99	0.4	0.3	0.2	0.2	0.2
History	224	100	0.4	0.3	0.1	0.1	0.1
Home Economics	224	32	0.1	0.2	-0.1	-0.1	-0.1
Information & Communication Technology	224	51	0.2	0.1	0.2	0.2	0.2
Languages	224	481	2.1	0.5	1.7	1.7	1.7
Mathematics	224	224	1.0	1.1	-0.1	-0.1	-0.1
Media & Film Studies	224	0	0.0	0.1	-0.1	-0.1	-0.1
Music	224	32	0.1	0.1	0.1	0.1	0.1
Physical Education	224	56	0.3	0.2	0.1	0.1	0.1
Performing Arts	224	36	0.2	0.2	0.0	0.0	0.0
Religious Education/ Studies	224	223	1.0	0.3	0.7	0.7	0.7
Science	224	664	3.0	1.7	1.2	1.2	1.2
Social Science	224	30	0.1	0.1	0.1	0.1	0.1
Other	224	18	0.1	0.1	0.0	0.0	0.0

Any of the subject groups can be expanded to show group members, as illustrated for languages for School A in Table 3 (note that national averages and differences should also be shown).

Table 3: Key Stage 4 Attainment and Entries by Subject Group (languages expanded), School A 2011

Subject Group	Pupils	Entries	Entries per pupil
Art & Design	216	51	0.2
Business Studies & Economics	216	17	0.1
Design & Technology	216	54	0.3
English	216	389	1.8
Geography	216	15	0.1
History	216	66	0.3
Home Economics	216	26	0.1
Information & Communication Technology	216	0	0.0
Languages	216	53	0.2
Arabic	216	3	0.0
French	216	25	0.1
Italian	216	<3	0.0
Polish	216	8	0.0
Portuguese	216	<3	0.0
Russian	216	<3	0.0
Spanish	216	17	0.1
Mathematics	216	294	1.4
Media & Film Studies	216	67	0.3
Music	216	10	0.0
Physical Education	216	27	0.1
Performing Arts	216	29	0.1
Religious Education/ Studies	216	162	0.8
Science	216	346	1.6
Social Science	216	57	0.3
Other	216	0	0.0

Note that the 'true' number of entries in languages at the above school was between 56 and 59. The total of 53 presented is a 'quirk' of using published data which has had suppression rules applied.

2. Creating Bands

The creation of bands denoting schools with numbers of entries that are below/ above average (for instance to define the visualisations shown in Table 1) has to take into account variation between schools and subject groups in the number of entries per pupil.

Table 4 shows the mean number of entries per pupil nationally for each of the subject groups proposed in Table 1. These vary from 0.06 (ICT) to 1.72 (English). Large proportions of schools had no entrants in business studies & economics, ICT, media & film studies, social science and 'other' subjects. We refer to these below as minority subjects.

Table 4: Mean entries per pupil by subject group, full course, double and international GCSEs, state-funded mainstream schools 2011

Subject Group	Mean	% schools with no entries
Art & Design	0.26	6%
Business Studies & Economics	0.12	50%
Design & Technology	0.26	7%
English	1.72	0%
Geography	0.26	5%
History	0.31	2%
Home Economics	0.23	12%
ICT	0.06	78%
Languages	0.42	1%
Mathematics	1.11	0%
Media & Film Studies	0.10	53%
Music	0.07	22%
PE	0.16	21%
Performing Arts	0.16	18%
RE	0.32	27%
Science	1.71	0%
Social Science	0.09	63%
Other	0.09	54%

Table 5 summarises the school-level distribution of entries per pupil by subject group. Entries in science ranged from 0 to 3.2. Aside from English, mathematics and science and the minority subjects noted above, median entries per pupil ranged from 0.06 to 0.33.

Table 5: School distribution of entries per pupil by subject group, state-funded mainstream schools 2011

	Minimum	Percentiles					Maximum
		5	25	50	75	95	
Art & Design	0.00	0.00	0.17	0.25	0.34	0.50	1.19
Business Studies & Economics	0.00	0.00	0.00	0.01	0.21	0.40	0.99
Design & Technology	0.00	0.00	0.13	0.22	0.34	0.57	1.22
English	0.87	1.22	1.55	1.79	1.93	2.00	2.09
Geography	0.00	0.03	0.15	0.24	0.35	0.54	0.98
History	0.00	0.08	0.20	0.30	0.41	0.58	0.91
Home Economics	0.00	0.00	0.11	0.21	0.33	0.51	1.05
ICT	0.00	0.00	0.00	0.00	0.00	0.39	1.00
Languages	0.00	0.05	0.17	0.33	0.59	1.08	2.15
Mathematics	0.68	0.95	0.98	1.00	1.17	1.65	2.45
Media & Film Studies	0.00	0.00	0.00	0.00	0.17	0.36	1.04
Music	0.00	0.00	0.02	0.06	0.10	0.17	0.35
PE	0.00	0.00	0.07	0.16	0.24	0.36	1.08
Performing Arts	0.00	0.00	0.06	0.14	0.22	0.37	1.33
RE	0.00	0.00	0.00	0.14	0.68	0.98	1.00
Science	0.00	0.67	1.33	1.77	2.09	2.52	3.22
Social Science	0.00	0.00	0.00	0.00	0.11	0.41	1.71
Other	0.00	0.00	0.00	0.00	0.11	0.35	1.29

Differences between school and national averages in the mean number of entries per pupil also vary by subject group (Table 6). Entries in RE, for example, are dominated by a small number of schools at which the majority of pupils are entered. The differences between the school at the 5th percentile and the school at the 95th percentile are generally in the range 0.2 to 0.7 entries per pupil. The range of scores for English and science is greater.

Table 6: School distribution of differences compared to national averages in entries per pupil by subject group, state-funded mainstream schools 2011

	Minimum	Percentiles					Maximum
		5	25	50	75	95	
Art & Design	0	-0.26	-0.26	-0.09	-0.01	0.08	0.24
Business Studies & Economics	0	-0.12	-0.12	-0.12	-0.12	0.09	0.28
Design & Technology	0	-0.26	-0.26	-0.13	-0.03	0.09	0.32
English	0	-0.85	-0.51	-0.18	0.06	0.21	0.28
Geography	0	-0.26	-0.23	-0.11	-0.02	0.09	0.28
History	0	-0.31	-0.23	-0.11	-0.01	0.10	0.27
Home Economics	0	-0.23	-0.23	-0.12	-0.02	0.10	0.28
ICT	0	-0.06	-0.06	-0.06	-0.06	-0.06	0.33
Languages	0	-0.42	-0.38	-0.25	-0.10	0.16	0.66
Mathematics	0	-0.43	-0.16	-0.12	-0.11	0.06	0.54
Media & Film Studies	0	-0.10	-0.10	-0.10	-0.10	0.06	0.26
Music	0	-0.07	-0.07	-0.05	0.00	0.03	0.10
PE	0	-0.16	-0.16	-0.10	0.00	0.07	0.20
Performing Arts	0	-0.16	-0.16	-0.10	-0.02	0.06	0.21
RE	0	-0.32	-0.32	-0.32	-0.18	0.36	0.66
Science	0	-1.71	-1.04	-0.38	0.06	0.38	0.81
Social Science	0	-0.09	-0.09	-0.09	-0.09	0.02	0.32
Other	0	-0.09	-0.09	-0.09	-0.09	0.02	0.27

Reasonable bands are produced by standardising entries per pupil at school level around the national mean and standard deviation for each subject group. Cutpoints at +/-0.9 and +/- 1.645 standard deviations were used to flag schools that were above/ below or well above/ below the national average. 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% of schools as average in each subject group (Table 7).

Table 7: Entries per pupil (banded) by subject group, state-funded mainstream schools 2011

	Band				
	Well below average	Below average	Average	Above average	Well above average
Art & Design	9.0%	7.4%	68.2%	6.3%	9.1%
Business Studies & Economics	0.0%	0.0%	82.0%	6.0%	12.0%
Design & Technology	7.7%	10.1%	65.6%	5.7%	10.9%
English	14.4%	7.3%	56.6%	21.6%	0.1%
Geography	8.7%	11.5%	60.5%	7.1%	12.1%
History	10.2%	10.4%	59.8%	7.7%	11.9%
Home Economics	13.5%	7.8%	60.3%	7.4%	10.9%
ICT	0.0%	0.0%	89.5%	2.0%	8.5%
Languages (other)	2.1%	16.9%	62.4%	4.8%	13.7%
Mathematics	0.2%	0.7%	85.8%	3.1%	10.3%
Media & Film Studies	0.0%	0.0%	86.1%	5.1%	8.8%
Music	0.0%	25.7%	55.7%	6.7%	11.9%
PE	21.5%	2.2%	61.4%	6.4%	8.5%
Performing Arts	0.0%	21.6%	64.2%	6.5%	7.7%
RE	0.0%	0.0%	74.1%	4.3%	21.6%
Science (other)	13.5%	7.0%	63.0%	9.5%	7.1%
Social Science	0.0%	0.0%	90.1%	3.2%	6.7%
Other	0.0%	0.0%	90.0%	4.0%	6.0%

Appendix 1: Subject Groups used in RM School Finder

Subject Group	Subject Name
Art & Design	Applied Art & Design Art & Design Art & Design (3d Studies) Art & Design (Critical Studies) Art & Design (Fine Art) Art & Design (Graphics) Art & Design (Photography) Art & Design (Textiles)
Business Studies & Economics	Applied Business Business Studies:Single Business Studies & Economics Economics
Design & Technology	D&T Electronic Products D&T Engineering D&T Graphic Products D&T Product Design D&T Resistant Materials D&T Systems & Control Design & Technology Electronics
English	English English Language English Language & 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 & Catering
ICT	Applied Information Communication Technology Computer Studies/Computing Information & Communications Technology
Languages	Arabic Bengali Chinese Classical Greek Dutch English for Speakers of other Languages French German

Subject Group	Subject Name
	Gujarati
	Hindi
	Irish
	Italian
	Japanese
	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 & Film Studies	Film Studies
	Media/Film/Tv Studies
	Media: Communication & Production
Music	Music
Other	Applied Engineering
	Classical Civilisation
	Construction
	Construction & the Built Environment
	Engineering
	General Studies
	Health & Social Care
	Leisure & Tourism
	Manufacturing
	Motor Vehicle Studies
	Office Technology
PE	Applied Physical Education
	Physical Education/Sports Studies
Performing Arts	Dance
	Drama & Theatre Studies
	Expressive Arts & Performance Studies
	Performing Arts
Religious Education/ Studies	Religious Studies
Science	Additional Applied Science
	Additional Science
	Applied Science
	Astronomy

Subject Group	Subject Name
	Biology
	Chemistry
	Environmental Science
	Geology
	Physics
	Science (Core)
	Science: Double Award
Social Science	Humanities: Single
	Law
	Psychology
	Social Science: Citizenship
	Sociology