

INTERNATIONAL STUDENT ASSESSMENT

How effective are school systems at providing young people with a solid foundation of knowledge and skills that will equip them for life and learning beyond school? OECD's Programme for International Student Assessment (PISA) assesses student knowledge and skills in science, mathematics and reading at age 15, i.e. towards the end of compulsory education.

PISA 2006 also assesses the attitudes which students have towards science and the environment, their interest in science, the extent to which they are aware of the life opportunities that possessing science competencies may open, and the science learning opportunities and environment which their schools offer.

Definition

The PISA survey covers science, mathematics and reading. For the 2006 round of PISA, three and a half hours of testing time was in science, two hours for mathematics and one hour for reading. Each student spent two hours on the assessment items.

Scientific literacy is the capacity to use scientific knowledge to identify questions, to acquire new knowledge, to explain scientific phenomena, and to draw evidence-based conclusions about science-related issues.

Overview

The graph "Performance on the science scale in PISA 2006" shows the results for science in terms of differences from the OECD average score (500). As in the 2003 PISA, Finland is the top of the league. For Hungary, Sweden, Poland, Denmark and France the science scores are not significantly different from the OECD average. The table "Mean scores and gender differences on the science scale in PISA 2006" presents also the scores in science by gender. In OECD on average, the boys are doing slightly better than the girls. The results are significantly better for boys in Denmark, Luxembourg, Mexico, the Netherlands, Switzerland and United Kingdom, whereas significantly better results for girls than for boys occur in Greece and Turkey.

The results for mathematics and reading are displayed in the following graphs. Finland and Korea are competing for the top positions in these results. Germany, Sweden, Ireland, France, United Kingdom and Poland are not significantly different from the OECD average in mathematics. The other countries are significantly above or below the OECD average and are indicated in green. In reading, Japan, United Kingdom, Germany, Denmark, Austria and France are not significantly different from the OECD average. In the same way as for mathematics, countries significantly above or below the OECD average are indicated.

In mathematics, females remain at a disadvantage in many countries, with on average 11 score points of difference in favour of males. On the opposite side, in reading, differences in favour of females are observed in all countries. On average across OECD countries, females are 38 score points ahead of their male counterparts.

Mathematical literacy is the capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen.

Reading literacy is the capacity to understand, use and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society.

Comparability

Leading experts in participating countries advise on the scope and nature of the assessments and final decisions on this are taken by OECD governments. Substantial efforts and resources are devoted to achieving cultural and linguistic breadth and balance in the assessment materials and stringent quality assurance mechanisms are applied in translation, sampling and data collection.

Over 400 000 15-year-old students in 57 participating countries were assessed for PISA 2006. Because the results are based on probability samples, the standard errors have to be calculated and these are shown in the tables.

Sources

- OECD (2001), *PISA Knowledge and Skills for Life – First Results from PISA 2000*, OECD, Paris.
- OECD (2004), *PISA Learning for Tomorrow's World: First Results from PISA 2003*, OECD, Paris.
- OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Volume 1 Analysis*, OECD, Paris.

Further information

Analytical publications

- OECD (2003), *PISA Literacy Skills for the World of Tomorrow – Further Results from PISA 2000*, OECD, Paris.
- OECD (2005), *PISA Problem Solving for Tomorrow's World: First Measures of Cross-Curricular Competencies from PISA 2003*, OECD, Paris.
- OECD (2006), *Are Students Ready for a Technology-Rich World? What PISA Studies Tell Us*, OECD, Paris.
- OECD (2006), *Where Immigrant Students Succeed: A Comparative Review of Performance and Engagement in PISA 2003*, OECD, Paris.
- OECD (2008), *Encouraging Student Interest in Science and Technology Studies*, OECD, Paris.

Methodological publications

- OECD (2006), *Assessing Scientific, Reading and Mathematical Literacy: A Framework for PISA 2006*, OECD, Paris.

Online databases

- OECD PISA Database.

Websites

- PISA website, www.pisa.oecd.org.



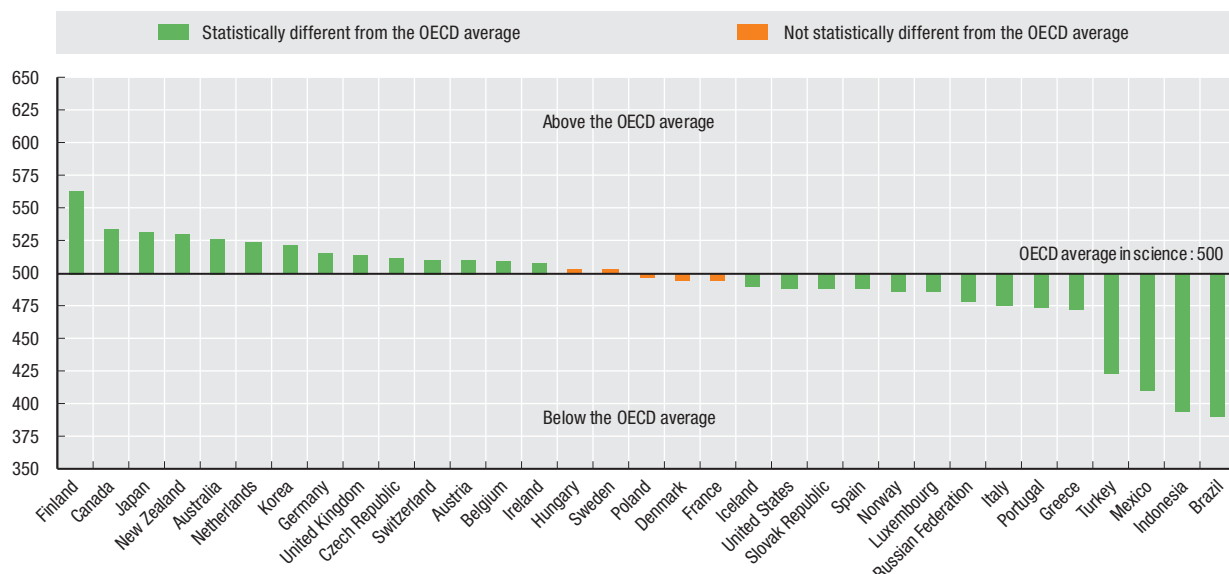
Mean scores and gender differences on the science scale in PISA 2006

	All students		Males		Females		Difference (males – females)	
	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Score difference	S.E.
Australia	527	2.3	527	3.2	527	2.7	0	3.8
Austria	511	3.9	515	4.2	507	4.9	8	4.9
Belgium	510	2.5	511	3.3	510	3.2	1	4.1
Canada	534	2.0	536	2.5	532	2.1	4	2.2
Czech Republic	513	3.5	515	4.2	510	4.8	5	5.6
Denmark	496	3.1	500	3.6	491	3.4	9	3.2
Finland	563	2.0	562	2.6	565	2.4	-3	2.9
France	495	3.4	497	4.3	494	3.6	3	4.0
Germany	516	3.8	519	4.6	512	3.8	7	3.7
Greece	473	3.2	468	4.5	479	3.4	-11	4.7
Hungary	504	2.7	507	3.3	501	3.5	6	4.2
Iceland	491	1.6	488	2.6	494	2.1	-6	3.4
Ireland	508	3.2	508	4.3	509	3.3	0	4.3
Italy	475	2.0	477	2.8	474	2.5	3	3.5
Japan	531	3.4	533	4.9	530	5.1	3	7.4
Korea	522	3.4	521	4.8	523	3.9	-2	5.5
Luxembourg	486	1.1	491	1.8	482	1.8	9	2.9
Mexico	410	2.7	413	3.2	406	2.6	7	2.2
Netherlands	525	2.7	528	3.2	521	3.1	7	3.0
New Zealand	530	2.7	528	3.9	532	3.6	-4	5.2
Norway	487	3.1	484	3.8	489	3.2	-4	3.4
Poland	498	2.3	500	2.7	496	2.6	3	2.5
Portugal	474	3.0	477	3.7	472	3.2	5	3.3
Slovak Republic	488	2.6	491	3.9	485	3.0	6	4.7
Spain	488	2.6	491	2.9	486	2.7	4	2.4
Sweden	503	2.4	504	2.7	503	2.9	1	3.0
Switzerland	512	3.2	514	3.3	509	3.6	6	2.7
Turkey	424	3.8	418	4.6	430	4.1	-12	4.1
United Kingdom	515	2.3	520	3.0	510	2.8	10	3.4
United States	489	4.2	489	5.1	489	4.0	1	3.5
OECD average	500	0.5	501	0.7	499	0.6	2	0.7
OECD total	491	1.2	492	1.4	490	1.3	3	1.3
Brazil	390	2.8	395	3.2	386	2.9	9	2.3
Indonesia	393	5.7	399	8.2	387	3.7	12	6.3
Russian Federation	479	3.7	481	4.1	478	3.7	3	2.7

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Performance on the science scale in PISA 2006

Mean scores



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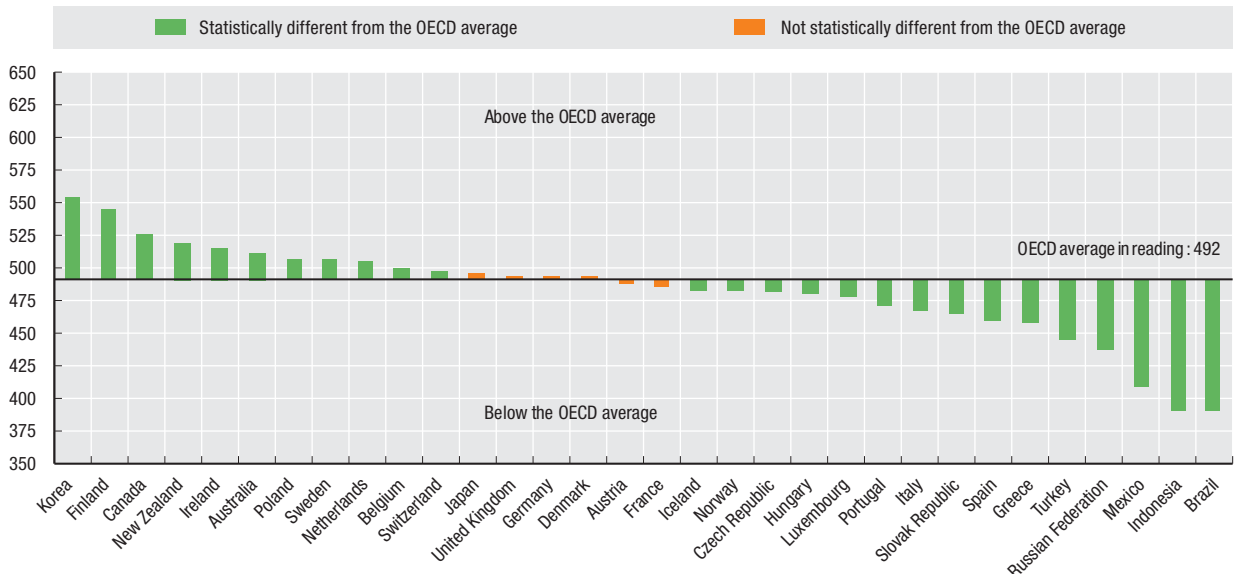
Mean scores and gender differences on the reading scale in PISA 2006

	All students		Males		Females		Difference (males – females)	
	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Score difference	S.E.
Australia	513	2.1	495	3.0	532	2.2	-37	3.6
Austria	490	4.1	468	4.9	513	5.5	-45	6.0
Belgium	501	3.0	482	4.1	522	3.5	-40	4.8
Canada	527	2.4	511	2.8	543	2.5	-32	2.3
Czech Republic	483	4.2	463	5.0	509	5.4	-46	6.2
Denmark	494	3.2	480	3.6	509	3.5	-30	3.2
Finland	547	2.1	521	2.7	572	2.3	-51	2.8
France	488	4.1	470	5.2	505	3.9	-35	4.4
Germany	495	4.4	475	5.3	517	4.4	-42	3.9
Greece	460	4.0	432	5.7	488	3.5	-57	5.6
Hungary	482	3.3	463	3.7	503	3.9	-40	4.1
Iceland	484	1.9	460	2.8	509	2.3	-48	3.3
Ireland	517	3.5	500	4.5	534	3.8	-34	4.9
Italy	469	2.4	448	3.4	489	2.8	-41	4.0
Japan	498	3.6	483	5.4	513	5.2	-31	7.7
Korea	556	3.8	539	4.6	574	4.5	-35	5.9
Luxembourg	479	1.3	464	2.0	495	2.1	-32	3.2
Mexico	410	3.1	393	3.5	427	3.0	-34	2.5
Netherlands	507	2.9	495	3.7	519	3.0	-24	3.4
New Zealand	521	3.0	502	3.6	539	3.6	-37	4.6
Norway	484	3.2	462	3.8	508	3.3	-46	3.3
Poland	508	2.8	487	3.4	528	2.8	-40	2.9
Portugal	472	3.6	455	4.4	488	3.5	-33	3.7
Slovak Republic	466	3.1	446	4.2	488	3.8	-42	5.4
Spain	461	2.2	443	2.6	479	2.3	-35	2.1
Sweden	507	3.4	488	4.0	528	3.5	-40	3.2
Switzerland	499	3.1	484	3.2	515	3.3	-31	2.6
Turkey	447	4.2	427	5.1	471	4.3	-44	4.3
United Kingdom	495	2.3	480	3.0	510	2.6	-29	3.5
OECD average	492	0.6	473	0.7	511	0.7	-38	0.8
OECD total	484	1.0	466	1.2	502	1.3	-36	1.4
Brazil	393	3.7	376	4.3	408	3.7	-32	3.0
Indonesia	393	5.9	384	8.7	402	4.2	-18	6.3
Russian Federation	440	4.3	420	4.8	458	4.3	-38	3.2

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Performance on the reading scale in PISA 2006

Mean scores



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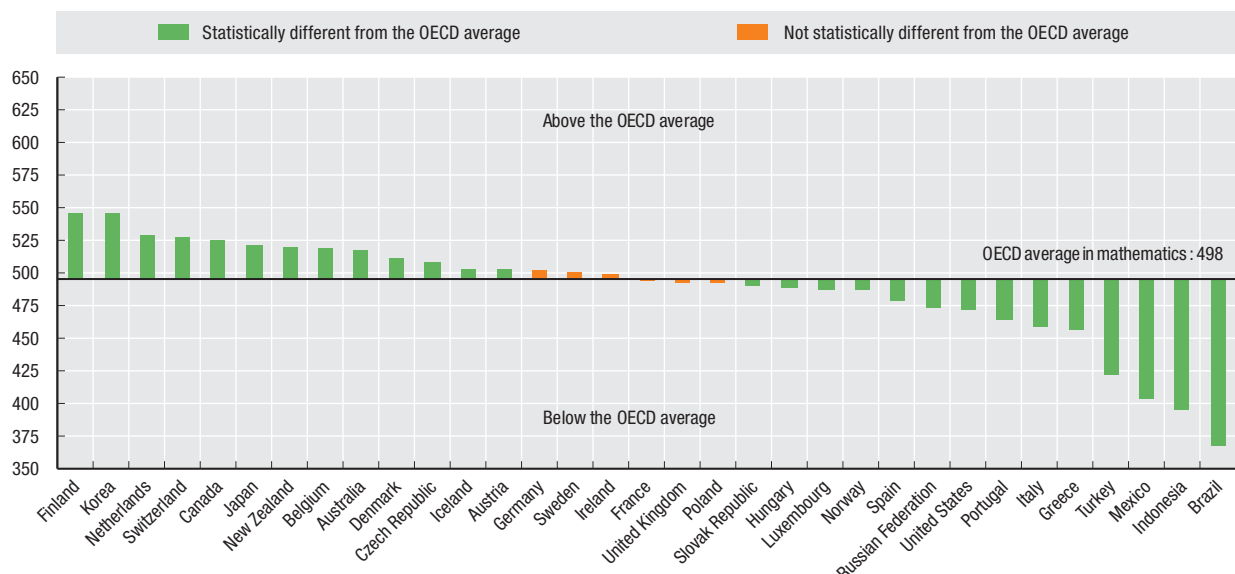
Mean scores and gender differences on the mathematics scale in PISA 2006

	All students		Males		Females		Difference (males – females)	
	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Score difference	S.E.
Australia	520	2.2	527	3.2	513	2.4	14	3.4
Austria	505	3.7	517	4.4	494	4.1	23	4.7
Belgium	520	3.0	524	4.1	517	3.4	7	4.8
Canada	527	2.0	534	2.4	520	2.0	14	1.9
Czech Republic	510	3.6	514	4.2	504	4.8	11	5.6
Denmark	513	2.6	518	2.9	508	3.0	10	2.8
Finland	548	2.3	554	2.7	543	2.6	12	2.6
France	496	3.2	499	4.0	492	3.3	6	3.7
Germany	504	3.9	513	4.6	494	3.9	20	3.7
Greece	459	3.0	462	4.3	457	3.0	5	4.5
Hungary	491	2.9	496	3.5	486	3.7	10	4.3
Iceland	506	1.8	503	2.6	508	2.2	-4	3.2
Ireland	501	2.8	507	3.7	496	3.2	11	4.1
Italy	462	2.3	470	2.9	453	2.7	17	3.4
Japan	523	3.3	533	4.8	513	4.9	20	7.2
Korea	547	3.8	552	5.3	543	4.5	9	6.3
Luxembourg	490	1.1	498	1.7	482	1.8	17	2.8
Mexico	406	2.9	410	3.4	401	3.1	9	2.6
Netherlands	531	2.6	537	3.1	524	2.8	13	2.8
New Zealand	522	2.4	527	3.1	517	3.6	11	4.7
Norway	490	2.6	493	3.3	487	2.8	6	3.1
Poland	495	2.4	500	2.8	491	2.7	9	2.6
Portugal	466	3.1	474	3.7	459	3.2	15	3.3
Slovak Republic	492	2.8	499	3.7	485	3.5	14	4.6
Spain	480	2.3	484	2.6	476	2.6	9	2.2
Sweden	502	2.4	505	2.7	500	3.0	5	2.9
Switzerland	530	3.2	536	3.3	523	3.6	13	2.7
Turkey	424	4.9	427	5.6	421	5.1	6	4.6
United Kingdom	495	2.1	504	2.6	487	2.6	17	2.9
United States	474	4.0	479	4.6	470	3.9	9	2.9
OECD average	498	0.5	503	0.7	492	0.6	11	0.7
OECD total	484	1.2	489	1.3	478	1.3	12	1.2
Brazil	370	2.9	380	3.4	361	3.0	19	2.8
Indonesia	391	5.6	399	8.3	382	4.0	17	7.3
Russian Federation	476	3.9	479	4.6	473	3.9	6	3.3

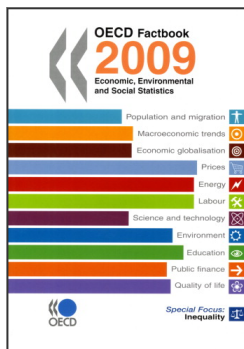
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Performance on the mathematics scale in PISA 2006

Mean scores



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