



PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA) RESULTS FROM PISA 2015

SPAIN

Student performance in science

- Students in Spain score 493 points in science, on average (Table I.2.4a) – comparable with the OECD average, Austria, the Czech Republic, France, Latvia, Norway, Russia, Sweden and the United States, above Iceland, Italy and Luxembourg, and below Estonia, Ireland, Poland and Portugal (Figure I.2.13).
- Spain's mean science performance has increased by 4 score points since 2006, not a significant change (Table I.2.4a). Between 2006 and 2015, Spain caught up with Austria, the Czech Republic and Sweden, and overtook Croatia, Hungary, Iceland, Luxembourg, Lithuania and the Slovak Republic. Portugal, whose score in science was lower than Spain's in 2006, and Denmark, whose score was similar to Spain's, overtook Spain in science performance between 2006 and 2015 (Figure I.2.24).
- On average across OECD countries, 21% of students do not reach the baseline level of proficiency in science, Level 2. At this level, students can draw on their knowledge of basic science content and procedures to identify an appropriate explanation, interpret data, and identify the question being addressed in a simple experiment. All students should be expected to attain Level 2 by the time they leave compulsory education. The share of low-performing students in Spain is 18% – below the OECD average – and has decreased by 1 percentage point between 2006 and 2015, not a significant change (Table I.2.2a).
- Some 8% of students across OECD countries are top performers in science, meaning that they are proficient at Level 5 or 6. At these levels, students can creatively and autonomously apply their scientific knowledge and skills to a wide variety of situations, including unfamiliar ones. Some 5% of students in Spain are top performers (below the OECD average), and this share has remained stable since 2006 (Table I.2.2a).

Gender differences in science performance

- Boys outperform girls in science by an average of 7 points, slightly above the gap across OECD countries. This gender gap has remained stable between 2006 and 2015 (Tables I.2.8a and I.2.8d).
- As in most countries, the gender gap in science in Spain is small among low-achieving students, and is largest among the highest-achieving students. The share of top performers in science is almost twice as large among boys (6.3%) as among girls (3.7%) (Tables I.2.6a, I.2.6b and I.2.6d).

Student performance in reading

- Students in Spain score 496 points in reading, on average (Table I.4.3a), comparable with the OECD average, Belgium, B-S-J-G (China), Denmark, France, Portugal, Russia, Chinese Taipei,

Sweden, Switzerland, United Kingdom and the United States, above Austria, Iceland or Italy, and below Estonia, Ireland, Poland or Slovenia (Figure I.4.1).

- Spain's mean reading performance is close to that observed in 2000 (493 points) but clearly higher than in 2009 (481 points), when reading was last assessed as a major domain (Table I.4.4a). Between 2009 and 2015, Spain has closed the gap with nine countries and economies, including France, Portugal, Sweden, Switzerland and the United States, and overtook nine other countries and economies, including Greece, Hungary, Israel and Italy (Figure I.4.4).
- About 20% of students in OECD countries, on average, do not attain the baseline level of proficiency in reading (Level 2), considered the level of proficiency at which students begin to demonstrate the reading skills that will enable them to participate effectively and productively in life. In Spain, 16% of students perform below Level 2 in reading, a lower percentage than the OECD average. This percentage has decreased by 3 percentage points since 2009 (Table I.4.2a).
- Across OECD countries, 8% of students are top performers in reading, meaning that they are proficient at Level 5 or 6. At these levels students can find information in texts that are unfamiliar in form or content, demonstrate detailed understanding, and infer which information is relevant to the task. They are also able to critically evaluate such texts and build hypotheses about them, drawing on specialised knowledge and accommodating concepts that may be contrary to expectations. Some 6% of students in Spain are top performers, below the OECD average. The share of top performers in Spain has increased since 2009, when reading was the main domain assessed (Table I.4.2a).

Gender differences in reading performance

- Girls outperform boys in reading by an average of 20 points, a smaller gap than the average gap observed across OECD countries (27 points). This gender gap shrank by 9 points since 2009 (an average decrease of 12 points was observed, over the same period, across OECD countries) (Tables I.4.8a and I.4.8d).
- Boys are more likely than girls to score below Level 2 in reading: 20% of boys, but only 13% of girls, do not attain the baseline level in reading. But equal shares of boys and girls score at the highest levels in reading (at or above Level 5) (Table I.4.6a).
- Between 2009 and 2015, the share of low-achieving boys (those scoring below Level 2) decreased by 5 percentage points, while the share of low-achieving girls decreased by 2 percentage points, not a significant change. The percentage of top-performing boys and girls increased by 2 percentage points in that period.

Student performance in mathematics

- Students in Spain score 486 points in mathematics, on average (Table I.5.3) – comparable with students in Iceland, Italy, Latvia, Luxembourg, Portugal and Viet Nam, above Greece, Israel and the United States, and below the OECD average, Estonia, France, Ireland, Poland and Slovenia (Figure I.5.1).
- Spain's mean performance has remained stable since 2003, when its mean score was 485 points (Table I.5.4a). Mean performance in 2012, the last time mathematics was assessed as a main domain, was 484 points, similar to that in 2015. Between 2012 and 2015, Spain overtook Hungary, Lithuania, the Slovak Republic and the United States, whereas Sweden overtook Spain (Figure I.5.4). The gap with the OECD average has decreased by 8 score points since 2003, and 6 score points since 2012.
- On average across OECD countries, almost one in four students (23%) does not reach the baseline Level 2 of proficiency. In mathematics, students who do not reach this level can sometimes carry out a routine procedure, such as an arithmetic operation, in situations where all the instructions are given to them, but have difficulty recognising how a (simple) real-world

situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency). In Spain, 22% students are low achievers, a similar percentage as the OECD average. Spain reduced its share of low achievers by 1 percentage point between 2003 and 2015, not a significant change (Table I.5.2a).

- Around one in ten students in OECD countries (11%) is a top performer in mathematics, on average; but in Singapore, more than one in three students are top performers in the subject. In Spain, 7% of students are top performers, lower than the OECD average. Spain has decreased its share of top performers by 1 percentage point since 2003 (not a significant change), when mathematics was the main domain assessed (Tables I.5.2a).

Gender differences in mathematics performance

- Boys outperform girls in mathematics by an average of 16 points, one of the largest gaps in favour of boys among PISA-participating countries and economies. This gender gap has increased by 7 score points since 2003, not a significant change (Tables I.5.8a, I.5.8b and I.5.8d). Some 9% of boys, but only 5% of girls, score at Level 5 or above in mathematics. Meanwhile, 24% of girls, but 20% of boys, do not reach the baseline level of performance (Level 2) in mathematics (Table I.5.6a).

Students' engagement with science

Disposition towards the scientific method of enquiry

PISA 2015 asked students about their beliefs about the nature of science knowledge and the validity of scientific methods of enquiry (collectively known as epistemic beliefs). Students whose epistemic beliefs are in agreement with current views about the nature of science can be said to value scientific approaches to enquiry.

In Spain, 87% of students reported that they agree or strongly agree that good answers are based on evidence from many different experiments, and 81% reported that sometimes scientists change their minds about what is true in science. These values are slightly above those observed, on average, across OECD countries (Figure I.2.32). As in all countries, in Spain, stronger agreement with these and similar statements are associated with higher performance on the PISA science test (Figure I.2.34).

Students' expectations of a career in science

PISA 2015 asked students what occupation they expect to be working in when they are 30 years old. Even though many 15-year-olds are undecided about their future, almost one in four students (24%) across OECD countries reported that they expect to work in an occupation that requires further science training beyond compulsory education, compared with 29% in Spain. In almost all countries/economies, the expectation of pursuing a career in science is strongly related to proficiency in science. In Spain, only 14% of students who score below PISA proficiency Level 2 in science hold such expectations, but that percentage quadruples to 56% among top performers in science (those who score at or above Level 5) (Figures I.3.2 and I.3.3).

- Between 2006 and 2015, the share of students who expect to be working in a science-related occupation at age 30 increased by 5 percentage points – largely because of an increase in the share of students who expect to be working as health professionals (+3.3%) and science and engineering professionals (+1.4%). The share of students who expect to be working as ICT professionals remained stable and that of students expecting to work as science-related technicians decreased slightly (Tables I.3.10a and I.3.10e).

Gender-related differences in students' engagement with science

Even when equal shares of boys and girls expect a science-related career, boys and girls tend to think of working in different fields of science. In all countries, girls envisage themselves as health professionals more than boys do; and in almost all countries, boys see themselves as becoming ICT professionals, scientists or engineers more than girls do. Boys are more than twice as likely as girls to expect to work as engineers, scientists or architects (science and engineering professionals), on average across OECD countries; only 0.4% of girls, but 4.8% of boys, expect to work as ICT professionals. Girls are almost three times as likely as boys to expect to work as doctors, veterinarians or nurses (health professionals).

- In Spain, gender differences are similar to those observed on average across OECD countries. Some 30% of boys reported that they expect to pursue a career in science, compared to 28% of girls. Girls are almost three times more likely than boys to expect a career as health professionals (20% of girls, 7% of boys), while boys are about twice as likely to expect a career as science or engineering professionals (15% of boys, 7% of girls). Very few girls (0.7%) expect a career as ICT professionals, compared to almost 7% of boys (Tables I.3.11a-c).

When a student is confident of his or her ability to accomplish particular goals in the context of science, he or she is said to have a greater sense of self-efficacy in science. Better performance in science leads to a greater sense of **self-efficacy**, through positive feedback received from teachers, peers and parents, and the positive emotions associated with that feedback.

In 39 countries and economies, including Spain, boys show significantly greater self-efficacy than girls. Boys in Spain are at least as likely as girls to report that they could easily do any of the eight tasks, requiring science competencies, listed in the PISA student questionnaire – from explaining why earthquakes occur more frequently in some areas than in others, to identifying the better of two explanations for the formation of acid rain. Students' self-efficacy in science decreased slightly between 2006 and 2015 in Spain (Figure I.3.20 and Tables I.3.4c, f).

The gender gap in science self-efficacy is related to the gender gap in science performance, especially among high-achieving students (Figure I.3.23).

PISA distinguishes between two forms of motivation to learn science: students may learn science because they enjoy it (**intrinsic motivation**) and/or because they perceive learning science to be useful for their future plans (**instrumental motivation**).

A majority of students who participated in PISA 2015 reported that they enjoy and are interested in learning science, but boys tended to report so more than girls. In Spain, 73% of boys, and 70% of girls, agreed with the statement “I am interested in learning about science” (Table I.3.1c). Moreover, in Spain, boys are 6 percentage points more likely than girls (71%, compared to 65%) to report that “making an effort in science subjects at school is worth it because this will help [them] in the work [they] want to do later on” (Table I.3.3c). More than 95% of students who expect to be working as medical doctors, and 92% of students who expect to be working as engineers at age 30, so reported; but only about two in three students who expect to be working as software and applications developers and analysts, and less than half of those who expect to be working as legal professionals or as journalists, reported so (Table I.3.11f). Perhaps, when prompted to think about what they learn in science at school, students mainly refer to content knowledge – the facts and theories learned in biology, chemistry, physics or earth science classes – rather than to the procedural or epistemic knowledge that can be applied outside of science-related careers too (e.g. “What constitutes a valid argument based on data?”, “How can experiments be used to identify cause and effect?”).

Student truancy

On average across OECD countries, 20% of students reported that they had skipped a day of school or more in the two weeks prior to the PISA test. In Spain, 25% of students so reported, and 33% reported that they had skipped some classes (Table II.3.1). Both shares are still higher than the OECD average

but the gap has decreased significantly since 2012 (by 8 and 6 percentage points, respectively) (Table II.3.3).

Students who play truant miss learning opportunities. They also disrupt class, creating a disciplinary climate that is not conducive to learning for their fellow students. In PISA-participating countries and economies, skipping a whole day of school is more common in disadvantaged schools than in advantaged schools. This is observed in 44 countries and economies, including in Spain (Table II.3.4 and Figure II.3.3).

In Spain, students who had skipped a whole day of school at least once in the two weeks prior to the PISA assessment score 36 points lower in the science assessment than students who had not skipped a day of school (29 points lower after accounting for the socio-economic profile of students and schools) – roughly the equivalent of about one full year of schooling (Table II.3.4).

Context for student achievement

Spain spends about USD 75 000 (adjusted for purchasing power parity) per student from the age of 6 to 15, below the OECD average of USD 90 000 (Table I.2.11). Between 2005 and 2013, public expenditure per student, in public primary and secondary schools, decreased by about 4% (in real terms) in Spain. Over the same period, expenditure increased by about 19%, on average, in OECD countries with available data (source: OECD [2016], *Education at a Glance 2016: OECD Indicators*, Indicator B1, [Table B1.5a](#)).

Spain's GDP per capita in 2014 (adjusted for purchasing power parity) was USD 33 629, around 15% below the OECD average of USD 39 333 (Table I.2.11). The adjusted performance in science after accounting for per capita GDP is 500 score points, above the OECD average of 493 score points.

The impact of socio-economic status on performance

- Canada, Estonia, Finland and Japan achieve high levels of performance and equity in education outcomes as assessed in PISA 2015, with 10% or less of the variation in student performance attributed to differences in students' socio-economic status, compared with 13% across OECD countries (Figure I.6.6 and Table I.6.3a).
- In Spain, equity in education outcomes is similar to the OECD average, as 13% of the variation in student performance in science is attributed to differences in students' socio-economic status.
- Across OECD countries, a one-unit increase in the PISA index of economic, social and cultural status is associated with an increase of 38 score points in science – the equivalent of more than one year of schooling. In Spain, a one-unit increase is associated with an increase of 27 score points – the fourth smallest score-point difference across OECD countries.
- Across OECD countries, 29% of disadvantaged students (those in the lowest 25% of socio-economic status) are “**resilient**”, meaning that they beat the odds against them and score among the top 25% of students internationally, among students of similar socio-economic status. In Hong Kong (China), Macao (China) and Viet Nam, more than one in two disadvantaged students are resilient. In Spain, 39% of disadvantaged students are resilient – considerably higher than on average across OECD countries (Figure I.6.10).

Students with an immigrant background

- The share of immigrant students in OECD countries increased from 9% in 2006 to 12% in 2015 while the difference in science performance between immigrant and non-immigrant students shrank by 6 score points during the same period (after accounting for differences in socio-economic status and in language spoken at home) (Figure I.7.13).
- In Spain, the proportion of students with an immigrant background increased from nearly 7% in 2006 to 11% in 2015. The difference in science scores between immigrant and non-immigrant

students narrowed by about 23 score points during the same period. In 2006, non-immigrant students of similar socio-economic status as immigrant students scored 50 points higher than immigrant students; in 2015, the score-point difference was only 26 points in 2015, after accounting for socio-economic status and language spoken at home.

Education policies and practices

Opportunity to learn science at school

Inequalities in opportunities to learn are mainly reflected in the time education systems, schools and teachers allocate to learning. If time is a necessary condition for learning, students who do not attend science lessons are probably those who enjoy the fewest opportunities to acquire competencies in science.

On average across OECD countries, 94% of students reported that they attend at least one science course per week. But that means that at least one million 15-year-old students are not required to attend any science lesson. In Spain, 16% of 15-year old students reported that they are not required to attend any science lesson (Table II.2.3).

Across OECD countries, students who reported that they do not attend school science classes score lower in science. In Spain, students who are required to attend at least one course score 17 points higher in science than students who are not required to do so (15 points higher after accounting for the socio-economic status of students and schools) (Table II.2.3).

Extracurricular activities

On average across OECD countries, students in schools that offer science competitions score 36 points higher in science and are 55% more likely to expect to work in a science-related occupation than students in schools that do not offer such activities. Students in schools offering a science club score 21 score points higher and are 30% more likely to expect to pursue a career in science.

Science-related extracurricular activities, such as science clubs and competitions, help students understand scientific concepts, raise interest in science and even nurture future scientists. Across OECD countries, 39% of students are enrolled in schools that offer a science club and 66% attend schools that offer science competitions. Science clubs are most commonly offered in East Asian countries and economies, while science competitions are most frequently offered in several Eastern European countries. In Spain, only one in six students (16%) is enrolled in schools where a science club is offered as a school activity, and about two in three students (66%) are in schools that offer science competitions (Table II.2.11).

Schools principals were asked if the school offers creative extracurricular activities, such as a band, orchestra or choir; a school play or school musical; and an art club or art activities. In Spain these activities are less frequently offered than on average across OECD countries (Table II.6.49).

Teaching strategies in science

How teachers teach science is more strongly associated with science performance and students' expectations of working in a science-related career than the material and human resources of science departments, including the qualifications of teachers or the kinds of extracurricular science activities offered to students.

Almost everywhere, students who reported that their teachers explain scientific ideas, demonstrate an idea or discuss students' questions more frequently score higher in science. In Spain, students who reported that their science teachers explain scientific ideas in many lessons or every lesson score 42 points higher after accounting for the socio-economic profile of students and schools (Table II.2.18).

In almost every school system, students who reported that their science teachers adapt the lesson to students' needs and knowledge more frequently score higher in science. In Spain, students score 17 points higher when they reported that, in many lessons or every lesson, their science teachers adapt the lesson to students' needs and knowledge (Table II.2.24).

School resources

Compared to principals in other OECD countries, somewhat more principals in Spain are concerned about the quality and the lack of material resources at their schools. For instance, 13% of students attend schools whose principal considers that the capacity to provide instruction is hindered a lot by the lack of educational material, above the OECD average (6%) and neighbouring countries France (3%), Italy (4%) and Portugal (4%) (Table II.6.1).

Equitable resource allocation means that the schools attended by socio-economically disadvantaged students are at least as well-equipped as the schools attended by advantaged students, to compensate for inequalities in the home environment. Based on school principals' reports, in 26 countries and economies, advantaged schools are better equipped than disadvantaged schools.

OECD countries where the allocation of resources is more equitable perform higher in science. Based on school principals' concerns about the lack and quality of the material resources at the school, Spain's has the fourth most inequitable allocation of resources among OECD countries, only below Chile, Mexico and Turkey (Table II.6.3).

There are about 7.4 computers for every 10 students in Spain – a similar ratio to the OECD average (7.7), and higher than in Portugal (4.3) or Italy (5.0), and slightly lower than in France (8.1) (Table II.6.4).

Science-specific resources

PISA asked school principals to provide information about the resources available to their school's science department. Most students in OECD countries attend schools whose principal reported that the science department is well-equipped and well-staffed, and the same is true for students in Spain. About 8 in 10 students in Spain attend schools whose principal reported that "the material for hands-on activities is in good shape" but only half of students reported that there is "enough laboratory material that all courses can regularly use it" (Table II.2.5).

As in many countries, in Spain, the science department is better resourced and staffed in advantaged and urban schools than in disadvantaged and rural schools (Table II.2.6). The difference between advantaged and disadvantaged schools in Spain is similar to the OECD average.

About 82% of Spain's science teachers have a university degree and a major in science, above the OECD average (74%) (Table II.2.8).

The learning environment

Principals in Spain reported somewhat less than principals across OECD countries that student or teacher behaviour hinders learning. For instance, 3% of students in Spain attend schools whose principal reported that students' use of or alcohol or illegal drugs hinders learning to some extent or a lot, compared to 9% of students across OECD countries who attend such schools (Table II.3.12). About 4% of students in Spain are in schools whose principal reported that teacher absenteeism hinders learning to some extent or a lot, compared to 17% of students across OECD countries who attend such schools (Table II.3.17).

Selecting and sorting students

On average across OECD countries, school systems begin selecting students for different programmes at the age of 14. Some OECD countries, including Austria and Germany, start selecting students as early as age 10. In Spain, schools start selecting students at age 16, later than the OECD average (Table II.5.27). The later students are selected into different academic programmes/schools, the

greater the equity in science performance, even after accounting for the school's mean score in science and the variation in student performance.

In Spain, virtually all 15-year-old students are enrolled in general or academic programmes (Table II.5.14).

Grade repetition

Grade repetition is more prevalent in school systems where students score lower on the PISA science assessment and where students' socio-economic status is most strongly associated with science performance. Students might have been kept back to repeat course content that they had not fully mastered; or they might have been invited to skip a grade when their teachers felt they were capable of taking on more challenging schoolwork. In 13 countries and economies, including Spain, at least 30% of students had repeated a grade at least once in primary or secondary education. The percentage of students in Spain who had repeated a grade (31% of students) is the second largest among OECD countries; only Belgium (34%) has a larger proportion of these students (Table II.5.9).

Students in disadvantaged schools are more likely to have repeated a grade almost everywhere, including in Spain, where 46% of students enrolled in disadvantaged schools had repeated a grade, compared to 12% of students in advantaged schools (Table II.5.12).

One promising finding is that, across OECD countries, the percentage of students who reported that they had repeated a grade at least once decreased by almost three percentage points between 2009 and 2015. In Spain too, the percentage of students who reported that they had repeated a grade at least once decreased by four percentage points between 2009 and 2015 (Table II.5.11).

School governance

About 31% of students in Spain are enrolled in a private school, compared to 18% of students on average across OECD countries (Table II.4.6). As in most other PISA-participating school systems, socio-economically advantaged students in Spain are more likely than disadvantaged students to attend private schools (Table II.4.10). The difference is the largest among OECD countries, since almost all students (91%) in disadvantaged schools attend a public school, and only a minority of students (18%) attending advantaged schools do so.

Spanish students in public schools score 8 score points higher than students in private schools, after accounting for socio-economic status, not a statistically significant difference.

In education systems where school principals hold greater responsibility for school governance, students score higher in science; and this relationship is stronger among school systems where the percentage of students whose achievement data are tracked over time and posted publicly is higher than the OECD average.

In Spain, schools have less autonomy than the average school in OECD countries (Table II.4.1). Among OECD countries, only in Greece, Italy, Mexico and Turkey, do schools enjoy less autonomy than schools in Spain. For instance, in Spain principals and teachers hold 30% of the responsibility for resources, compared to 42% of that responsibility across OECD countries; 56% of the responsibility for the curriculum, compared to 66% across OECD countries; 57% of the responsibility for student assessments, compared to 68% across OECD countries; and 19% of the responsibility for school admissions, compared to 67% across OECD countries (Table II.4.2).

Snapshot of performance in science, reading and mathematics

-  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 top performers/
 share of low achievers not 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

	Science		Reading		Mathematics		Science, reading and mathematics	
	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend	Mean score in PISA 2015	Average three-year trend	Share of top performers in at least one subject (Level 5 or 6)	Share of low achievers in all three subjects (below Level 2)
	Mean	Score dif.	Mean	Score dif.	Mean	Score dif.	%	%
OECD average	493	-1	493	-1	490	-1	15.3	13.0
Singapore	556	7	535	5	564	1	39.1	4.8
Japan	538	3	516	-2	532	1	25.8	5.6
Estonia	534	2	519	9	520	2	20.4	4.7
Chinese Taipei	532	0	497	1	542	0	29.9	8.3
Finland	531	-11	526	-5	511	-10	21.4	6.3
Macao (China)	529	6	509	11	544	5	23.9	3.5
Canada	528	-2	527	1	516	-4	22.7	5.9
Viet Nam	525	-4	487	-21	495	-17	12.0	4.5
Hong Kong (China)	523	-5	527	-3	548	1	29.3	4.5
B-S-J-G (China)	518	m	494	m	531	m	27.7	10.9
Korea	516	-2	517	-11	524	-3	25.6	7.7
New Zealand	513	-7	509	-6	495	-8	20.5	10.6
Slovenia	513	-2	505	11	510	2	18.1	8.2
Australia	510	-6	503	-6	494	-8	18.4	11.1
United Kingdom	509	-1	498	2	492	-1	16.9	10.1
Germany	509	-2	509	6	506	2	19.2	9.8
Netherlands	509	-5	503	-3	512	-6	20.0	10.9
Switzerland	506	-2	492	-4	521	-1	22.2	10.1
Ireland	503	0	521	13	504	0	15.5	6.8
Belgium	502	-3	499	-4	507	-5	19.7	12.7
Denmark	502	2	500	3	511	-2	14.9	7.5
Poland	501	3	506	3	504	5	15.8	8.3
Portugal	501	8	498	4	492	7	15.6	10.7
Norway	498	3	513	5	502	1	17.6	8.9
United States	496	2	497	-1	470	-2	13.3	13.6
Austria	495	-5	485	-5	497	-2	16.2	13.5
France	495	0	499	2	493	-4	18.4	14.8
Sweden	493	-4	500	1	494	-5	16.7	11.4
Czech Republic	493	-5	487	5	492	-6	14.0	13.7
Spain	493	2	496	7	486	1	10.9	10.3
Latvia	490	1	488	2	482	0	8.3	10.5
Russia	487	3	495	17	494	6	13.0	7.7
Luxembourg	483	0	481	5	486	-2	14.1	17.0
Italy	481	2	485	0	490	7	13.5	12.2
Hungary	477	-9	470	-12	477	-4	10.3	18.5
Lithuania	475	-3	472	2	478	-2	9.5	15.3
Croatia	475	-5	487	5	464	0	9.3	14.5
CABA (Argentina)	475	51	475	46	456	38	7.5	14.5
Iceland	473	-7	482	-9	488	-7	13.2	13.2
Israel	467	5	479	2	470	10	13.9	20.2
Malta	465	2	447	3	479	9	15.3	21.9
Slovak Republic	461	-10	453	-12	475	-6	9.7	20.1
Greece	455	-6	467	-8	454	1	6.8	20.7
Chile	447	2	459	5	423	4	3.3	23.3
Bulgaria	446	4	432	1	441	9	6.9	29.6
United Arab Emirates	437	-12	434	-8	427	-7	5.8	31.3
Uruguay	435	1	437	5	418	-3	3.6	30.8
Romania	435	6	434	4	444	10	4.3	24.3
Cyprus ¹	433	-5	443	-6	437	-3	5.6	26.1
Moldova	428	9	416	17	420	13	2.8	30.1
Albania	427	18	405	10	413	18	2.0	31.1
Turkey	425	2	428	-18	420	2	1.6	31.2
Trinidad and Tobago	425	7	427	5	417	2	4.2	32.9
Thailand	421	2	409	-6	415	1	1.7	35.8
Costa Rica	420	-7	427	-9	400	-6	0.9	33.0
Qatar	418	21	402	15	402	26	3.4	42.0
Colombia	416	8	425	6	390	5	1.2	38.2
Mexico	416	2	423	-1	408	5	0.6	33.8
Montenegro	411	1	427	10	418	6	2.5	33.0
Georgia	411	23	401	16	404	15	2.6	36.3
Jordan	409	-5	408	2	380	-1	0.6	35.7
Indonesia	403	3	397	-2	386	4	0.8	42.3
Brazil	401	3	407	-2	377	6	2.2	44.1
Peru	397	14	398	14	387	10	0.6	46.7
Lebanon	386	m	347	m	396	m	2.5	50.7
Tunisia	386	0	361	-21	367	4	0.6	57.3
FYROM	384	m	352	m	371	m	1.0	52.2
Kosovo	378	m	347	m	362	m	0.0	60.4
Algeria	376	m	350	m	360	m	0.1	61.1
Dominican Republic	332	m	358	m	328	m	0.1	70.7

1. Note 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".

Note 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.

Notes: Values that are statistically significant are marked in bold (see Annex A3).

The average trend is reported for the longest available period since PISA 2006 for science, PISA 2009 for reading, and PISA 2003 for mathematics.

Countries and economies are ranked in descending order of the mean science score in PISA 2015.

Source: OECD, PISA 2015 Database, Tables I.2.4a, I.2.6, I.2.7, I.4.4a and I.5.4a.

StatLink  <http://dx.doi.org/10.1787/888933431961>

Snapshot of students' science beliefs, engagement and motivation

	Mean science score	Beliefs about the nature and origin of scientific knowledge		Share of students with science-related career expectations			Motivation for learning science			
		Index of epistemic beliefs (support for scientific methods of enquiry)	Score-point difference per unit on the index of epistemic beliefs	All students	Boys	Girls	Increased likelihood of boys expecting a career in science	Index of enjoyment of learning science	Score-point difference per unit on the index of enjoyment of learning science	Gender gap in enjoyment of learning science (Boys - Girls)
OECD average	493	0.00	33	24.5	25.0	23.9	1.1	0.02	25	0.13
Singapore	556	0.22	34	28.0	31.8	23.9	1.3	-0.59	35	0.17
Japan	538	-0.06	34	18.0	18.5	17.5	1.1	-0.33	27	0.52
Estonia	534	0.01	36	24.7	28.9	20.3	1.4	-0.16	24	0.05
Chinese Taipei	532	0.31	38	20.9	25.6	16.0	1.6	-0.06	28	0.39
Finland	531	-0.07	38	17.0	15.4	18.7	0.8	-0.07	30	0.04
Macao (China)	529	-0.06	26	20.8	22.0	19.6	1.1	0.20	21	0.16
Canada	528	0.30	29	33.9	31.2	36.5	0.9	0.40	26	0.15
Viet Nam	525	-0.15	31	19.6	21.2	18.1	1.2	0.65	14	0.06
Hong Kong (China)	523	0.04	23	23.6	22.9	24.2	0.9	0.28	20	0.26
B-S-J-G (China)	518	-0.08	37	16.8	17.1	16.5	1.0	-0.37	28	0.14
Korea	516	0.02	38	19.3	21.7	16.7	1.3	-0.14	31	0.32
New Zealand	513	0.22	40	24.8	21.7	27.9	0.8	0.20	32	0.03
Slovenia	513	0.07	33	30.8	34.6	26.8	1.3	-0.36	22	-0.03
Australia	510	0.26	39	29.2	30.3	28.2	1.1	0.12	33	0.16
United Kingdom	509	0.22	37	29.1	28.7	29.6	1.0	0.15	30	0.18
Germany	509	-0.16	34	15.3	17.4	13.2	1.3	-0.18	29	0.43
Netherlands	509	-0.19	46	16.3	16.9	15.7	1.1	-0.52	30	0.25
Switzerland	506	-0.07	34	19.5	19.8	19.1	1.0	-0.02	30	0.17
Ireland	503	0.21	36	27.3	28.0	26.6	1.1	0.20	32	0.09
Belgium	502	0.00	34	24.5	25.3	23.6	1.1	-0.03	28	0.20
Denmark	502	0.17	32	14.8	11.8	17.7	0.7	0.12	26	0.09
Poland	501	-0.08	27	21.0	15.4	26.8	0.6	0.02	18	-0.10
Portugal	501	0.28	33	27.5	26.7	28.3	0.9	0.32	23	0.08
Norway	498	-0.01	35	28.6	28.9	28.4	1.0	0.12	29	0.27
United States	496	0.25	32	38.0	33.0	43.0	0.8	0.23	26	0.21
Austria	495	-0.14	36	22.3	26.6	18.0	1.5	-0.32	25	0.23
France	495	0.01	30	21.2	23.6	18.7	1.3	-0.03	30	0.31
Sweden	493	0.14	38	20.2	21.8	18.5	1.2	0.08	27	0.22
Czech Republic	493	-0.23	41	16.9	18.6	15.0	1.2	-0.34	27	-0.06
Spain	493	0.11	30	28.6	29.5	27.8	1.1	0.03	28	0.11
Latvia	490	-0.26	27	21.3	21.1	21.5	1.0	0.09	18	0.03
Russia	487	-0.26	27	23.5	23.2	23.8	1.0	0.00	16	0.07
Luxembourg	483	-0.15	35	21.1	24.3	18.0	1.4	0.10	26	0.14
Italy	481	-0.10	34	22.6	24.7	20.6	1.2	0.00	22	0.24
Hungary	477	-0.36	35	18.3	23.9	12.8	1.9	-0.23	20	-0.02
Lithuania	475	0.11	22	23.9	22.5	25.4	0.9	0.36	20	-0.14
Croatia	475	0.03	32	24.2	26.8	21.8	1.2	-0.11	22	0.05
CABA (Argentina)	475	0.09	28	27.8	26.2	29.3	0.9	-0.20	15	-0.14
Iceland	473	0.29	28	23.8	20.1	27.3	0.7	0.15	24	0.26
Israel	467	0.18	38	27.8	26.1	29.5	0.9	0.09	20	0.06
Malta	465	0.09	54	25.4	30.2	20.4	1.5	0.18	48	0.11
Slovak Republic	461	-0.35	36	18.8	18.5	19.0	1.0	-0.24	25	-0.02
Greece	455	-0.19	36	25.3	25.7	24.9	1.0	0.13	27	0.12
Chile	447	-0.15	23	37.9	36.9	39.0	0.9	0.08	15	-0.09
Bulgaria	446	-0.18	34	27.5	28.8	25.9	1.1	0.28	17	-0.16
United Arab Emirates	437	0.04	33	41.3	39.9	42.6	0.9	0.47	22	-0.02
Uruguay	435	-0.13	27	28.1	23.8	31.9	0.7	-0.10	16	-0.07
Romania	435	-0.38	27	23.1	23.3	23.0	1.0	-0.03	17	-0.05
Cyprus*	433	-0.15	33	29.9	29.3	30.5	1.0	0.15	29	0.06
Moldova	428	-0.14	37	22.0	22.5	21.3	1.1	0.33	22	-0.17
Albania	427	-0.03	m	24.8	m	m	m	0.72	m	m
Turkey	425	-0.17	18	29.7	34.5	24.9	1.4	0.15	12	0.01
Trinidad and Tobago	425	-0.02	28	27.8	24.6	31.0	0.8	0.19	24	-0.01
Thailand	421	-0.07	35	19.7	12.4	25.2	0.5	0.42	18	-0.05
Costa Rica	420	-0.15	16	44.0	43.8	44.2	1.0	0.35	4	-0.03
Qatar	418	-0.10	33	38.0	36.3	39.9	0.9	0.36	25	0.00
Colombia	416	-0.19	21	39.7	37.1	42.0	0.9	0.32	7	-0.02
Mexico	416	-0.17	17	40.7	45.4	35.8	1.3	0.42	12	0.01
Montenegro	411	-0.32	23	21.2	20.1	22.4	0.9	0.09	14	-0.07
Georgia	411	0.05	42	17.0	16.4	17.7	0.9	0.34	23	-0.13
Jordan	409	-0.13	28	43.7	44.6	42.8	1.0	0.53	23	-0.25
Indonesia	403	-0.30	16	15.3	8.6	22.1	0.4	0.65	6	-0.06
Brazil	401	-0.07	27	38.8	34.4	42.8	0.8	0.23	19	-0.04
Peru	397	-0.16	23	38.7	42.7	34.6	1.2	0.40	9	0.01
Lebanon	386	-0.24	35	39.7	41.0	38.5	1.1	0.38	32	-0.04
Tunisia	386	-0.31	18	34.4	28.5	39.5	0.7	0.52	15	-0.12
FYROM	384	-0.18	30	24.2	20.0	28.8	0.7	0.48	17	-0.29
Kosovo	378	0.03	22	26.4	24.7	28.1	0.9	0.92	14	-0.16
Algeria	376	-0.31	16	26.0	23.1	29.2	0.8	0.46	14	-0.12
Dominican Republic	332	-0.10	13	45.7	44.7	46.8	1.0	0.54	6	-0.05

* See note 1 under Figure I.1.1.

Note: Values that are statistically significant are indicated in bold (see Annex A3).

Countries and economies are ranked in descending order of the mean science score in PISA 2015.

Source: OECD, PISA 2015 Database, Tables I.2, I.2a-b, I.3, I.3a-c and I.3.10a-b.

StatLink <http://dx.doi.org/10.1787/888933431979>

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 2015

- The PISA 2015 survey focused on science, with reading, mathematics and collaborative problem-solving as minor areas of assessment. For the first time, PISA 2015 delivered the assessment of all subjects via computer. Paper-based assessments were provided for countries that chose not to test their students by computer, but the paper-based assessment was limited to questions that could measure trends in science, reading and mathematics performance.

The students

- Around 540 000 students completed the assessment in 2015, representing about 29 million 15-year-olds in the schools of the 72 participating countries and economies.

The assessment

- Computer-based tests were used, with assessments lasting a total of two hours for each student.
- Test items were a mixture of multiple-choice questions 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. About 810 minutes of test items were covered, with different students taking different combinations of test items.
- Students also answered a background questionnaire, which took 35 minutes to complete. The questionnaire sought information about the students themselves, their homes, and their school and learning experiences. School principals completed a questionnaire that covered the school system and the learning environment. For additional information, some countries/economies decided to distribute a questionnaire to teachers. It was the first time that this optional teacher questionnaire was offered to PISA-participating countries/economies. In some countries/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 science. Countries could choose two other optional questionnaires for students: one asked students about their familiarity with and use of information and communication technologies (ICT); and the second sought information about students' education to date, including any interruptions in their schooling, and whether and how they are preparing for a future career.

Map of PISA countries and economies



■ OECD countries	■ Partner countries and economies in PISA 2015	■ Partner countries and economies in previous cycles
Australia	Albania	Azerbaijan
Austria	Algeria	Himachal Pradesh-India
Belgium	Argentina	Kyrgyzstan
Canada	Brazil	Liechtenstein
Chile	B-S-J-G (China)*	Mauritius
Czech Republic	Bulgaria	Miranda-Venezuela
Denmark	Colombia	Panama
Estonia	Costa Rica	Serbia
Finland	Croatia	Tamil Nadu-India
France	Cyprus ¹	
Germany	Dominican Republic	
Greece	Former Yugoslav Republic of Macedonia	
Hungary	Georgia	
Iceland	Hong Kong (China)	
Ireland	Indonesia	
Israel	Jordan	
Italy	Kazakhstan	
Japan	Kosovo	
	Lebanon	
	Lithuania	
	Macao (China)	
	Malaysia	
	Malta	
	Moldova	
	Montenegro	
	Peru	
	Qatar	
	Romania	
	Russian Federation	
	Singapore	
	Chinese Taipei	
	Thailand	
	Trinidad and Tobago	
	Tunisia	
	United Arab Emirates	
	Uruguay	
	Viet Nam	

* B-S-J-G (China) refers to the four PISA participating China provinces: Beijing, Shanghai, Jiangsu, Guangdong.

1. Note 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".

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For more information on the Programme for International Student Assessment and to access the full set of PISA 2015 results, visit:

www.oecd.org/edu/pisa

