



In which countries do the most highly qualified and experienced teachers teach in the most difficult schools?

PISA

PISA in Focus #85



## In which countries do the most highly qualified and experienced teachers teach in the most difficult schools?

- In 2015, a majority of countries and economies that participated in PISA compensated disadvantaged schools with smaller classes and/or lower student-teacher ratios. However, in more than a third of countries and economies, teachers in the most disadvantaged schools were less qualified or less experienced than those in the most advantaged schools.
- Gaps in student performance related to socio-economic status were wider in countries where socio-economically disadvantaged schools employed fewer qualified and experienced teachers than advantaged schools.
- Greater school autonomy for managing teachers is associated with more equitable sorting of teachers across schools.

Teachers are the most important school resource. In every country, teachers' salaries and training represent the greatest share of expenditure on education; and this investment in teachers can have significant returns. Research shows that being taught by the best teachers can make a real difference in the learning and life outcomes of otherwise similar students.

But not all students are equal when it comes to access to high-quality teaching. In fact, PISA data show that there are inequities in access to experienced and qualified teachers in many countries, and that they are related to the gap in learning outcomes between advantaged and disadvantaged students.

### More is not necessarily better.

An analysis of PISA 2015 data ranked all lower-secondary schools or upper-secondary schools (depending on the typical school level attended by 15-year-olds) by their socio-economic profile – that is, the average socio-economic status of 15-year-old students attending the school. From this ranking, four groups of schools were created in each country, with each group having approximately 25% of all 15-year-old students. The group of schools with the lowest average socio-economic profile represents socio-economically disadvantaged schools; the group of students with the highest socio-economic profile represents advantaged schools. The analysis then compared class size, student-teacher ratios, teachers' credentials and, in countries that collected this information, teachers' experience, between advantaged and disadvantaged schools.

Results clearly show that a majority of countries and economies that participated in PISA 2015 compensate disadvantaged schools with smaller classes and/or lower student-teacher ratios; this is particularly true when analyses are restricted to public and government-dependent private schools. However, in more than a third of countries and economies, including many that compensate disadvantaged schools with more teachers, teachers in the most disadvantaged schools are less qualified and/or less experienced than teachers in the most advantaged schools.

The size of language-of-instruction classes is smaller in disadvantaged schools than in advantaged schools in 38 out of 69 countries and economies participating in PISA, including Canada, France, Germany, Japan, Korea, Mexico, the Netherlands and Poland. Meanwhile, even if class size is not significantly different in disadvantaged schools compared to advantaged schools, Denmark, Ireland, Italy, Spain, and public and government-dependent private schools in the United States compensate disadvantaged schools with more teachers per student.

But far fewer education systems ensure that more qualified teachers or a greater share of fully certified teachers are found in disadvantaged schools. In fact, the opposite is often observed. In France, Italy and the Netherlands, and in 16 out of 66 countries/economies, teachers in the most disadvantaged schools are less likely to be fully certified than teachers in advantaged

## Difference between advantaged and disadvantaged schools in teacher resources

Results based on principals' reports

	ALL SCHOOLS				PUBLIC SCHOOLS AND GOVERNMENT-DEPENDENT PRIVATE SCHOOLS			
	Class size (number of students)	Number of students per teacher	Proportion of science teachers with a major in science (%)	Proportion of fully certified teachers (%)	Class size (number of students)	Number of students per teacher	Proportion of science teachers with a major in science (%)	Proportion of fully certified teachers (%)
<b>OECD</b>								
Australia	25	13   12	91   96	96	25	13	92	96
Austria	24	10	40   84	89	24	10	39   87	88
Belgium	17   23	7   10	48	82   95	18   23	7   11	38   57	84
Canada	24   28	13   15	78	97	24   28	13   16	77	97
Chile*	34	18	72	25	35	16   21	70	23
Czech Republic	21   27	13	56   71	91   96	21   27	13	57   71	91   96
Denmark	22	11   13	86		22	11   14	85	
Estonia	20   30	8   12	71	94	19   29	8   12	70	94
Finland	18   20	10	83	93	18   20	10	83	93
France	25   33	9   12	87	19   90	25   33	9   12	87	20   92
Germany	22   28	14	79	91	22   27	14	75   90	92
Greece	24	8	44	91	24	7   10	42	90
Hungary	26   31	6   10	75		26   32	6   9	74	
Iceland	17   22	9	20   35	82   91	17   22	9	20   36	82   92
Ireland	25	12   14	93	99	24	12   14	92	100
Israel	28   33	10	83	79				
Italy	23	8   13		83   95	23	8   13		83   97
Japan	33   38	9		96	32   38	9		96
Korea	29   32	13   15	90	96	31	13   15	92	96
Latvia	17   24	7   11	79	65	17   25	7   11	80	66
Luxembourg	21   23	9   11	63   81	64   88	20   23	9   11	63   79	64   85
Mexico	34   40	20	53   78	57   33	33   44	17   27	53   79	58   23
Netherlands	22   27	13   20	23   51	75   94	22   27	14   20	23   50	75   94
New Zealand	25	14	93	92	26	12   15	92	92
Norway	22   26	9   11	40   70	88	22   27	9   11	42   70	88
Poland	22   26	8	92	99	22   26	8	93	99
Portugal	24   27	10   12	87	92   98	24   28	10   11	86	96
Slovak Republic	19   25	12	62	89   96	19   25	12	62	89   96
Slovenia	25   28	9	82   88	97	25   28	9	82   88	97
Spain	27	11   15	82	93	27	11   15	82	93
Sweden	22   25	11	79	89	22   25	11	79	89
Switzerland	20	11	46   91	86	20	12	46   92	87
Turkey	48	14	78	90	48	14	79	92
United Kingdom	24	14	92   99	92	23   26	13   16	92   98	96
United States	26	14	96   80	92	26	14   17	94	94   99
<b>Partners</b>								
Albania	27	7	72	84	28	8	70	84
Algeria	30	17	36	91	29	17	36	91
Brazil	37	22	21   39	87	37	22	29	89
B-S-J-G (China)	46	13	65   90	98	47   43	12	71   98	98
Bulgaria	25	12	94   100	97	24   27	11   14	94   100	98
CABA (Argentina)	40	8	18   51	89	40	7	32	92
Colombia	30   35	24   20	80	11	30   40	27	84	8
Costa Rica	28	17	93   100	90	28	17	97	93
Croatia	24   27	10   12	89	95	24   27	10   12	89	95
Dominican Republic	36	19	67		38	19	76	
FYROM	26	12	76   84	78	26	12	76   83	70   75
Georgia	31   43	9   13	77	18   38	31   45	9   18	76	19   44
Hong Kong (China)	31	12   14	89	95	31	12   14	89	95
Indonesia	27   35	12	72   88	40   82	26   33	12	82	41   89
Jordan	33	14	82	71	33	13	84	75
Kosovo	25   31	15	100   67	73	25   32	15	100   53	75
Lebanon	27	10	71	69	27	7   10	58   100	77
Lithuania	20   27	8   12	93	99	20   27	8   12	93	99
Macao (China)	35   37	13	88   94	100	35	14	88   98	100
Malta	17   22	5   9	39   79	96   83	17   22	5   8	39   93	96   70
Moldova	22   28	11   13	55	67   78	22   27	11   13	54	67   79
Montenegro	26   30	11   9	98	98	26   30	11   9	98	98
Peru	25   28	15	19	92   76	24   31	13   22	19	91
Qatar	34   26	12	28   35	45   60	29   32	7   9	6   27	100   72
Romania	23   29	14	84	92	23   29	15	84	93
Russia	18   26	8   14	89   97	98	18   26	8   14	89   97	98
Singapore	34   31	12	91   95	91	35	12	92	99   91
Chinese Taipei	36   39	14   18	94	86   94	34	14	94	89   95
Thailand	33   43	18	90	94	33   43	16   20	91	94
Trinidad and Tobago	25   34	10   15	80	38   64	25   35	10   14	83   78	39   63
Tunisia	28	10	79	92	28	10	77	91
United Arab Emirates	33   26	15   13	90	27   18	32	10	77   82	50
Uruguay	27	12	6	54   63	24   30	12	5	56
Viet Nam	41	15	89	86	42	15	89	86
Education systems where disadvantaged schools are better off	38	24	2	4	39	34	3	4
Education systems with no difference	28	41	42	46	28	33	43	47
Education systems where advantaged schools are worse off	3	4	23	16	1	1	20	14

Missing values

mm Difference not significant (the overall mean, mm, is reported)

dd | aa Disadvantaged schools (mean, dd) are worse off compared to advantaged schools (mean, aa)

dd | aa Disadvantaged schools (mean, dd) are better off compared to advantaged schools (mean, aa)

\*In Chile, the question about the certification of teachers was adapted as "authorised or enabled by the Ministry of Education".

Notes: Differences in class size of fewer than two students and of student-teacher ratios of fewer than one student are not reported as significant; differences in proportions of science teachers with a major in science and of fully certified teachers of less than four percentage points are not reported as significant. Larger differences are reported as significant based on the estimated standard errors.

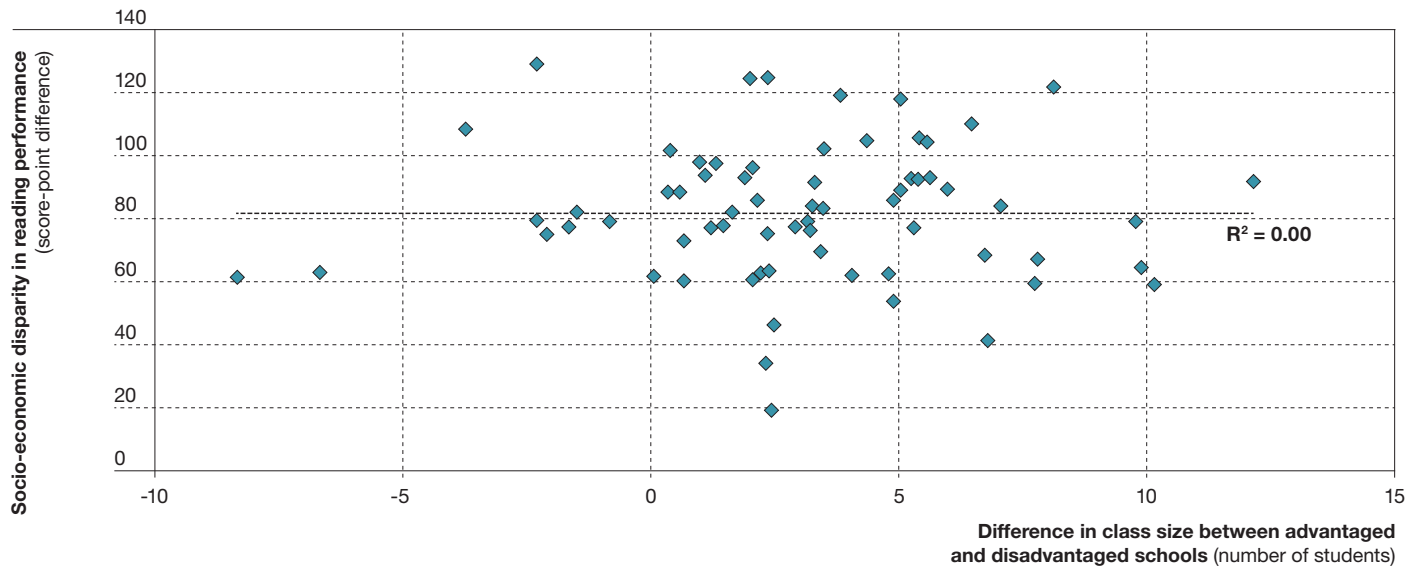
Countries and economies are ranked by OECD/partner status and in alphabetical order.

Source: OECD (2018), *Effective Teacher Policies: Insights from PISA*, Figure 1.2.



## Relationship between socio-economic differences in reading performance and in class size

Difference in reading performance between students in the top quarter and students in the bottom quarter of socio-economic status and average difference between advantaged and disadvantaged schools in the size of language-of-instruction classes



Notes: The dotted line indicates a non-significant relationship.

Source: OECD (2018), *Effective Teacher Policies: Insights from PISA*, Table 3.1; OECD (2016), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Table I.6.3b, <http://dx.doi.org/10.1787/888933433214>.

schools; a similar gap is observed between advantaged and disadvantaged public schools in the United States. In Australia, Mexico and the United Kingdom, and in 23 out of 67 countries/economies, science teachers in the most disadvantaged schools are less likely to have a university degree with a major in science compared to science teachers in advantaged schools. In countries that surveyed teachers as part of PISA 2015, similar gaps – to the detriment of disadvantaged schools – are also found for other teacher characteristics that correlate with teacher quality, such as the proportion of teachers with more than five years of experience, or the proportion of teachers on short-term temporary contracts.

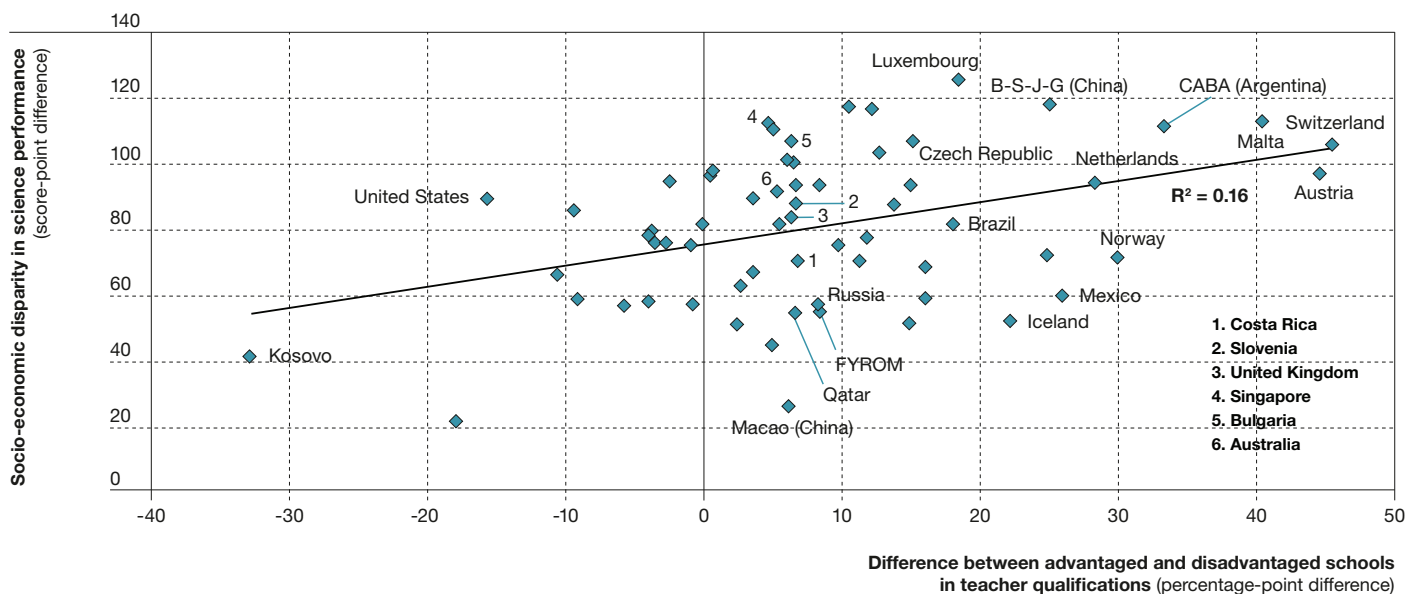
## Education should strive to ameliorate, not exacerbate, economic and social inequities.

While all countries have disparities in student performance related to socio-economic status, countries in which teachers' qualifications and experience are significantly better in advantaged schools than in disadvantaged schools tend to have larger performance gaps related to students' socio-economic status and therefore less equitable outcomes. At the same time, countries that compensate for disadvantage in schools with smaller classes and lower student-teacher ratios do not, on average, have narrower performance gaps related to socio-economic status. That may be because such quantitative compensations do not translate into higher-quality teachers and teaching. This suggests that it is not sufficient, and perhaps not necessary, for the most disadvantaged schools to have more teachers, as long as these schools are able to attract the most talented and effective teachers.

Opponents to school autonomy often argue that greater independence of schools might lead to larger disparities in student performance and, perhaps more worryingly, to an education system that exacerbates, rather than ameliorates, existing economic and social inequities. But PISA data suggest that this is not the most common result of greater school autonomy.

## Relationship between socio-economic differences in science performance and in teacher qualifications

Difference in science performance between students in the top quarter and students in the bottom quarter of socio-economic status and average difference between advantaged and disadvantaged schools in the proportion of science teachers with a major in science



Note: Countries on the chart show a significant difference between advantaged and disadvantaged schools in the proportion of science teachers with a major in science. Countries/economies where the difference is not significant are Albania, Algeria, Belgium, Canada, Chile, Colombia, Denmark, the Dominican Republic, Estonia, Finland, France, Georgia, Germany, Greece, Hong Kong (China), Hungary, Indonesia, Ireland, Israel, Jordan, Korea, Latvia, Lebanon, Lithuania, Moldova, Montenegro, New Zealand, Peru, Poland, Portugal, Romania, the Slovak Republic, Spain, Sweden, Chinese Taipei, Thailand, Trinidad and Tobago, Tunisia, Turkey, the United Arab Emirates, Uruguay and Viet Nam.

OECD (2018), *Effective Teacher Policies: Insights from PISA*, Table 3.11; OECD (2016), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, Table I.6.3a, <http://dx.doi.org/10.1787/888933433214>.

Many countries have been able to combine extensive autonomy of schools with strong incentives to ensure that schools prioritise student learning over other considerations, and with compensatory funding mechanisms to ensure that equity is not jeopardised. Ireland provides an interesting example. While most Irish schools are private, the government provides almost all funding; and the schools with the highest concentrations of pupils from disadvantaged backgrounds receive significantly more funds and are given priority access to government-led education programmes, including teacher-training programmes. Perhaps as a result, the most disadvantaged schools not only have smaller student-teacher ratios compared to advantaged schools, but also have teachers who are at least as qualified as those in advantaged schools.

### The bottom line

Most countries can do more to oversee how teachers are allocated to schools: they should not only monitor the number of teachers, but also keep a close eye on their qualifications, experience and effectiveness. Any teacher policy that aims to tackle student disadvantage should strive to allocate high-quality teachers, and not just more teachers, to underprivileged students.

## For more information

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**See:** OECD (2018), *Effective Teacher Policies: Insights from PISA*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264301603-en>.

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