PROGRAMME FOR INTERNATIONAL
STUDENT ASSESSMENT (PISA)
RESULTS FROM PISA 2012

UNITED KINGDOM

Key findings

- The United Kingdom performs around the average in mathematics and reading and above average in science, compared with the 34 OECD countries that participated in the 2012 PISA assessment of 15-year-olds.

- When compared with PISA 2006 and PISA 2009, there has been no change in performance in any of the subjects tested. (The PISA 2000 and 2003 samples for the United Kingdom did not meet the PISA response-rate standards, so the observed higher performance in 2000 should not be used for comparisons.)

- The United Kingdom is listed 26th in mathematics performance, but because results are based on a sample, its relative position could be between 23rd and 31st. Its performance is similar to Czech Republic, Denmark, France, Iceland, Republic of Ireland, Latvia, Luxembourg, New Zealand, Norway and Portugal.

- The United Kingdom has a higher GDP and spends more on education than the average in OECD countries, as well as higher levels of tertiary education and a lower share of the most socio-economically deprived groups. However, these comparative advantages do not have a clear relationship with educational outcomes.

- As in many other countries, socio-economically disadvantaged students in the United Kingdom are less likely to succeed at school than their more advantaged peers. However, some countries are more successful than the United Kingdom in reducing the influence of socio-economic status on student performance.

- On the other hand, students from an immigrant background (first or second generation) in the United Kingdom perform as well in mathematics as other students. This is in contrast to the situation observed in many other OECD countries, where students from an immigrant background score significantly lower.

- Students in the United Kingdom are generally positive about their experiences at school and about the climate in their classrooms. As in many other countries, they are much less positive about learning mathematics, although students in the United Kingdom are less anxious about mathematics than the average across OECD countries.

- Girls in the United Kingdom do not enjoy mathematics, are anxious when asked to solve mathematical problems, and underperform compared with boys. Boys also outperform girls in science. Girls outperform boys in reading, although the gap is smaller than in many other countries.

Student performance in mathematics, reading and science

Mathematics performance

- Students in the United Kingdom score 494 points in mathematics, on average – at the OECD average and comparable with the Czech Republic, Denmark, France, Iceland, Republic of Ireland, Latvia, Luxembourg, New Zealand, Norway and Portugal. Mean performance in mathematics has remained unchanged since 2006 and 2009.

- The proportions of top performers (students who attain proficiency Level 5 or 6; who can develop and work with models for complex situations, and work strategically using broad, well-developed thinking and reasoning skills) and low performers (students who do not attain the baseline proficiency Level 2; these students can, at best, extract relevant information from a single source and can use basic algorithms, formulae, procedures or conventions to solve problems involving whole numbers) are similar to the OECD average. The proportion of top performers was 12% compared with an OECD average of 13% while the proportion of low performers was 22% compared with an average of 23%.

- Boys in the United Kingdom outperform girls in mathematics by an average of 12 points, which is similar to the OECD average gender gap of 11 points.

- Scores for mathematics were similar in England (495) and Scotland (498). In both cases this showed little change from PISA 2009, where the scores were 493 and 499 respectively. The score in Northern Ireland was 487, compared with a score of 492 in PISA 2009. As in PISA 2009, mathematics performance in Wales was lower than the rest of the United Kingdom, with a score of 468 points compared with 472 in PISA 2009.

Student performance in different areas of mathematics

- The United Kingdom's 15-year-old students do not show large differences in their scores on the three mathematical processes measured in PISA. They have the highest mean scores in *interpreting*, *applying and evaluating* mathematical outcomes. They have the lowest mean scores in *formulating situations mathematically*, and perform close to their overall performance level in *employing mathematical concepts, facts, procedures and reasoning*.

- Of the four mathematical content areas assessed by PISA, UK students scored above their overall mathematics score in *uncertainty and data*, and scored similar to their overall mathematics score in the areas of *change and relationships* and *quantity*. Their performance in *space and shape* was somewhat below their overall performance. These strengths and weaknesses may reflect differences in curriculum priorities and in course content available to 15-year-olds. The *space and shape* subscale, where UK students struggle the most, is closely linked to geometry, but also draws on other areas, such as spatial visualisation, measurement and algebra.

Reading performance

- Students in the United Kingdom score 499 points in reading, on average – at the OECD average and comparable with the Czech Republic, Denmark, France, Germany, Norway and the United States. Mean reading performance has remained unchanged since 2006 and 2009.

- The proportions of top performers (students who attain proficiency Level 5 or 6; they can handle texts that are unfamiliar in either form or content and can conduct fine-grained analyses of text) and low-performers (students who do not attain the baseline proficiency Level 2; they can, at best, recognise the main theme or author's purpose in a text about a familiar topic and make a simple connection between information in the text and everyday knowledge) are similar to the OECD average. The proportion of top performers was 9%

compared with an OECD average of 8% while the proportion of low performers was 17% compared with an average of 18%.

- Girls outperform boys in reading by an average of 25 points, significantly less than the OECD average gender gap of 38 points.

- The score for reading in Scotland was 506 points, slightly higher than that in England (500), and Northern Ireland (498). This compares with scores of 500 in Scotland, 495 in England and 499 in Northern Ireland in PISA 2009. As in PISA 2009, reading performance in Wales was lower than the rest of the United Kingdom, with a score of 480 points compared with 476 in PISA 2009.

Science performance

- Students in the United Kingdom score 514 points in science, on average – above the OECD average and comparable with Australia, Austria, the Czech Republic, Ireland, the Netherlands, New Zealand, Slovenia and Switzerland. Mean science performance has remained unchanged since PISA 2006 and PISA 2009.

- The proportion of top performers in science – students who attain proficiency Level 5 or 6 – was 11% in the United Kingdom, above the OECD average of 8%. At these levels, students can identify, explain and apply scientific knowledge and knowledge about science in a variety of complex life situations. At 15%, the proportion of low performers in science – students who do not attain the baseline proficiency Level 2 – is below the OECD average of 18%. At this level, students can, at best, present scientific explanations that are obvious and follow explicitly from given evidence.

- Boys outperform girls in science by an average of 13 points, which is a larger difference than the OECD average gender gap of 1 score point.

- Scores for science were 516 in England, 513 in Scotland and 507 in Northern Ireland. This showed little change from PISA 2009, where the scores were 515, 514 and 511 respectively. As in PISA 2009, science performance in Wales was lower than the rest of the United Kingdom, with a score of 491 points compared with 496 in PISA 2009.

Context

Expenditure per student explains 30% of the variation in mean mathematics performance between countries. However, moderate or high spending per student cannot automatically be equated with particularly poor or high performance. For example, the Slovak Republic, which spends around USD 53 000 per student, performs at the same level as the United States, which spends over USD 115 000 per student. Similarly, Korea, the highest-performing OECD country in mathematics, spends well below the average per-student expenditure.

- The United Kingdom spends more per head on education than the average across OECD countries, with a cumulative expenditure per student between 6 and 15 years at USD 98 023. The OECD average is USD 83 382.

- GDP per capita in the United Kingdom is USD 35 299 against an OECD average of USD 33 732.

- The level of tertiary education is relatively high in the United Kingdom; 43% of 35-44 year-olds have a tertiary qualification against an OECD average of 34%.

- In the United Kingdom, only 6% of PISA students have a very low score on the PISA index of socio-economic background while on average, across OECD countries this proportion is 15%.

Giving every student the chance to succeed

Equity in the context of performance

Across OECD countries, 15% of the variation in student performance in mathematics is attributed to differences in students' socio-economic status. Australia, Canada, Estonia, Finland, Hong Kong-China, Japan, Korea, Liechtenstein and Macao-China achieve both high levels of performance and an above-average level of equity in education outcomes in PISA 2012.

- In the United Kingdom, equity in education outcomes is at the OECD average, with 13% of the variation in student performance in mathematics attributed to differences in students' socio-economic status.
- Across OECD countries, a more socio-economically advantaged student scores 39 points higher in mathematics – the equivalent of nearly one year of schooling – than a less-advantaged student. Similarly, in the United Kingdom, a more advantaged student scores 41 points higher in mathematics, on average, than a less-advantaged student.

Resilient students

Across OECD countries, some 26% of disadvantaged students – the equivalent of 7% of the entire student population – are "resilient", meaning that they beat the socio-economic odds against them and exceed expectations, when compared with students of a similar socio-economic background in other countries.

- In the United Kingdom, 6% of all students (24% of disadvantaged students) are resilient. Although this is similar to the average across OECD countries, students in some countries are more successful in beating the odds against them. For example, in Hong Kong-China, Korea, Macao-China, Shanghai-China, Singapore and Viet Nam, more than half of disadvantaged students, or 13% of the overall student population, are resilient.

Immigrant students

In 2012, 12% of students in OECD countries were either first- or second-generation immigrants. On average, these students scored 34 points lower in mathematics than non-immigrant students.

- In the United Kingdom, 13% of students in 2012 had an immigrant background. However, these students score only 9 points lower, on average, than non-immigrant students, a difference that is not statistically significant and that is far below the OECD average. After taking socio-economic status into account, the difference shrank further, to 6 score points.

Students' engagement, drive and self-beliefs

Punctuality and attendance

Punctuality and attendance at school have strong associations with performance across all countries.

- In the United Kingdom, 25% of students reported that they had skipped either classes or whole days of school in the two weeks prior to the PISA test; and those who had skipped classes or days of school scored 37 points lower in mathematics, on average, than those who hadn't. Both the rate of reported truancy and the score difference are similar to the OECD average.

Feelings about school

- Students in the United Kingdom are largely satisfied with their school and have positive feelings towards school: 79% of students feel that they belong at school, 88% make friends easily, and 89% do not feel like an outsider or feel left out of things. Some 83% of students reported that they feel happy at school, 84% are satisfied with school, and 71% believe that conditions are ideal in their school.

Disciplinary climate

- Students in the United Kingdom were more positive about the disciplinary climate in their schools than the OECD average. Some 84% of UK students, compared to 78% of students across OECD countries, reported that they never or only occasionally find that they are not able to work well in mathematics classes.

Drive

Intrinsic motivation refers to the drive to perform an activity because of the pleasure and interest in the activity itself. Across OECD countries, large proportions of students reported low levels of enjoyment of mathematics. For example, only 53% of students in OECD countries agreed or strongly agreed that they are interested in the things they learn in mathematics: 58% of boys but only 49% of girls so reported.

- Similarly, in the United Kingdom, students do not report high levels of intrinsic motivation. Only 56% of students agreed or strongly agreed that they are interested in learning mathematics: 59% of boys and 53% of girls.

Mathematics anxiety

On average across OECD countries, greater mathematics anxiety is associated with a 34-point lower score in mathematics – the equivalent of almost one year of school.

- In the United Kingdom, the proportion of students who reported high levels of mathematics anxiety was lower than the OECD average. For example, across the OECD 31% reported that they feel nervous when doing mathematics problems, compared with 26% in the United Kingdom. Girls reported more maths anxiety than boys, both in the UK and in other OECD countries.

Socio-economic disparities in dispositions towards learning mathematics

Across most countries and economies, socio-economically disadvantaged students not only score lower in mathematics than advantaged students, they are also less engaged with and at school, have less drive and motivation to learn, and hold negative self-beliefs about their ability to learn mathematics. For example, across OECD countries, 78% of disadvantaged but 85% of advantaged students agreed or strongly agreed with the statement "I feel like I belong at school".

- Such disparities were also found in the United Kingdom, with 75% of disadvantaged but 85% of advantaged students agreeing or strongly agreeing with this statement. Similarly, disadvantaged students tended to be more likely to report that they had arrived late or skipped classes or days of school during the two weeks prior to the PISA test.

Snapshot of performance in mathematics, reading and science

Countries/economies with a mean performance/share of top-performers above the OECD average Countries/economies with a share of low-achievers below the OECD average
Countries/economies with a mean performance/share of low-achievers/share of top-performers not statistically significantly different from the OECD average
Countries/economies with a mean performance/share of top-performers below the OECD average Countries/economies with a share of low-achievers above the OECD average
Countries/economies in which the annualised change in performance is statistically significant are marked in **bold**.

	Mathematics				Reading		Science	
	Mean score in PISA 2012	Share of low-achievers (Below Level 2)	Share of top-performers in mathematics (Level 5 or 6)	Annualised change	Mean score in PISA 2012	Annualised change	Mean score in PISA 2012	Annualised change
OECD average	494	23.1	12.6	**-0.3**	496	**0.3**	501	**0.5**
Shanghai-China	613	3.8	55.4	**4.2**	570	**4.6**	580	1.8
Singapore	573	8.3	40.0	**3.8**	542	**5.4**	551	**3.3**
Hong Kong-China	561	8.5	33.7	**1.3**	545	**2.3**	555	**2.1**
Chinese Taipei	560	12.8	37.2	1.7	523	**4.5**	523	-1.5
Korea	554	9.1	30.9	1.1	536	0.9	538	**2.6**
Macao-China	538	10.8	24.3	**1.0**	509	0.8	521	**1.6**
Japan	536	11.1	23.7	0.4	538	**1.5**	547	**2.6**
Liechtenstein	535	14.1	24.8	0.3	516	**1.3**	525	0.4
Switzerland	531	12.4	21.4	0.6	509	**1.0**	515	0.6
Netherlands	523	14.8	19.3	**-1.6**	511	-0.1	522	-0.5
Estonia	521	10.5	14.6	0.9	516	**2.4**	541	1.5
Finland	519	12.3	15.3	**-2.8**	524	**-1.7**	545	**-3.0**
Canada	518	13.8	16.4	**-1.4**	523	**-0.9**	525	**-1.5**
Poland	518	14.4	16.7	**2.6**	518	**2.8**	526	**4.6**
Belgium	515	18.9	19.4	**-1.6**	509	0.1	505	-0.8
Germany	514	17.7	17.5	**1.4**	508	**1.8**	524	1.4
Viet Nam	511	14.2	13.3	m	508	m	528	m
Austria	506	18.7	14.3	0.0	490	-0.2	506	-0.8
Australia	504	19.7	14.8	**-2.2**	512	**-1.4**	521	-0.9
Ireland	501	16.9	10.7	-0.6	523	**-0.9**	522	**2.3**
Slovenia	501	20.1	13.7	**-0.6**	481	**-2.2**	514	-0.8
Denmark	500	16.8	10.0	**-1.8**	496	0.1	498	0.4
New Zealand	500	22.6	15.0	**-2.5**	512	**-1.1**	516	**-2.5**
Czech Republic	499	21.0	12.9	**-2.5**	493	-0.5	508	-1.0
France	495	22.4	12.9	**-1.5**	505	0.0	499	0.6
United Kingdom	494	21.8	11.8	-0.3	499	0.7	514	-0.1
Iceland	493	21.5	11.2	**-2.2**	483	**-1.3**	478	**-2.0**
Latvia	491	19.9	8.0	0.5	489	**1.9**	502	**2.0**
Luxembourg	490	24.3	11.2	-0.3	488	0.7	491	0.9
Norway	489	22.3	9.4	-0.3	504	0.1	495	1.3
Portugal	487	24.9	10.6	**2.8**	488	**1.6**	489	**2.5**
Italy	485	24.7	9.9	**2.7**	490	0.5	494	**3.0**
Spain	484	23.6	8.0	0.1	488	-0.3	496	1.3
Russian Federation	482	24.0	7.8	1.1	475	**1.1**	486	1.0
Slovak Republic	482	27.5	11.0	**-1.4**	463	-0.1	471	**-2.7**
United States	481	25.8	8.8	0.3	498	-0.3	497	1.4
Lithuania	479	26.0	8.1	-1.4	477	1.1	496	1.3
Sweden	478	27.1	8.0	**-3.3**	483	**-2.8**	485	**-3.1**
Hungary	477	28.1	9.3	**-1.3**	488	1.0	494	-1.6
Croatia	471	29.9	7.0	0.6	485	1.2	491	-0.3
Israel	466	33.5	9.4	**4.2**	486	**3.7**	470	**2.8**
Greece	453	35.7	3.9	1.1	477	0.5	467	-1.1
Serbia	449	38.9	4.6	**2.2**	446	**7.6**	445	1.5
Turkey	448	42.0	5.9	**3.2**	475	**4.1**	463	**6.4**
Romania	445	40.8	3.2	**4.9**	438	1.1	439	**3.4**
Cyprus[1,2]	440	42.0	3.7	m	449	m	438	m
Bulgaria	439	43.8	4.1	**4.2**	436	0.4	446	2.0
United Arab Emirates	434	46.3	3.5	m	442	m	448	m
Kazakhstan	432	45.2	0.9	**9.0**	393	0.8	425	**8.1**
Thailand	427	49.7	2.6	**1.0**	441	1.1	444	**3.9**
Chile	423	51.5	1.6	**1.9**	441	**3.1**	445	1.1
Malaysia	421	51.8	1.3	**8.1**	398	**-7.8**	420	-1.4
Mexico	413	54.7	0.6	**3.1**	424	1.1	415	0.9
Montenegro	410	56.6	1.0	1.7	422	**5.0**	410	-0.3
Uruguay	409	55.8	1.4	**-1.4**	411	**-1.8**	416	**-2.1**
Costa Rica	407	59.9	0.6	-1.2	441	-1.0	429	-0.6
Albania	394	60.7	0.8	**5.6**	394	**4.1**	397	2.2
Brazil	391	67.1	0.8	**4.1**	410	1.2	405	**2.3**
Argentina	388	66.5	0.3	1.2	396	-1.6	406	2.4
Tunisia	388	67.7	0.8	**3.1**	404	**3.8**	398	2.2
Jordan	386	68.6	0.6	0.2	399	-0.3	409	**-2.1**
Colombia	376	73.8	0.3	1.1	403	**3.0**	399	1.8
Qatar	376	69.6	2.0	**9.2**	388	**12.0**	384	**5.4**
Indonesia	375	75.7	0.3	0.7	396	**2.3**	382	-1.9
Peru	368	74.6	0.6	1.0	384	**5.2**	373	1.3

Countries and economies are ranked in descending order of the mathematics mean score in PISA 2012.
Source: OECD PISA 2012 database, Tables I.2.1a, I.2.1b, I.2.3a, I.2.3b, I.4.3a, I.4.3b, I.5.3a and I.5.3b.

1. Footnote by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
2. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

What is PISA?

The Programme for International Student Assessment (PISA) is an ongoing triennial survey that assesses the extent to which 15-year-olds students near the end of compulsory education have acquired key knowledge and skills that are essential for full participation in modern societies. The assessment does not just ascertain whether students can reproduce knowledge; it also examines how well students can extrapolate from what they have learned and apply that knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that modern economies reward individuals not for what they know, but for what they can do with what they know.

PISA offers insights for education policy and practice, and helps monitor trends in students' acquisition of knowledge and skills across countries and in different demographic subgroups within each country. The findings allow policy makers around the world to gauge the knowledge and skills of students in their own countries in comparison with those in other countries, set policy targets against measurable goals achieved by other education systems, and learn from policies and practices applied elsewhere.

Key features of PISA 2012

- The PISA 2012 survey focused on mathematics, with reading, science and problem-solving minor areas of assessment. For the first time, PISA 2012 also included an assessment of the financial literacy of young people, which was optional for countries.

The students

- Around 510 000 students completed the assessment in 2012, representing about 28 million 15-year-olds in the schools of the 65 participating countries and economies.

The assessment

- Paper-based tests were used, with assessments lasting a total of two hours for each student. In a range of countries and economies, an additional 40 minutes were devoted to the computer-based assessment of mathematics, reading and problem solving.
- Test items were a mixture of multiple-choice items and questions requiring students to construct their own responses. The items were organised in groups based on a passage setting out a real-life situation. A total of about 390 minutes of test items were covered, with different students taking different combinations of test items.
- Students answered a background questionnaire, which took 30 minutes to complete, that sought information about themselves, their homes and their school and learning experiences. School principals were given a questionnaire, to complete in 30 minutes, that covered the school system and the learning environment. In some countries and economies, optional questionnaires were distributed to parents, who were asked to provide information on their perceptions of and involvement in their child's school, their support for learning in the home, and their child's career expectations, particularly in mathematics. Countries could choose two other optional questionnaires for students: one asked students about their familiarity with and use of information and communication technologies, and the second sought information about their education to date, including any interruptions in their schooling and whether and how they are preparing for a future career.

Map of PISA 2012 countries and economies
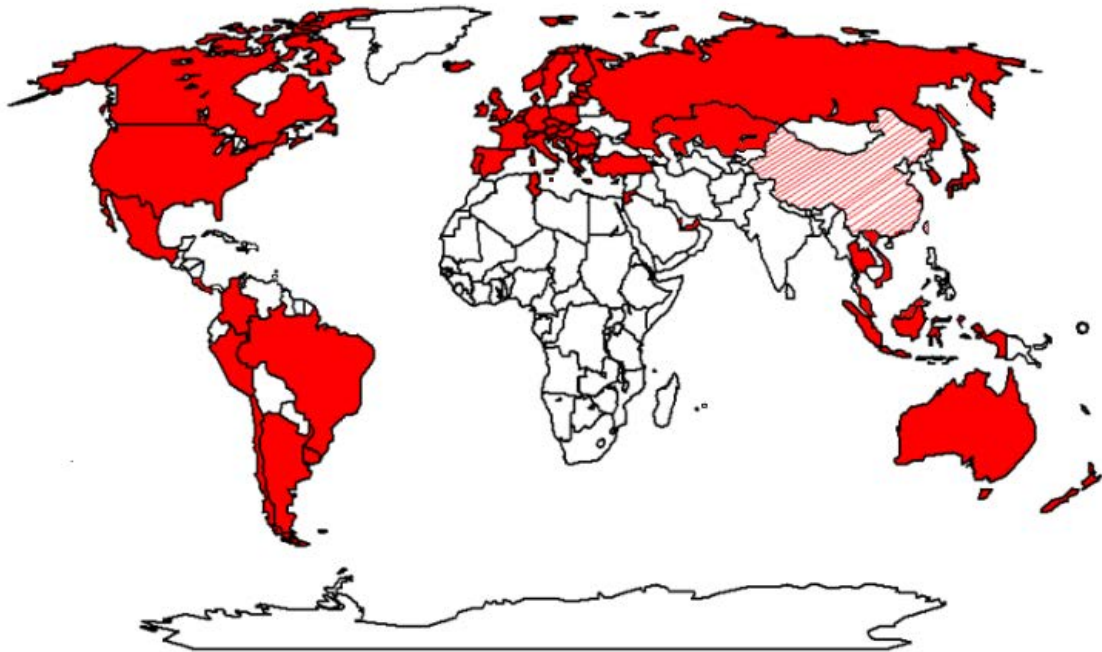
OECD countries		Partner countries and economies in PISA 2012	
Australia	Japan	Albania	Malaysia
Austria	Korea	Argentina	Montenegro
Belgium	Luxembourg	Brazil	Peru
Canada	Mexico	Bulgaria	Qatar
Chile	Netherlands	Colombia	Romania
Czech Republic	New Zealand	Costa Rica	Russian Federation
Denmark	Norway	Croatia	Serbia
Estonia	Poland	Cyprus[1,2]	Shanghai-China
Finland	Portugal	Hong Kong-China	Singapore
France	Slovak Republic	Indonesia	Chinese Taipei
Germany	Slovenia	Jordan	Thailand
Greece	Spain	Kazakhstan	Tunisia
Hungary	Sweden	Latvia	United Arab Emirates
Iceland	Switzerland	Liechtenstein	Uruguay
Ireland	Turkey	Lithuania	Vietnam
Israel	United Kingdom	Macao-China	
Italy	United States		

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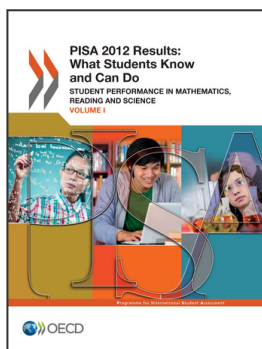**Telephone:** +33 6 07 38 54 64

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