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Chapter

D

THE LEARNING ENVIRONMENT AND ORGANISATION OF SCHOOLS



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Indicators D1 on instruction time, D6 on teachers' salaries and bonus systems, and D7 on teacher working time draw on system-level information on teachers and the curriculum collected annually. Annex 3 (see www.oecd.org/els/education/eag2002) adds to this a rich source of qualitative information on differences and similarities between countries in instruction time, teachers' pay scales and bonus systems, and definitions of teaching and working time. It also helps readers to interpret comparisons and data on individual countries.

Indicators D3 to D5 and part of indicator D1 draw on data from the Programme of International Student Assessment (PISA). For detailed information on PISA, see www.pisa.oecd.org.

TOTAL INTENDED INSTRUCTION TIME FOR STUDENTS 9 TO 14 YEARS OF AGE

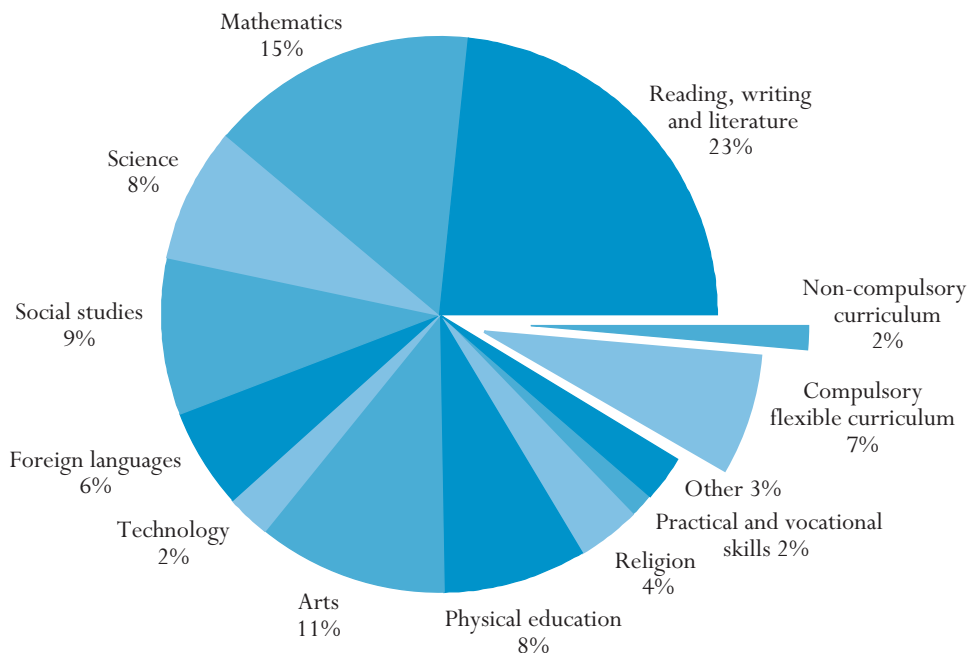
- Students between the ages of 9 and 11 spend, on average, 841 hours per year in the classroom, while students between the ages of 12 and 14 spend nearly 100 hours more per year. However, the figure varies significantly across countries.
- On average across countries, reading and writing in the language of instruction, mathematics and science comprise about half of the compulsory curriculum for 9 to 11-year-olds and 40 per cent for 12 to 14-year-olds.
- 15-year-old students spend an average of 4.6 hours per week on homework and learning in the language of instruction, mathematics and science in addition to the instruction time spent in the classroom.
- On average, one in three 15-year-olds receive private instruction outside school at least occasionally.
- The degree to which schools and local and regional authorities can specify curricular content and timetables varies widely from country to country.

Chart D1.1.

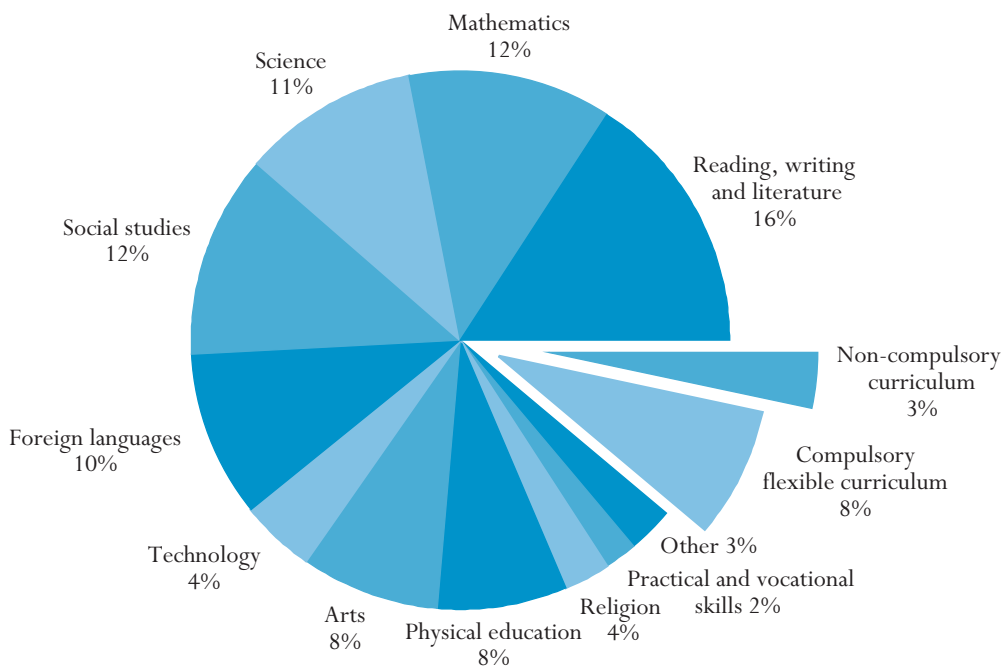
Intended instruction time in public institutions, by school subject (2000)

Percentage of total intended instruction time allocated for the compulsory core curriculum, by subject, compulsory flexible curriculum and non-compulsory curriculum, for 9 to 11-year-olds and 12 to 14-year-olds

Intended instruction time for 9 to 11-year-olds (Average total intended instruction time 841 hours)



Intended instruction time for 12 to 14-year-olds (Average total intended instruction time 936 hours)



Source: OECD. Tables D1.2a and D1.2b. See Annex 3 for notes (www.oecd.org/els/education/eag2002).

D1

Policy context

The amount and quality of the time that people spend learning between early childhood and the start of their working lives are decisive for shaping their lives, socially and economically. Instruction time in formal classroom settings comprises a large part of the public investment in student learning. Matching resources with students' needs and using time in an optimal manner, from the perspective of the learner and of public investment, are major challenges for education policy. The costs of resources depend primarily on the costs of teacher labour, of institutional maintenance, and of other educational resources. The length of time during which resources are made available to students, as shown in this indicator on instruction time in classroom settings in the formal education system, are therefore important.

This indicator shows intended instruction time in classroom settings in the formal education system...

Student learning time includes hours spent in the formal classroom setting as well as time spent on homework and in other learning activities organised by the school such as remedial tutoring, enrichment classes and interest clubs. It often also includes private lessons, tutoring and other forms of out-of-school learning that are much more difficult to quantify. The indicator does report on two important aspects of extra-curricular learning, namely the incidence of organised instruction in addition to the formal curriculum both inside and outside school, and the time that 15-year-olds report spending on homework.

...and sheds some light on the incidence of learning outside school.

Evidence and explanations

What this indicator shows

This indicator captures intended instruction time as a measure of exposure to learning in formal classroom settings as per public regulations. It also shows how instruction time is allocated to different curricular areas. The indicator is calculated as the intended net hours of instruction for the grades in which the majority of students are 9 to 14 years of age. Although such data are difficult to compare across countries because of different curriculum policies, they nevertheless provide an indication of how much contact time countries consider students need in order to achieve the educational goals that have been set for them.

Intended instruction time is an important indicator of the public resources invested in education...

In some countries, intended instruction time varies considerably between regions or different types of school. In many countries, local education authorities or schools can determine the number and allocation of hours. Additional teacher time is often planned for individual remedial teaching or enhancement of the curriculum. On the other hand, time may be lost because too few qualified substitutes exist to replace absent teachers or because students are absent.

...but needs to be interpreted in the context of often considerable variation between regions and schools...

Annual instruction time should also be seen together with the length of compulsory education, which measures the time during which young people receive full-time educational support from public resources, or during which more than 90 per cent of the population participates in education (see Indicator

...and in the context of other measures of learning time and of the quality of teaching that

are not captured by this indicator.

C1). Intended instruction time also does not capture the quality of learning opportunities that are being provided or the level or quality of human and material resources involved. Other indicators in this section tackle the problem of the availability of educational resources (Indicators D3 and D5) and of teachers relative to the student population (Indicator D2), and the quality of the learning climate in schools and classrooms (Indicator D5).

Curriculum policies

Responsibilities for curriculum provision are distributed in different ways.

Decision-making responsibilities for planning students' programmes of learning vary greatly from country to country. Two basic models exist in OECD countries, with several variants.

In some OECD countries, subjects and content are defined, and time is allocated at a national (or sub-national) level...

In one model of curriculum regulation, national or regional authorities specify subject areas, the time allocated to them and the content, and schools must respect with a greater or lesser degree of flexibility these national or sub-national curricular specifications. In Austria, England, France, Germany, Greece and Spain, the national authorities (German *Länder*, Spanish Autonomous Communities) establish curricula for all types of schools, grades and subjects. Typically, the documents define subjects, the time allocated to them and content in more or less detail by grade level and type of programme, while the school is responsible for managing and delivering the curriculum.

Curriculum regulation in Spain

In Spain, the governments of Autonomous Communities state the curriculum for their community by specifying the subjects and number of hours per school year to be devoted to each subject. The governments must necessarily include the compulsory curriculum prescribed by the central government (65 per cent of the total compulsory curriculum, or 55 per cent if the community has its own language).

...while in others, local school authorities, or the schools themselves, are primarily responsible for providing the curricula, with attainment targets set at the national level...

In the second model of curriculum regulation, national authorities establish attainment targets or standards, while local authorities or schools are responsible for planning and implementing curricula. For example, in Belgium (Flemish Community), the Czech Republic, New Zealand and Portugal (primary level), national policy documents describe the targets, and local authorities or schools specify the subjects, content and time allocated to them.

D1

Curriculum guidance in New Zealand

In New Zealand, the national curriculum is specified by seven learning area statements for mathematics, science, English, technology, social studies, health and physical education and the arts. State and state-integrated schools are required to provide programmes of learning based on the statements for all students in grades 1 to 10. However, how schools do this is not prescribed either in terms of time allocations or programme/timetable arrangements. Modern foreign languages are not compulsory at any level, and in New Zealand, community languages and international languages are considered foreign languages.

Primary education curricula in Portugal

In Portugal, the primary education curriculum does not specify the amount of hours per week allocated to each subject area; it only indicates the total amount of hours per week. Study areas include physical education, music, drama and plastic education; environmental studies; Portuguese language; mathematics and religion or personal and social development. Teachers may allocate the time for each subject area up to a total amount of 25 hours per week.

Finland, Hungary, Ireland and Sweden combine these two models. Local authorities and schools are required to develop the programme of learning, but they are guided by national curriculum documents on subject and content, which provide broad directions concerning time allocations to study areas at the national level. Schools in these countries enjoy a fair degree of flexibility in offering additional instruction and even individual tutoring for students.

...and yet in others, combinations of the two models exist.

Primary education curriculum in Ireland

In Ireland, the primary school curriculum is integrated and envisages an integrated learning experience for children. Learning experiences are organised to foster cross-curricular activity. Schools are required to develop their own curricula, but are assisted in planning and implementing them by a framework allocating minimal times to each of the main study areas.

Curriculum regulations in Sweden

In Sweden, the curriculum prescribed by legislation states the total number of hours per subject or group of subjects for the nine years of compulsory education. Municipalities and schools decide in which year a given subject should be introduced and how many hours are needed for each subject in any academic year.

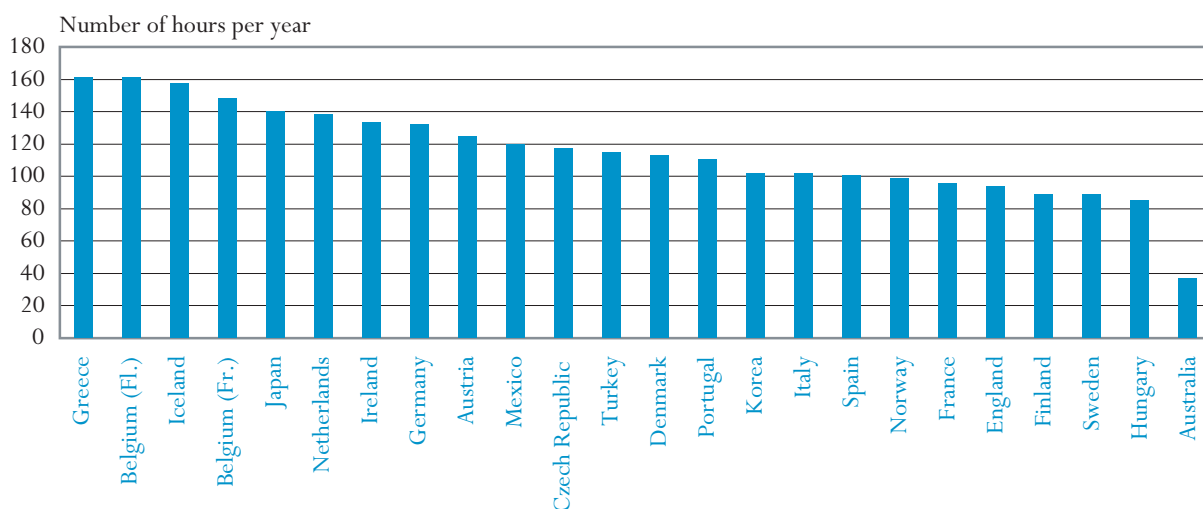
Compulsory intended instruction time in classroom settings in the formal education system

On average, 8 per cent of compulsory instruction time belongs to the flexible part of the curriculum in the grades where most students are 9 to 14 years of age.

In most OECD countries, the number of hours of compulsory instruction is defined. Within the compulsory part of the curriculum, students have varying degrees of freedom to choose the subjects they want to learn. On average, the flexible part of the curriculum comprises 7 per cent of compulsory instruction time in the grades where most students are 9 to 11 years old, and 9 per cent for students 12 to 14 years of age. However, in Australia, the flexible part of the curriculum is 60 and 28 per cent in the two age groups respectively, whereas it is zero in one-third of OECD countries. For 12 to 14-year-old students in Belgium, the Czech Republic, Finland, Iceland, the Netherlands, Portugal, Scotland and Spain, at least 10 per cent of the compulsory curriculum is flexible (Tables D1.2a and D1.2b).

Chart D1.2.

Average number of hours per year devoted to foreign language instruction in public institutions for 9 to 14-year-olds (2000)



Countries are ranked in descending order of the number of hours per year devoted to foreign language instruction for 9 to 14-year-olds. Source: OECD. Tables D1.2a and D1.2b. See Annex 3 for notes (www.oecd.org/els/education/eq2002).

For students 9 to 11 years of age, 48 per cent of the compulsory curriculum on average is devoted to the three basic subject areas: reading and writing (23 per cent), mathematics (15 per cent) and science (8 per cent). On average, 9 per cent of the compulsory curriculum is devoted to social studies and 6 per cent to modern foreign languages (Chart D1.2). Arts account for 11 per cent and physical education accounts for 8 per cent of the total compulsory curriculum time. These seven study areas form part of the curriculum in all OECD countries for these age cohorts. Religion or moral education is included in the curriculum in about half of the countries. At this level, classroom activities in the study areas are not necessarily organised as separate subject classes (Tables D1.2a and D1.2b).

About half of compulsory instruction time tends to be devoted to reading and writing, mathematics and science for all students 9 to 11 years of age...

For 12 to 14-year-old students in OECD countries, 40 per cent of the compulsory curriculum, on average, is devoted to three basic subject areas: reading and writing (16 per cent), mathematics (12 per cent) and science (11 per cent). In these age cohorts, a relatively larger part of the curriculum is devoted to social studies (12 per cent) and modern foreign languages (10 per cent) (Chart D1.2), whereas somewhat less time is devoted to arts (8 per cent). Physical education accounts for 8 per cent. These seven study areas form part of the curriculum in all OECD countries for lower secondary students. Technology is included in about two-thirds of the countries, and religion is included in about half of the OECD countries as part of the compulsory curriculum (Tables D1.2a and D1.2b).

...and 40 per cent for students 12 to 14 years of age.

Total intended instruction time in classroom settings in the formal education system

Intended instruction time is an estimate of the number of hours during which students are taught both the compulsory and non-compulsory parts of the curriculum. Total intended instruction time in classroom settings in the formal education system for 9 to 11-year-old students ranges from a yearly average of less than 700 hours in Finland and Iceland to 1 000 hours or more in Italy, the Netherlands and Scotland. These figures do not include individualised instruction outside classroom settings, which is considerable in many countries, including Finland and Iceland (Table D1.1).

Total intended instruction time for 9 to 11-year-olds averages to 841 hours...

For 12 to 14-year-old students, the average intended instruction time per year ranges from less than 800 hours in Sweden and Turkey to more than 1 100 hours in Austria and Mexico. The OECD average for the 12 to 14 age cohorts is 936 hours per year (Table D1.1).

...and to 936 hours for 12 to 14-year-olds.

On average, the non-compulsory part of the curriculum comprises 2 per cent of the total instruction time for 9 to 11-year-old students and 4 per cent for 12 to 14-year-old students. However, a considerable amount of additional non-compulsory instruction time can sometimes be provided. In primary schools, all intended instruction time is compulsory for students in most OECD countries, but the additional non-compulsory part is as high as 20 per cent in Hungary and around 10 per cent in New Zealand and Turkey. At the lower secondary level,

On average, the non-compulsory part of the curriculum accounts for 3 per cent of total intended instruction time, but this varies greatly across countries.

a sizeable non-compulsory fraction of instruction time is provided in Australia, Belgium, Denmark, England, France, Hungary, Ireland, New Zealand and Turkey, which ranges from 5 per cent in Australia and New Zealand to 28 per cent in Hungary (Tables D1.2a and D1.2b and Chart D1.1).

In most OECD countries, total intended instruction time for 12 to 14-year-old students remained unchanged between 1996 and 2000.

In most OECD countries, total intended instruction time for students aged 12 to 14 did not change between 1996 and 2000. However, it increased by 11 per cent in the Czech Republic and New Zealand (see Annex 3 at www.oecd.org/els/education/eag2002).

Homework

Homework and other out-of-school learning play an important part for 15-year-olds...

Practices and policies concerning homework are other elements in this equation that can substantially influence how much time students spend learning. In many countries, homework constitutes a major part of students' learning time. In PISA 2000, 15-year-olds were asked to specify how much time they spend each week on homework in the language of assessment, mathematics and science.

...with close to the equivalent of one-third of instruction time in the language of instruction, mathematics and science devoted to homework.

In PISA, 15-year-olds reported spending an average of 4.6 hours on homework and learning in the language of instruction, mathematics and science. Students in Greece, however, reported spending about 7 hours per week. Students in Australia, Canada, Denmark, France, Hungary, Iceland, Ireland, Italy, Mexico, New Zealand, Poland, Portugal, Spain and the United Kingdom reported spending more time on homework in the core subjects than the OECD average. Students in Austria, the Czech Republic, Finland, Japan, Korea, Luxembourg, Sweden and Switzerland, by contrast, reported spending less than the OECD average time on homework (Table D1.3).

Additional instruction time

School principals and students in PISA were asked about the additional instruction offered by the school for 15-year-old students.

A policy on a flexible curriculum is often used to respond to students' specific interests or to their need for remedial instruction in OECD countries. In addition, parents often seek tutoring and instruction for their children beyond what the school can offer. In PISA, school principals in secondary schools were asked whether their school offers *i)* extra courses on academic subjects for gifted students, *ii)* special training in the test language for low achievers, *iii)* special courses in study skills for low achievers, *iv)* special tutoring by staff members and *v)* room(s) where students can do their homework with staff help. 15-year-old students in the same schools were asked whether they had attended additional extension or enrichment courses or remedial courses in the test language and in other subjects or training to improve their study skills, and whether they received additional instruction outside of the school. The responses to these questions give some hints of further learning opportunities beyond formal classroom instruction. Although the age cohort responding to the questions in the PISA student questionnaire is somewhat older than that referred to in the first part of this indicator, the characteristic differences between countries may suggest policy issues that warrant attention (Table D1.3).

On average across OECD countries, the schools of about half of the 15-year-olds offer additional instruction, and about two-thirds of schools offer individual tutoring for students. Schools in Australia, Canada, Finland, Iceland, Italy, Luxembourg, New Zealand, Portugal, Sweden and the United Kingdom offer additional instruction for interested students and remedial teaching for students in need relatively more frequently. For example, over 90 per cent of 15-year-olds attend schools where remedial courses for low achievers are offered in the language of instruction in Iceland, Italy, New Zealand, Norway, Portugal and Sweden (Table D1.3).

By contrast, only half of 15-year-olds go to such schools in Belgium, Germany, Korea, Mexico and Poland. Where more than 90 per cent of students receive individual tutoring from staff members in Denmark, Finland, Japan, New Zealand and the United Kingdom, less than 40 per cent are offered such help in Austria, Germany and France (Table D1.3).

Comparing these findings with the intended instruction time reported on the system level, one finds that a relatively low amount of intended instruction time does not necessarily equate with an insufficient amount of instruction. For example, Austria, France, Greece and Mexico are among the countries with the highest amount of intended instruction time, yet fewer schools reported offering additional instruction time. By contrast, Finland, Iceland, Norway, Sweden and Portugal appear to have the fewest classroom instruction hours among the OECD countries, yet belong to the group of countries where most schools reported offering additional courses to meet special needs of students (Tables D1.1 and D1.3).

Students seek not only additional courses in schools, but also additional instruction outside school. In Japan, 30 and 55 per cent of 15-year-olds, respectively, reported regularly receiving out-of-school instruction in the language of instruction and other subjects during the last three years. These percentages are also high in Korea (27 and 34 per cent respectively). Somewhat fewer students in Hungary and Poland – 25 and 10 per cent – reported regularly attending extension or additional courses outside school during the last three years (for data see www.pisa.oecd.org). Finally, 11 per cent or more of 15-year-olds receive private tutoring in Hungary, Japan, Korea, New Zealand, Ireland, Poland, Portugal and Spain.

Including the students who only occasionally seek instruction outside of the school, fewer than 10 per cent of 15-year-old students in Finland, Italy, Norway, Switzerland and Sweden attended courses in the test language or in other subjects, or additional extension courses outside of the school during the last three years. By contrast, in Mexico, Poland, Korea and Japan, more than half of the students received private instruction in addition to instruction in the school. Furthermore, while less than 10 per cent received remedial (private) instruction in Finland and Sweden, in Hungary, Ireland, Italy, Mexico, New

Most schools in Australia, Canada, Finland, Iceland, Italy, Luxembourg, New Zealand, Portugal, Sweden and the United Kingdom offer additional courses for interested students or students needing remedial help while only about half of the schools or fewer in Belgium, Germany, Korea, Mexico and Poland do so.

In some cases, additional courses in schools compensate for below-average intended instruction time.

One-third of 15-year-olds in Korea and more than half the 15-year-olds in Japan reported receiving private instruction outside school in subjects other than those in the language of instruction during the last three years.

Zealand, Poland, Portugal and Spain 40 per cent of 15-year-olds or more receive some during the last three years (Table D1.3).

Definitions and methodologies

Data on instruction time are from the 2001 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1999–2000.

Instruction time for 9 to 14-year-olds refers to the formal number of class 60 minute-hours per school year organised by the school for instructional activities for students in the reference school year 1999-2000. For countries that have no formal policy on instruction time, the number of hours was estimated from survey data. Hours lost when schools are closed for festivities and celebrations, such as national holidays, are excluded. Intended instruction time does not include non-compulsory time outside the school day, homework, individual tutoring, or private study done before or after school.

Compulsory curriculum refers to the amount and allocation of instruction time that every school must provide and all students must attend.

Compulsory flexible curriculum refers to the part of the compulsory curriculum where schools or students have some flexibility or choice. For example, a school may choose to offer more than the minimum number of science classes and only minimum required number of art classes within the compulsory time frame.

The *non-compulsory part of the curriculum* is that which is defined entirely at the school level or eventually at the programme level if various programme types exist. Students are usually not required to attend the non-compulsory part of the curriculum.

Intended instruction time refers to the number of hours per year during which students receive instruction in the compulsory and non-compulsory parts of the curriculum.

The amount of time spent on homework by 15-year-olds in the language of assessment, mathematics and science was estimated based on self-reports administered as part of PISA 2000. In PISA, students rated the amount on a four-point scale for each subject area with response categories ‘no time’, ‘less than 1 hour per week’, ‘between 1 and 3 hours per week’ and ‘3 hours or more per week’. Student responses were then added across subject areas with ‘no time’ recoded as 0, ‘less than 1 hour per week’ recoded as 0.5, ‘between 1 and 3 hours per week’ recoded as 2 and ‘3 hours or more per week’ recoded to 4 hours.

For the classification of subject areas and specific notes on countries, see www.oecd.org/els/education/eag2002.

Table D1.1.
Intended instruction time in public institutions (2000)
Total intended instruction time in hours per year for 9 to 14-year-olds

	Ages			Average (Ages 9-11)	Ages			Average (Ages 12-14)
	9	10	11		12	13	14	
OECD COUNTRIES								
Australia*	986	987	987	987	1 014	1 020	1 023	1 019
Austria	m	m	m	m	1 013	1 169	1 262	1 148
Belgium (Fl.)*	831	831	831	831	955	955	a	955
Belgium (Fr.)	m	m	m	m	1 044	1 106	a	1 075
Czech Republic*	716	738	803	752	828	886	886	867
Denmark	750	810	810	790	840	900	930	890
England	890	890	890	890	940	940	940	940
Finland*	684	684	713	694	713	855	855	808
France	802	802	837	814	960	1 100	1 066	1 042
Germany	752	774	862	796	874	915	918	903
Greece*	928	928	928	928	1 064	1 064	1 064	1 064
Hungary*	733	867	902	834	971	902	902	925
Iceland	630	700	747	692	793	817	817	809
Ireland*	941	941	941	941	891	891	891	891
Italy	1 020	1 020	1 020	1 020	1 020	1 020	m	1 020
Japan	761	761	761	761	875	875	875	875
Korea	706	752	752	737	867	867	867	867
Mexico	800	800	800	800	1 167	1 167	1 167	1 167
Netherlands*	1 000	m	1 000	1 000	1 067	1 067	1 067	1 067
New Zealand	985	985	985	985	985	930	930	948
Norway	m	770	770	770	770	855	855	827
Portugal	815	842	842	833	842	842	842	842
Scotland*	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
Spain*	795	795	795	795	795	870	870	845
Sweden*	741	741	741	741	741	741	741	741
Turkey	796	796	796	796	796	796	m	796
United States	m	m	m	m	m	m	m	m
Country mean	829	835	855	841	916	944	944	936
NON-OECD COUNTRIES								
Argentina	729	729	729	729	912	936	936	928
Brazil	800	800	800	800	800	800	800	800
Chile	1 140	1 140	900	1 060	990	990	1 260	1 080
China	771	771	771	771	893	893	1 020	935
Egypt	1 026	1 053	1 026	1 035	1 026	999	a	1 013
India	1 051	1 051	1 051	1 051	1 176	1 176	1 176	1 176
Indonesia	1 064	1 120	1 176	1 120	1 176	1 323	1 323	1 274
Jamaica	950	808	808	855	798	798	798	798
Jordan	802	945	974	907	974	945	974	965
Malaysia	964	964	964	964	1 230	1 230	1 230	1 230
Paraguay	753	753	753	753	1 011	1 011	1 011	1 011
Peru ¹	783	783	783	783	914	914	914	914
Philippines	1 067	1 067	1 067	1 067	1 467	1 467	1 467	1 467
Russian Federation	630	893	919	814	971	998	998	989
Thailand	1 080	1 200	1 200	1 160	1 167	1 167	1 167	1 167
Tunisia	960	960	960	960	900	900	900	900
Uruguay	455	455	455	455	863	863	1 011	913
Zimbabwe	753	753	753	753	753	1 375	1 375	1 167

1. Year of reference 1999.

* See Annex 3 for notes (www.oecd.org/els/education/eqg2002).

Source: OECD.

Table D1.2a.

Intended instruction time for 9 to 11-year-olds in public institutions, by subject (2000)
Intended instruction time as a percentage of total compulsory instruction time, by subject, and division of instruction time into compulsory and non-compulsory parts of the curriculum, for 9 to 11-year-olds

	Compulsory core curriculum											Com- pulsory flexible curricu- lum	TOTAL compul- sory cur- riculum	Non-com- pulsory curricu- lum		
	Reading, writing and lit- erature	Math- ematics	Science	Social studies	Modern foreign lan- guages	Tech- nology	Arts	Physical educa- tion	Reli- gion	Practi- cal and vocation- al skills	Other				TOTAL compulsory core cur- riculum	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)				(12)	(13)
OECD COUNTRIES	Australia*	12	8	2	3	2	2	4	4	1	n	n	40	60	100	n
	Austria	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Belgium (Fl.)*	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Belgium (Fr.)	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Czech Republic ^{1*}	23	18	15	5	12	n	14	9	n	2	n	98	2	100	m
	Denmark*	24	15	8	4	10	n	22	10	4	n	4	100	n	100	n
	England	27	22	11	10	n	9	10	7	5	n	n	100	n	100	n
	Finland*	23	16	11	2	6	n	9	9	6	6	n	86	14	100	4
	France	29	21	5	8	9	4	9	16	n	n	n	100	n	100	n
	Germany	20	17	7	8	7	n	16	11	7	n	2	96	4	100	n
	Greece*	29	14	11	11	10	n	8	7	7	n	2	100	n	100	n
	Hungary*	28	17	n	9	7	n	16	12	n	7	4	100	n	100	20
	Iceland	20	13	4	7	2	n	17	10	7	3	n	84	16	100	n
	Ireland*	29	12	x(4)	12	n	n	12	4	10	n	14	92	8	100	n
	Italy	17	10	8	11	10	3	13	7	6	n	n	84	16	100	n
	Japan*	23	17	10	10	n	5	14	10	n	n	10	100	n	100	n
	Korea	19	14	12	11	6	n	12	9	n	3	3	91	9	100	n
	Mexico	30	25	15	20	n	n	5	5	n	n	n	100	n	100	n
	Netherlands ^{2*}	30	19	x(4)	15	2	2	10	7	4	n	12	100	n	100	n
	New Zealand*	42	19	7	8	x(1)	7	9	9	m	n	m	100	n	100	10
	Norway ^{3*}	19	14	8	8	7	n	17	7	9	n	9	100	n	100	n
	Portugal ^{3*}	16	13	10	10	13	16	10	10	3	n	n	100	n	100	n
	Scotland*	20	15	5	5	x(1)	5	10	5	15	x(13)	n	80	20	100	n
	Spain*	24	17	9	9	13	n	11	11	x(13)	n	n	93	7	100	n
	Sweden*	22	14	12	13	12	x ⁴	7	8	x ⁴	7	n	94	6	100	n
	Turkey	19	13	10	10	9	n	7	6	7	10	1	91	9	100	10
	United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Country mean	24	16	8	9	6	2	11	8	4	2	3	93	7	100	2
NON-OECD COUNTRIES	Argentina	19	19	15	15	7	4	7	7	a	a	n	93	7	100	m
	Chile	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	81	19	100	m
	China	26	18	6	9	n	n	12	9	n	3	12	94	6	100	m
	Egypt	30	15	9	6	9	2	5	7	7	5	5	100	a	100	m
	India	19	17	12	12	19	a	4	6	a	a	6	96	4	100	m
	Indonesia	22	22	13	11	a	a	5	5	5	13	5	100	a	100	m
	Jamaica	25	23	9	9	a	a	6	6	6	a	16	100	n	100	m
	Jordan	24	16	13	8	12	a	3	6	9	5	3	100	a	100	m
	Malaysia	21	15	11	9	15	n	4	4	13	4	4	100	a	100	m
	Paraguay	26	13	8	10	x(13)	7	10	7	3	x(7)	10	93	7	100	m
	Peru ⁵	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	a	70	30	100	m
	Philippines	13	13	13	13	13	a	8	4	a	13	13	100	a	100	m
	Russian Federation	31	15	4	9	6	6	6	6	a	m	m	85	15	100	m
	Thailand	14	10	x(11)	x(11)	x(15)	x(15)	x(11)	x(11)	x(11)	23	39	86	14	100	m
	Tunisia	62	13	5	7	n	2	3	3	4	n	n	100	a	100	m
	Uruguay	28	29	13	19	a	a	9	3	a	a	a	100	a	100	m
	Zimbabwe	17	17	14	11	17	n	5	5	8	3	3	100	n	100	m

Note: x indicates that data are included in another column. The column reference is shown in brackets after "x". e.g., x(2) means that data are included in column 2.

1. For 9 to 10-year-olds, social studies is included in science.

2. Includes 9 to 11-year-olds only.

3. Includes 10 to 11-year-olds only.

4. Included in various subjects.

5. Year of reference 1999.

* See Annex 3 for notes (www.oecd.org/els/education/eag2002).

Source: OECD.

Table D1.2b.

Intended instruction time for 12 to 14-year-olds in public institutions, by subject (2000)

Intended instruction time as a percentage of total compulsory instruction time, by subject, and division of instruction time into compulsory and non-compulsory parts of the curriculum, for 12 to 14-year-olds

	Compulsory core curriculum											TOTAL compulsory core curriculum	Compulsory flexible curriculum	TOTAL compulsory curriculum	Non-compulsory curriculum	
	Reading, writing and literature	Mathematics	Science	Social studies	Modern foreign languages	Technology	Arts	Physical education	Religion	Practical and vocational skills	Other					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)					(12)
OECD COUNTRIES																
Australia*	11	11	9	8	5	7	7	8	1	n	3	72	28	100	5	
Austria	11	14	13	11	9	5	11	10	5	2	9	100	n	100	n	
Belgium (Fl.)* ¹	14	13	5	9	14	6	6	6	6	n	n	80	20	100	n	
Belgium (Fr.) ¹	15	14	6	12	12	3	3	9	6	n	5	85	15	100	6	
Czech Republic*	13	14	16	13	10	n	8	7	n	6	n	87	13	100	n	
Denmark*	23	15	14	13	11	n	10	8	4	n	4	100	n	100	11	
England	14	14	13	13	11	13	9	9	4	n	n	100	n	100	10	
Finland*	13	12	13	5	13	n	5	7	4	6	2	79	21	100	1	
France	17	15	12	13	12	6	7	11	n	n	n	93	7	100	10	
Germany	14	13	11	12	16	3	10	10	5	1	3	98	2	100	n	
Greece*	12	11	10	10	15	5	6	8	6	1	16	100	n	100	n	
Hungary*	13	13	12	16	9	4	12	9	n	8	5	100	n	100	28	
Iceland	15	12	8	7	15	n	14	9	3	6	n	88	12	100	n	
Ireland*	28	14	11	22	11	x(13,15)	x(13,15)	6	8	x(13,15)	n	100	n	100	11	
Italy ¹	22	10	10	15	10	10	13	7	3	n	n	100	n	100	n	
Japan*	14	12	11	12	13	7	11	10	n	n	7	98	2	100	n	
Korea	14	12	12	11	12	5	8	9	n	4	6	91	9	100	n	
Mexico	14	14	19	21	9	9	6	6	n	n	n	97	3	100	n	
Netherlands	10	10	8	11	14	5	7	9	n	3	n	78	22	100	n	
New Zealand*	24	17	12	12	x(1)	12	11	11	n	n	n	100	n	100	5	
Norway*	16	13	9	11	10	n	8	10	7	n	10	94	6	100	n	
Portugal*	13	13	15	17	10	n	10	10	3	n	n	90	10	100	n	
Scotland*	19	10	9	9	x(1)	8	8	5	5	x(13)	n	73	27	100	n	
Spain*	18	13	10	10	11	5	12	8	x(13)	x(13)	x(13)	88	12	100	n	
Sweden*	22	14	12	13	12	x ²	7	8	x ²	7	n	94	6	100	n	
Turkey ¹	17	13	10	12	13	n	7	3	7	10	2	93	7	100	10	
United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	
Country mean	16	13	11	12	11	4	8	8	3	2	3	91	9	100	4	
NON-OECD COUNTRIES																
Argentina	13	13	13	15	8	8	8	8	a	a	5	90	10	100	m	
Chile	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	x(12)	92	8	100	m	
China	14	12	9	17	11	n	5	7	n	5	11	92	8	100	m	
Egypt	24	13	11	8	13	5	5	5	5	5	4	100	a	100	m	
India	11	13	15	13	13	a	4	6	a	a	9	83	17	100	m	
Indonesia	16	16	14	13	6	a	5	5	5	15	5	100	a	100	m	
Jamaica	17	14	14	14	6	17	6	6	6	3	n	100	n	100	m	
Jordan	21	13	15	9	16	2	3	4	9	6	3	100	a	100	m	
Malaysia	13	11	11	13	11	n	4	4	9	9	13	100	a	100	m	
Paraguay	20	12	14	13	x(13)	12	10	5	2	x(7)	7	95	5	100	m	
Peru ¹	14	14	12	23	6	a	6	6	6	7	a	93	7	100	m	
Philippines	9	9	9	9	9	18	6	3	a	a	9	82	18	100	m	
Russian Federation	23	13	14	13	8	6	4	5	a	a	m	87	13	100	m	
Thailand	11	6	9	11	x(13)	x(13)	3	9	x(11)	6	14	69	31	100	m	
Tunisia	33	13	5	15	7	5	7	10	5	n	n	100	a	100	m	
Uruguay	13	13	19	18	8	a	5	5	a	a	a	81	19	100	m	
Zimbabwe	14	14	11	9	14	9	7	4	7	10	2	100	n	100	m	

Note: x indicates that data are included in another column. The column reference is shown in brackets after "x". e.g., x(7) means that data are included in column 7.

1. Includes 12 to 13-year-olds only.

2. Included in various subjects.

3. Year of reference 1999.

* See Annex 3 for notes (www.oecd.org/els/education/eag2002).

Source: OECD.

Table D1.3.

Additional instruction time and learning time of 15-year-olds (2000)

Percentage of students attending schools where additional courses are offered and percentage of students attending additional courses at and outside school, estimated average amount of hours spent on homework

	Percentage of students attending schools which offer...					Percentage of students reporting regular participation in extra-curricular courses at school				Percentage of students reporting regular attendance of courses outside school						Percentage of students who have sometimes or regularly attended remedial courses outside of school in the language of assessment, courses in other subjects, or extension or additional courses in the last three years	Percentage of students who have sometimes or regularly attended remedial courses outside of school in the language of assessment, in other subjects, received training to improve study skills or private tutoring in the last three years	Estimated mean number of hours spent on homework in the language of assessment, mathematics and science courses		
	extra courses on academic subjects for gifted students	special training in test language for low achievers	special courses in study skills for low achievers	special tutoring by staff members	room(s) where students can do their homework with staff help	Extension or additional courses	Remedial courses in test language	Remedial courses in other subjects	Training to improve study skills	Courses in test language	Courses in other subjects	Extension or additional courses	Remedial courses in test language	Remedial courses in other subjects	Training to improve study skills				Private tutoring	
OECD COUNTRIES																				
Australia	61	86	71	76	46	2	2	2	2	2	5	2	1	2	2	9	23	32	4.7	
Austria	42	68	32	32	26	1	2	4	1	n	n	2	1	7	1	n	11	35	3.5	
Belgium	12	51	63	67	43	2	2	4	2	1	4	n	n	1	1	3	22	17	4.3	
Canada	50	77	68	79	61	3	1	2	3	n	n	3	1	1	2	6	14	32	5.0	
Czech Republic	31	60	16	83	22	1	9	8	1	2	6	n	n	n	n	7	19	20	3.6	
Denmark	9	78	19	96	32	n	4	3	n	1	2	1	2	2	n	1	15	14	4.7	
Finland	78	80	14	93	35	1	n	3	1	n	n	1	n	1	n	1	5	9	3.5	
France	4	70	59	39	41	2	5	8	2	3	7	2	2	4	1	7	m	m	4.9	
Germany	45	46	15	14	25	2	2	5	2	n	n	3	1	5	1	9	10	36	4.5	
Greece	4	76	n	70	17	n	13	12	n	n	n	n	n	10	n	n	m	25	7.0	
Hungary	76	71	43	60	31	3	6	13	3	n	n	25	3	9	2	12	47	47	5.8	
Iceland	27	93	45	82	57	3	8	11	3	1	3	1	2	4	1	6	18	27	4.7	
Ireland	7	89	45	54	33	4	2	3	4	1	5	6	1	2	2	14	31	41	5.4	
Italy	49	91	93	77	31	3	3	8	3	n	n	1	1	5	2	8	6	48	5.2	
Japan	37	59	53	94	38	2	3	6	2	30	55	n	n	n	n	11	71	17	2.9	
Korea	10	29	46	56	29	1	3	8	1	27	34	9	5	14	3	11	64	58	4.4	
Luxembourg	18	89	54	83	61	2	4	7	2	3	4	1	2	4	6	2	22	37	4.0	
Mexico	22	51	48	62	43	5	2	5	5	1	3	8	1	3	3	4	51	47	5.2	
New Zealand	59	94	78	93	55	5	2	3	5	n	n	3	3	4	4	12	18	40	4.7	
Norway	9	93	24	72	29	1	3	5	1	n	n	1	1	2	1	n	6	11	4.3	
Poland	55	24	24	70	28	3	5	4	3	7	8	10	3	3	3	15	51	53	5.3	
Portugal	1	99	42	87	75	2	6	7	2	2	5	1	n	4	1	14	21	45	5.0	
Spain	8	54	52	79	28	2	2	7	2	3	12	n	3	11	1	22	31	54	5.4	
Sweden	19	97	39	86	61	n	3	5	n	n	1	n	n	1	n	1	8	8	3.3	
Switzerland	47	73	35	46	32	2	5	9	2	n	n	2	2	6	1	6	7	30	3.9	
United Kingdom	52	83	65	91	79	7	2	6	7	2	5	n	n	n	3	8	20	24	5.4	
United States	62	53	49	69	46	5	6	6	5	3	3	2	1	n	2	3	25	29	4.6	
<i>OECD total</i>	<i>41</i>	<i>58</i>	<i>49</i>	<i>68</i>	<i>41</i>	<i>4</i>	<i>4</i>	<i>6</i>	<i>4</i>	<i>8</i>	<i>13</i>	<i>4</i>	<i>2</i>	<i>4</i>	<i>2</i>	<i>8</i>	<i>34</i>	<i>34</i>	<i>4.6</i>	
<i>Country average</i>	<i>35</i>	<i>71</i>	<i>46</i>	<i>72</i>	<i>41</i>	<i>3</i>	<i>4</i>	<i>6</i>	<i>3</i>	<i>5</i>	<i>9</i>	<i>4</i>	<i>2</i>	<i>4</i>	<i>2</i>	<i>8</i>	<i>25</i>	<i>32</i>	<i>4.6</i>	
NON-OECD COUNTRIES																				
Brazil	14	58	28	62	20	10	3	6	10	n	n	4	2	5	6	5	14	51	4.4	
Latvia	76	48	48	94	48	3	6	10	3	3	9	9	2	4	2	11	55	56	m	
Liechtenstein	71	63	16	57	31	2	6	6	2	4	n	4	2	3	1	5	10	29	m	
Russian Federation	62	62	45	94	39	5	10	15	5	6	12	n	n	n	n	8	45	21	m	
Netherlands ¹	15	55	60	60	54	m	2	4	2	m	m	m	m	m	m	5	m	18	4.1	

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

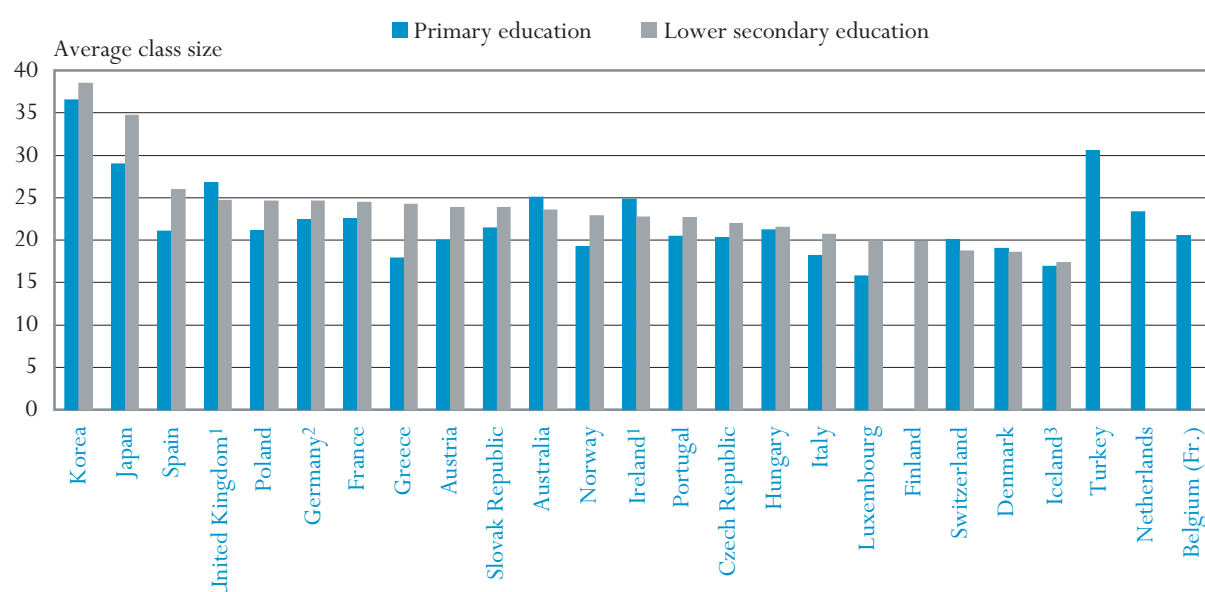
Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

CLASS SIZE AND RATIO OF STUDENTS TO TEACHING STAFF

- The average class size in primary education is 22, but varies between countries from 36 students in Korea per class to less than half of that number in Greece, Iceland and Luxembourg.
- The number of students per class increases by an average of two students between primary and lower secondary education but ratios of students to teaching staff tend to decrease with increasing levels of education due to more annual instruction time.

Chart D2.1.

Average class size in public and private institutions, by level of education (2000)



1. Public institutions only.

2. Year of reference 2001.

3. Including multi-grade classes.

Countries are ranked in descending order of average class size in lower secondary education.

Source: OECD. Table D2.1. See Annex 3 for notes (www.oecd.org/els/education/eqg2002).

Policy context

This indicator shows class sizes and ratios of students to teaching staff.

Class sizes are widely debated in many OECD countries. Smaller classes are valued because they may allow students to receive more individual attention from their teachers and reduce the disadvantage of managing large numbers of students and their work. Smaller class sizes may also influence parents when they choose schools for their children. However, the predominance of teacher costs in educational expenditure means that reducing class sizes leads to sharp increases in the costs of education.

Another important indicator of the resources devoted to education is the ratio of students to teaching staff. Because of the difficulty of constructing direct measures of educational quality, especially at higher levels of education, this indicator is often used as a proxy for quality, on the assumption that a smaller ratio of students to teaching staff means better student access to teaching resources. However, a smaller ratio of students to teaching staff may have to be weighed against higher salaries for teachers, greater investment in teaching technology, or more widespread use of assistant teachers and other paraprofessionals whose salaries are often considerably lower than those of qualified teachers. Moreover, as larger numbers of children with special educational needs are integrated into normal classes, more use of specialised personnel and support services may limit the resources available for reducing the ratio of students to teaching staff.

Evidence and explanations

Average class size in primary and lower secondary education

The average class size in primary education is 22, but varies between countries from 36 students per class to less than half of that.

The average class size in primary education varies widely between OECD countries. It ranges from 36 students per primary class in Korea to fewer than 20 in Denmark, Greece, Iceland, Italy, Luxembourg and Norway. At the lower secondary level, the average class size varies from 38 students per class in Korea to fewer than 20 in Denmark, Finland, Iceland, Luxembourg and Switzerland (Table D2.1).

D₂

The number of students per class increases by an average of two between primary and lower secondary education.

The number of students per class tends to increase, on average, by two students between primary and lower secondary education. In Greece, Japan, Luxembourg and Spain, the increase in average class size exceeds four students, while Australia, Denmark, Ireland, Switzerland and United Kingdom show a drop in the number of students per class between these two levels (Chart D2.1). The indicator on class size is limited to primary and lower secondary education because class sizes are difficult to define and compare at higher levels of education, where students often attend several different classes, depending on the subject area.

Public institutions have three students or more per class than private institutions in the Czech Republic, Greece, Norway, Poland, Switzerland and Turkey.

In nine out of the 20 countries with comparable data, the difference in class sizes between public and private institutions exceeds three students at the primary level. Differences tend to be smaller at the lower secondary level but

the average class size in private lower secondary schools is still lower than in public schools in eight out of the 18 countries (Table D2.1).

Ratio of students to teaching staff

The indicator also provides the ratio of students to teaching staff, which is obtained by dividing the number of full-time equivalent students at a given level of education by the number of full-time equivalent “teachers” at that level and in similar types of institutions. The relationship between the ratio of students to teaching staff and average class size is influenced by many factors, including the number of hours during which a student attends class each day, the length of a teacher’s working day, the number of classes or students for which a teacher is responsible, the subject taught, the division of the teacher’s time between teaching and other duties, the grouping of students within classes and the practice of team-teaching.

In primary education, the ratio of students to teaching staff, expressed in full-time equivalents, ranges from 32 students per teacher in Korea to 10 in Denmark. The country mean in primary education is 18 students per teacher. There is slightly more variation between countries in the ratio of students to teaching staff at the secondary level, ranging from more than 21 students per full-time equivalent teacher in Korea and Mexico to below 11 in Belgium, Greece, Italy, Luxembourg and Portugal. On average across countries, the ratio of students to teaching staff at the secondary level of education is 14, which is close to the ratios in Finland (14), Germany (15), Japan (15), Poland (15), Sweden (14), Turkey (14), the United Kingdom (15) and the United States (15) (Table D2.2).

As the difference in the mean ratio of students to teaching staff between primary and secondary education indicates, there are fewer students per teacher as the level of education rises. With the exception of Canada, Denmark, Hungary, Mexico, the Netherlands, Poland and Sweden, the ratio of students to teaching staff in every OECD country decreases between primary and secondary levels of education, despite a tendency for class sizes to increase. This is mostly because instruction time tends to increase with the level of education.

In France, Korea and Turkey, the decrease in the ratio of students to teaching staff from the primary to the secondary levels is between seven and 16 students per full-time equivalent teacher, which is more marked compared to other countries. In France and Korea, this mainly reflects differences in the annual instruction time, but it may also result from delays in matching the teaching force to demographic changes, or from differences in teaching hours for teachers at different levels of education. The general trend is consistent across countries, but it is not obvious from an educational perspective why a smaller ratio of students to teaching staff should be more desirable at higher levels of education (Table D2.2).

Many factors contribute to differences in the ratio of students to teaching staff.

In Korea and Turkey, the ratio of students to teaching staff in primary education is approximately three times as high as in Denmark and Hungary.

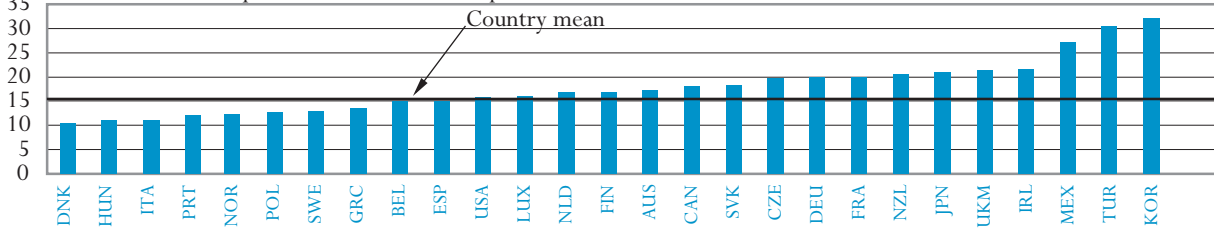
There are fewer students per teacher as the level of education rises.

Chart D2.2.

Ratio of students to teaching staff in public and private institutions, by level of education (2000)

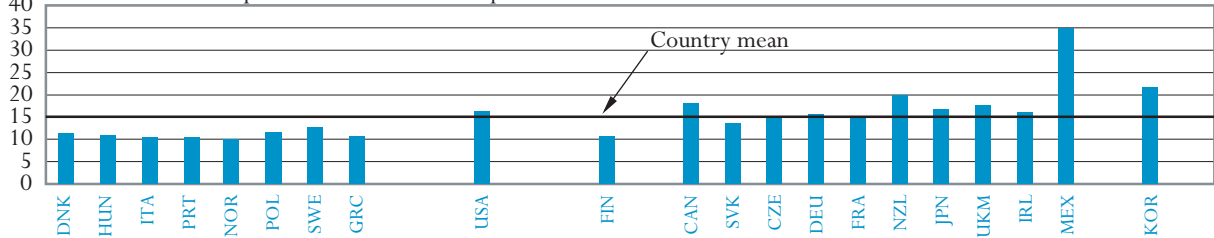
Primary education

Number of students per teacher in full-time equivalents



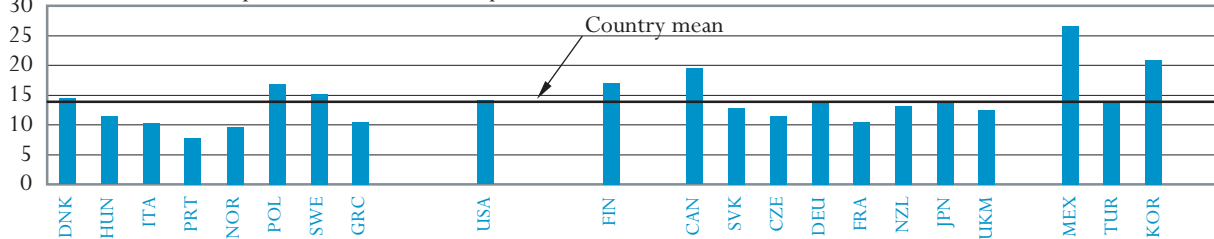
Lower secondary education

Number of students per teacher in full-time equivalents



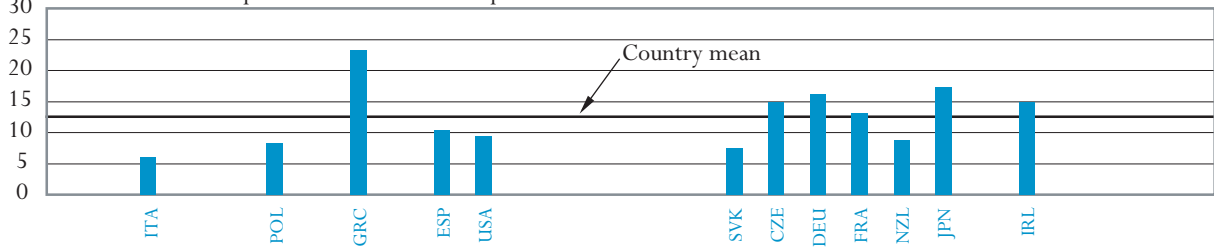
Upper secondary education

Number of students per teacher in full-time equivalents



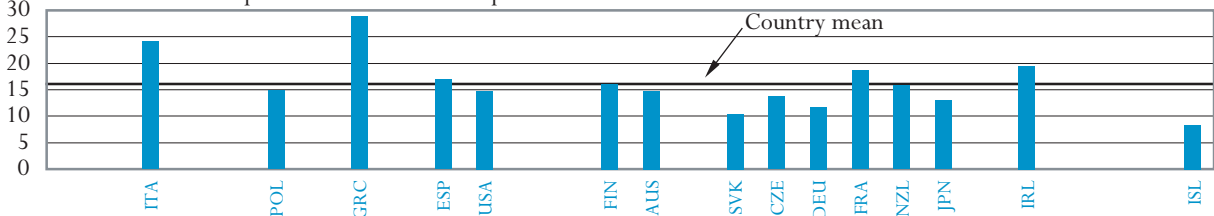
Tertiary-type B education

Number of students per teacher in full-time equivalents



Tertiary-type A and advanced research programmes

Number of students per teacher in full-time equivalents



Note: Please refer to the Reader's Guide for list of country codes and country names used in this chart.

Countries are ranked in ascending order of number of students per teacher in primary education.

Source: OECD. Table D2.2. See Annex 3 for notes (www.oecd.org/els/education/eq2002).

The ratio of students to teaching staff in public and private tertiary institutions ranges from 27 students per teacher in Greece to 12 or below in Canada, Germany, Iceland, Japan, the Slovak Republic and Sweden (Table D2.2). Such comparisons in tertiary education, however, should be made with caution since it is still difficult to calculate full-time equivalent students and teachers on a comparable basis at this level.

In general, the ratio of students to teaching staff at the tertiary level tends to be similar to that in secondary education.

In 11 out of the 12 countries for which data are available for both tertiary-type A and advanced research programmes and tertiary-type B education, the ratio of students to teaching staff is lower, at 12, in the generally more occupationally specific tertiary-type B programmes than in tertiary-type A and advanced research programmes, which have an average ratio of 16 (Chart D2.2). Germany is the only country with a higher ratio in tertiary-type B programmes.

The ratio of students to teaching staff in pre-primary education tends to be lower than in primary education, but slightly higher than in secondary education. In pre-primary education, the ratio ranges from fewer than seven students per teacher in Denmark and Iceland to over 22 students per teacher in Germany, Korea and Mexico. There is little apparent relationship between the ratio of students to teaching staff in pre-primary and primary education, suggesting that the staffing requirements or emphases at these levels differ within countries (Table D2.2).

The ratio of students to teaching staff in pre-primary education tends to be between that in primary and secondary education.

Definitions and methodologies

Class sizes have been calculated by dividing the number of students enrolled by the number of classes. In order to ensure comparability between countries, special needs programmes have been excluded. Data include only regular programmes at primary and lower secondary levels of education and exclude teaching in sub-groups outside the regular classroom setting.

Data refer to the school year 1999–2000, and are based on the UOE data collection on education statistics that is administered annually by the OECD.

“Teaching staff” refers to professional personnel directly involved in teaching students. The classification includes classroom teachers; special education teachers; and other teachers who work with a whole class of students in a classroom, in small groups in a resource room, or in one-to-one teaching situations inside or outside a regular classroom. Teaching staff also includes department chairpersons whose duties include some teaching, but excludes non-professional personnel who support teachers in providing instruction to students, such as teachers’ aides and other paraprofessional personnel.

Table D2.1.
 Average class size, by type of institution and level of education (2000)

	Primary education				Lower secondary education			
	Public institutions	Government-dependent private institutions	Independent private institutions	Total: Public and private institutions	Public institutions	Government-dependent private institutions	Independent private institutions	Total: Public and private institutions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OECD COUNTRIES								
Australia	24.9	25.9	a	25.0	23.6	22.2	a	23.5
Austria	19.9	22.7	x(2)	20.0	23.8	25.3	x(6)	23.9
Belgium (Fl.)	m	m	m	m	m	m	m	m
Belgium (Fr.)	20.2	21.0	m	20.5	21.1	m	m	m
Canada	m	m	m	m	m	m	m	m
Czech Republic	20.4	12.7	a	20.3	22.0	18.7	a	21.9
Denmark	19.0	m	m	19.0	18.6	m	m	18.6
Finland	m	m	a	m	m	m	a	19.9
France	22.3	23.9	n	22.6	24.4	24.8	x(6)	24.5
Germany ¹	22.4	24.0	x(2)	22.4	24.5	26.0	x(6)	24.6
Greece	17.7	a	21.3	17.9	24.1	a	27.4	24.2
Hungary	21.3	19.9	a	21.2	21.5	22.2	a	21.5
Iceland* ²	16.9	18.9	n	16.9	17.4	14.3	n	17.4
Ireland	24.8	m	m	m	22.7	m	m	m
Italy	18.1	a	20.7	18.2	20.7	a	20.8	20.7
Japan	28.9	a	34.8	29.0	34.5	a	37.9	34.7
Korea	36.5	a	36.4	36.5	38.7	37.9	a	38.5
Luxembourg	15.5	21.0	19.6	15.7	19.9	20.8	19.1	19.9
Mexico	m	m	m	m	m	m	m	m
Netherlands	m	m	m	23.9	m	m	m	m
New Zealand	m	m	m	m	m	m	m	m
Norway	19.3	16.1	x(2)	19.3	22.9	19.1	x(6)	22.8
Poland	21.3	12.7	a	21.2	24.8	13.0	a	24.6
Portugal	20.2	23.6	x(2)	20.5	22.7	22.0	x(6)	22.6
Slovak Republic	21.4	21.5	n	21.4	23.8	24.5	n	23.8
Spain	19.7	25.0	21.6	21.1	25.0	29.0	22.6	26.0
Sweden	m	m	m	m	m	m	m	m
Switzerland	20.2	12.5	15.8	20.1	18.9	18.0	16.4	18.8
Turkey	30.9	a	21.1	30.6	a	a	a	a
United Kingdom	26.8	m	m	m	24.7	a	m	m
United States	m	m	m	m	m	m	m	m
Country mean	22.1	20.1	23.9	21.9	23.6	22.5	24.0	23.6
NON-OECD COUNTRY								
Israel	m	m	m	26.7	m	m	m	31.6

*See Annex 3 for notes (www.oecd.org/els/education/eag2002).

Note: x indicates that data are included in another column. The column reference is shown in brackets after "x". e.g., x(2) means that data are included in column 2.

1. Year of reference 2001.

2. Including multi-grade classes.

Source: OECD.

Table D2.2.
Ratio of students to teaching staff in public and private institutions by level of education, calculations based on full-time equivalents (2000)

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Post secondary non-tertiary education	Tertiary-type B education	Tertiary-type A and advanced research programmes	All tertiary education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OECD COUNTRIES									
Australia ¹	m	17.3	m	m	12.6	m	m	14.8	m
Austria	m	m	m	m	m	m	m	m	m
Belgium*	x(2)	15.0	x(5)	x(5)	9.7	x(5)	x(9)	x(9)	19.9
Canada	18.1	18.1	18.1	19.5	18.8	x(9)	x(9)	x(9)	9.8
Czech Republic	13.1	19.7	14.7	11.5	13.1	11.0	12.1	13.7	13.5
Denmark	6.6	10.4	11.4	14.4	12.8	m	m	m	m
Finland*	12.2	16.9	10.7	17.0	13.8	x(4)	x(4)	16.1	m
France	19.1	19.8	14.7	10.4	12.5	11.4	16.2	18.6	18.3
Germany*	23.6	19.8	15.7	13.9	15.2	14.3	14.9	11.7	12.1
Greece	15.8	13.4	10.8	10.5	10.7	m	23.3	28.9	26.8
Hungary	11.6	10.9	10.9	11.4	11.2	x(4)	x(9)	x(9)	13.1
Iceland	5.4	x(3)	12.7	9.7	m	m	m	8.3	7.9
Ireland*	15.1	21.5	15.9	x(3)	x(3)	x(3)	14.8	19.4	17.4
Italy*	13.0	11.0	10.4	10.2	10.3	m	6.0	24.1	22.8
Japan	18.8	20.9	16.8	14.0	15.2	m	8.8	12.9	11.4
Korea	23.1	32.1	21.5	20.9	21.2	a	m	m	m
Luxembourg ²	20.2	15.9	x(5)	x(5)	9.2	m	m	m	m
Mexico	22.4	27.2	34.8	26.5	31.7	m	x(9)	x(9)	15.1
Netherlands	x(2)	16.8	x(5)	x(5)	17.1	x(5)	m	m	12.6
New Zealand	7.5	20.6	19.9	13.1	16.3	12.6	13.2	15.8	15.2
Norway	m	12.4	9.9	9.7	m	x(4)	x(9)	x(9)	12.7
Poland	13.1	12.7	11.5	16.9	15.5	17.1	8.4	14.9	14.7
Portugal	16.4	12.1	10.4	7.9	9.0	m	x(9)	x(9)	m
Slovak Republic	10.1	18.3	13.5	12.8	13.2	9.0	7.4	10.3	10.2
Spain	16.1	14.9	x(5)	x(5)	11.9	x(5)	10.5	16.9	15.9
Sweden	m	12.8	12.8	15.2	14.1	m	x(9)	x(9)	9.3
Switzerland ²	m	m	m	m	m	m	m	m	m
Turkey	16.0	30.5	m	14.0	14.0	m	m	m	m
United Kingdom* ¹	21.0	21.2	17.6	12.5	14.8	m	x(9)	x(9)	17.6
United States	18.7	15.8	16.3	14.1	15.2	10.1	9.5	14.8	13.5
Country mean	15.5	17.7	15.0	13.9	14.3	12.2	12.1	16.1	14.7
NON-OECD COUNTRIES									
Argentina ^{2,3}	19.9	22.7	13.2	9.0	11.2	a	12.1	8.0	9.3
Brazil ³	18.5	26.6	34.2	38.7	35.6	m	x(9)	x(9)	14.1
Chile ³	39.3	34.0	33.4	28.5	30.2	a	m	m	m
China ³	26.7	20.2	17.6	13.8	16.4	10.1	31.0	8.5	12.3
Egypt	a	23.0	22.0	12.8	17.1	m	m	m	m
India ^{2,3}	m	43.0	22.0	9.2	16.1	20.8	m	m	m
Indonesia ⁴	33.0	27.1	19.6	17.8	18.9	a	x(9)	x(9)	15.0
Jamaica	22.1	30.4	x(5)	x(5)	18.5	x(7)	19.4	13.4	16.5
Jordan ²	19.4	x(3)	21.2	16.9	20.6	a	15.6	34.9	29.5
Malaysia ³	26.9	21.3	17.7	18.3	17.9	24.7	17.3	20.2	19.1
Paraguay ³	x(2)	18.0	x(5)	x(5)	30.6	a	17.2	m	m
Peru ³	25.9	26.8	x(5)	x(5)	18.5	m	m	m	m
Philippines ³	32.9	34.7	40.5	21.2	34.1	m	a	23.6	23.6
Russian Federation ⁴	7.0	17.3	m	m	m	10.2	15.1	15.3	15.2
Tunisia ²	19.8	23.3	24.9	17.4	21.5	a	x(9)	x(9)	19.2
Uruguay ³	31.3	20.4	11.9	22.6	14.9	a	x(9)	x(9)	8.1
Zimbabwe ⁴	m	37.0	x(5)	x(5)	24.7	m	m	m	m

*See Annex 3 for notes (www.oecd.org/els/education/eag2002).

Note: x indicates that data are included in another column. The column reference is shown in brackets after "x". e.g., x(2) means that data are included in column 2.

1. Includes only general programmes in lower and upper secondary education.

2. Public institutions only.

3. Year of reference 1999.

4. Year of reference 2001.

Source: OECD.

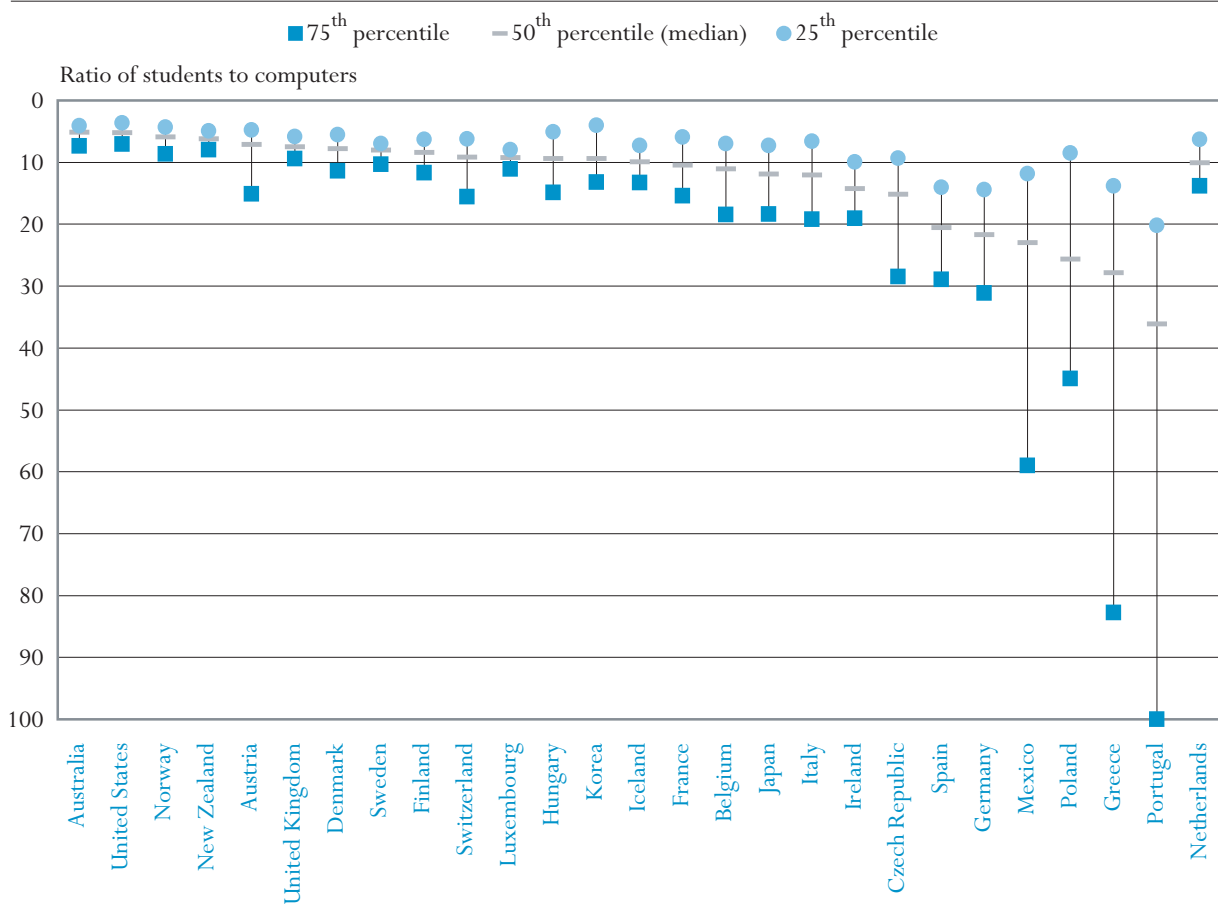
USE AND AVAILABILITY OF COMPUTERS AT SCHOOL AND IN THE HOME

- On average in OECD countries, the typical 15-year-old attends a school where there are 13 students for every computer. However, the figure varies widely across countries and in some countries it varies between regions and schools.
- On average across countries, about one-third of 15-year-olds reported using a computer at school every day or at least a few times per week, but the frequency of computer use at home is almost twice that proportion. However, the percentage of 15-year-olds who say that they never have a computer available to use is 10 points higher in the home than at school, suggesting that schools may play an important role in bridging the educational gap between the “information-haves and have-nots”.

Chart D3.1.

Ratio of students to computers (2000)

Total number of students enrolled in the school divided by the total number of computers for the school in which 15-year-olds are enrolled, weighted by student enrolment, by quartile



Countries are ranked in descending order of the ratio of students to computers at the 50th percentile.

Source: OECD PISA database, 2001. Table D3.1. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

D₃

Policy context

OECD economies depend increasingly on technological knowledge and skills in the labour force. Students with little or no exposure to computers and information technology may face difficulties in making a smooth transition to the modern labour market. The integration of computers into the learning environment at school has important implications in the classroom, but the increasing availability of affordable home computers, software, and access to the Internet and e-mail means that students are often more likely to come into frequent contact with computers at home than at school. The way in which students use computers in the home is also taking on a greater educational role, increasingly incorporating non game-playing activities such as word-processing, databases, spreadsheets, programming, the Internet and Web design. Nevertheless, schools have an important role to play, especially in bridging the gap between the “information-haves and have-nots”.

This indicator shows the use and availability of information technology to 15-year-olds.

PISA 2000 explored three aspects of computer familiarity among 15-year-olds both at school and at home: interest in computers, self-assessment of attitudes and ability to work with computers, and use of and experience with computers. This indicator explores several of these aspects.

Evidence and explanations

Ratio of students to computers at school

The average number of students per computer is often used as a proxy for the extent to which technology is accessible to students. In PISA, principals of the schools in which 15-year-olds were enrolled were asked the total number of computers available in the school. A ratio of students to computers was then calculated by dividing the total number of computers by the total number of students enrolled in each school. To better explain how computer availability may vary between schools within each country, the 25th, 50th and 75th percentiles of the ratio are also presented. A ratio of students to computers of 20 at the 25th percentile, for example, means that 25 per cent of 15-year-olds attend a school where there are 20 students or less per computer. Similarly, a ratio of 30 students per computer at the 50th percentile means that, among 15-year-olds, 50 per cent of students attend a school where there are 30 students or less per computer. Ratios of students to computers were also calculated separately for public, private government-independent and private government-dependent institutions, and for schools in villages, towns and cities.

The average number of students per computer is a proxy for the extent to which information technologies are accessible to students...

The availability of hardware does not guarantee its effective use by students and teachers, nor does it indicate how easily the technology can be accessed when needed in the classroom, laboratories, school libraries or other locations. Nor does the ratio guarantee the quality of hardware (*e.g.*, compatibility, memory, speed, age of the machine, attached peripheral devices and software) that is appropriate for classroom use. Finally, average ratios may hide variation between schools according to such factors as the geographical or socio-economic location of the school and the type of educational institution.

...although accessibility does not guarantee the effective use of computers.

Across OECD countries, the typical 15-year-old attends a school where 13 students share one computer, but the ratio varies widely.

On average in OECD countries, a typical 15-year-old attends schools where there is one computer for every 13 students, but the ratio varies widely. In Australia and the United States, the ratio is five students per computer and it is six in New Zealand and Norway. On the other hand, in Germany, Greece, Mexico, Poland, Portugal and Spain, 15-year-olds attend schools where, on average, more than 20 students share one computer. In some of these countries, most notably Greece, Mexico, Poland and Portugal, access to computers varies widely across schools, as indicated by large differences between the 25th and 75th percentiles in the ratio of students to computers (Chart D3.1 and Table D3.1).

Access to computers can also be influenced by the extent to which local and regional governments and private stakeholders invest in these new technologies.

Access to computers can also be influenced by the extent to which local, regional and national governments and private decision-making bodies are prepared to finance the purchase of hardware in schools. Related policies and decisions may also target schools in remote geographical areas or in low socio-economic inner-city areas. Further information provided by school principals participating in PISA made it possible to calculate the ratio of students per computer by school location and by type of educational institution.

In some countries, access to computers is markedly better in private schools...

In some countries, 15-year-olds will have better access to computers in private schools. The contrast with public schools is marked in Greece and Mexico, where there are fewer than 10 students per computer in private schools, compared to up to 32 students per computer in public schools. In other countries, access to computers does not vary between types of institutions (Table D3.1).

...and sometimes access differs considerably depending on the school location.

In Australia, Finland, New Zealand, the United Kingdom and the United States, the ratios of students to computers do not differ greatly between geographical locations. Ratios vary between five and six students per computer in Australia and the United States, irrespective of whether the school is located in a village of fewer than 3 000 people, a small town of 15 000 to 100 000 people, close to the centre of a city of over one million people or elsewhere in a city of over one million people. This is not the case in the Czech Republic, Hungary and Ireland, where a student attending a school located in an urban area has greater access to computers than a student attending a school in a rural area. In Ireland, for example, the ratio of students per computer in a school located in a village is 14 (in which 28 per cent of the student population goes to school), but in schools located close to cities of over one million people, there are nine students for every computer in the school. The reverse is true of students studying in schools in rural areas in Korea, Mexico, Poland and Spain, who have far greater access to computers than students who are studying in schools in urban areas (Table D3.1).

Availability and use of computers at school

On average across countries, about one-third of 15-year-olds

Between 45 and 65 per cent of 15-year-olds reported using a computer at school almost every day or a few times each week in Australia, Denmark, Finland, Hungary, Scotland and Sweden. By contrast, in Germany and Switzerland,

this percentage is only 18 and 22 per cent respectively, and in Mexico half of 15-year-olds reported never using a computer at school (Table D3.5).

In most countries, 15-year-olds reported using computers at home far more frequently than at school. On average across countries, 60 per cent of 15-year-olds reported using a computer at home almost every day or a few times each week, and in Australia, Canada, Denmark, Finland, Norway, Sweden and the United States, this is between 66 and 82 per cent. Even in Germany and Switzerland, where computer use at school is comparatively low, almost two-thirds of 15-year-olds reported using a computer at home almost every day or a few times each week. The only exceptions to this pattern are Hungary and Mexico, where 15-year-olds reported using computers more frequently at school than at home (Table D3.5).

Students and teachers are using the Internet and local area networks more widely both as a communication and as a research tool. While a slow, costly connection to the Internet at a school with an insufficiently flexible curriculum may result in little educational value, Internet and computer networks that are effectively used in the classroom can add a new dimension to learning and teaching methodologies. In PISA, school principals were asked how many computers in the school were connected to the Internet and to a local area network. On average, approximately half of all computers in schools in OECD countries are connected to the Internet or a local area network. In Australia and Luxembourg, this proportion is more than 75 per cent, while less than one-quarter of computers in schools in Italy and Mexico are connected to the Internet or a local area network (Table D3.2). In Australia, Austria, Denmark, Finland, Iceland and Sweden, more than 50 per cent of 15-year-olds reported using the Internet at school several times a month or several times a week. For data see www.oecd.org/els/education/eag2002.

While measures of availability of computers in schools such as those described in this indicator may provide some indication of the success of national policies for resourcing computers in education, availability alone does not guarantee quality or effective use of computers for learning. To extend the picture, school principals in PISA were asked to what extent they perceived that the lack of computers and multi-media resources for instruction hindered the learning of 15-year-olds. School principals were also asked about the quality of other educational resources, such as instructional material, instruction materials in the library, science laboratory equipment and facilities for the fine arts. On average, more than any other type of instructional material, lack of computers and multi-media resources was perceived by school principals as being the greatest hindrance to learning (Table D5.3). In OECD countries, more than 37 per cent of 15-year-olds were enrolled in schools where principals reported that learning was hindered to some extent or a lot by the lack of computers for instruction. However, while school principals in Greece and Mexico expressed the most concern about the lack of computers and multi-media resources

reported using a computer at school almost every day or a few times each week, but this varies widely.

Around one-third of students use the Internet at school several times per week or at least several times per month.

School principals consider a lack of computers and multi-media resources to be more of an obstacle to learning than a lack of any other type of instructional material.

impeding the learning process, school principals in Australia, Belgium, Hungary, Switzerland and the United States, where levels of computer availability are markedly higher, reported that learning was not hindered at all by a lack of computers and multi-media resources for instruction (Table D3.3).

On average across countries, 15 per cent of computers in schools are exclusively for use by teachers and 12 per cent are exclusively reserved for use by administrative staff.

Computers are also a vital tool for teachers and school administrators, who use computers to complete every day tasks such as updating student records, writing letters to parents and committees, completing electronic student assessments, preparing lessons and updating school and class web sites. In the PISA school questionnaire, school principals were asked how many computers in the school were available for 15-year-old students, for teachers only, and for administrative staff only. Fifteen per cent of computers in schools are for use by teachers only and a further 12 per cent by administrative staff only. In Greece, Korea, Portugal and the United States, more than one-fifth of the total number of computers available in the school are used exclusively by teachers. In Belgium, Greece, Mexico and Portugal, more than 15 per cent of computers in the school are available only to administrative staff (Table D3.2).

Availability and use of computers at home

Access to computers and educational software at home has grown rapidly in many countries with an average of about three quarters of 15-year-olds now reporting having at least one computer at home...

Students' use of computers at home has the potential to complement the learning process at school and improve attitudes towards learning, thus bridging formal classroom learning and informal learning that occurs at home.

Over the last five to 10 years, the home personal computer market has risen dramatically. The marketing of home computers increasingly targets family and educational use rather than games, reflecting the increasing availability of affordable hardware and software, and parents growing awareness of the role that computers can play in their child's education. More recently, inexpensive home Internet connections have become more common. In 2000, an average of 73 per cent of 15-year-old students in OECD countries reported having at least one computer in the home. More than 40 per cent of 15-year-olds in Denmark, Iceland, Norway, Sweden and the United Kingdom reported having two or more computers in the home. Over 55 per cent of 15-year-olds in OECD countries, on average, reported having educational software at home; in Australia, Canada, Iceland, New Zealand, Sweden, United Kingdom and the United States the figure was 75 per cent or more. Forty-five per cent of 15-year-olds in OECD countries reported being connected to the Internet at home. In Iceland and Sweden, more than three-quarters of 15-year-olds have Internet access at home. (For data see www.oecd.org/els/education/eag2002.)

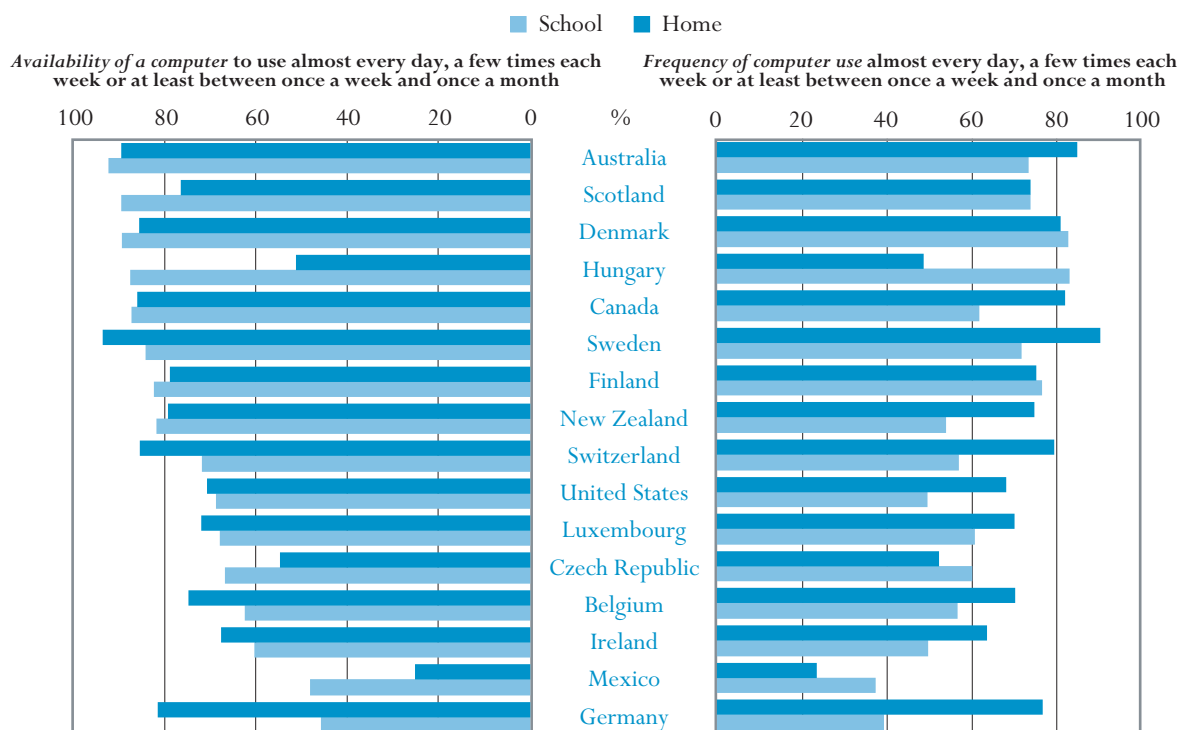
...and daily contact with computers much more likely to occur in the home than at school ...

This indicator also shows that for many 15-year-olds, daily contact with computers is much more likely to occur in the home than at school. An average of 64 per cent of 15-year-olds in OECD countries reported having home computers available for use every day, but only 27 per cent had this facility at school (Chart D3.2 and Table D3.4).

Chart D3.2.

Availability and frequency of the use of computers for 15-year-olds at home and at school (2000)

Distribution of mean percentages of 15-year-olds who reported having a computer available to use and those who reported using computers at home and at school



Countries are ranked in ascending order of the availability of a computer to use almost every day, a few times each week or between once a week and once a month at school.

Source: OECD PISA database, 2001. Tables D3.4 and D3.5. See Annex 3 for notes on methodology (www.oecd.org/els/education/eaq2002) and www.pisa.oecd.org.

Interestingly, the percentage of 15-year-olds who say that they never have a computer available to use is 10 percentage points higher in the home than at school, suggesting that schools may be helping to bridge the educational gap between the “information-haves and have-nots”.

In PISA, 15-year-olds were asked how often they used computers to help them learn school material. An average of 11 per cent reported that they used computers almost every day to help them learn school material; 24 per cent use computers a few times each week; and 26 per cent use them between once a week and once a month. However, more than 25 per cent of 15-year-olds in Belgium, the Czech Republic, Hungary, Ireland and Switzerland reported that they never use computers to help them with schoolwork (Chart D3.3 and Table D3.6).

...but in other countries, a large gap remains between the “information-haves and have-nots”.

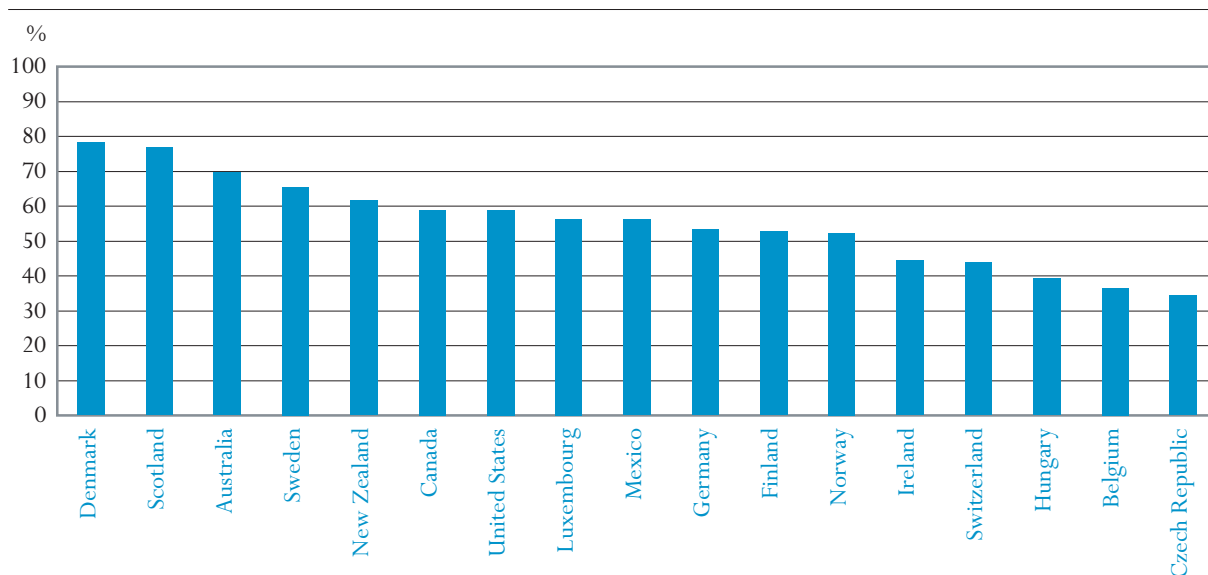
Not all computer use at home is related to school-learning.

D3

Chart D3.3.

15-year-olds' use of computers to help them learn school material (2000)

Distribution of mean percentages of 15-year-olds who reported using computers to help them learn school material almost every day, a few times each week or at least between once a week and once a month



Countries are ranked in descending order of the percentage of 15-year-olds who reported using computers to help them learn school material almost every day, a few times each week or at least between once a week and once a month.

Source: OECD PISA database, 2001. Table D3.6. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Definitions and methodologies

Results from this indicator derive from background questionnaires completed by 15-year-old students and their principals as part of the Programme for International Student Assessment (PISA) under-taken by the OECD in 2000.

Data used in this indicator derive from responses of 15-year-old students and school principals to questions related to computer use and availability of computers at home and at school in three background questionnaires used in the 2000 cycle of the OECD Programme for International Student Assessment (PISA).

In addition to a written test, 15-year-olds participating in PISA completed a student questionnaire that was designed to collect information about the student's family, home environment, reading habits, school and everyday activities. Students' responses to questions on the frequency of use of computers and the Internet at school (Table D3.2) derive from this questionnaire. A second background questionnaire on computer familiarity was completed by students in 20 countries as part of an international option exploring students' interest in computers, self-assessment of their attitudes and ability to work with computers, and use of and experience with computers. Data used in this indicator on the availability and use of computers at home and at school (Chart D3.2, Table D3.4 and Table D3.5), and the extent to which students use computers to help them learn school material (Chart D3.3 and Table D3.6) are taken from this questionnaire. Students' responses were weighted to be proportional to the number of 15-year-olds in each school.

The principals of the schools in which students were assessed also completed a questionnaire on the characteristics of their school. Data presented here relating to the availability of computers, including the number of students per computer (Chart D3.1, Table D3.1 and Table D3.2) and principals' perception of quality of educational resources (Table D3.3), derive from principals' responses to this questionnaire. These were weighted to be proportional to the number of 15-year-olds in each school.

Table D3.1.

Ratio of students to computers (2000)

Total number of students enrolled in the school divided by the total number of computers for the school in which 15-year-olds are enrolled, by quartile, type of institution and location of school, weighted by student enrolment

		Ratio of students to computers, by type of institution								
		Ratio of students to computers			Government-independent private schools		Government-dependent private schools		Public schools	
		25 th percentile	50 th percentile (median)	75 th percentile	50 th percentile (median)	% students represented in the sample	50 th percentile (median)	% students represented in the sample	50 th percentile (median)	% students represented in the sample
OECD COUNTRIES	Australia	4	5	7	m	m	m	m	m	m
	Austria	5	7	15	11	7	9	6	7	87
	Belgium	7	11	18	10	1	12	75	9	25
	Czech Republic	9	15	28	9	n	10	6	17	94
	Denmark	6	8	11	a	a	7	24	8	76
	Finland	6	8	12	a	a	20	3	8	97
	France	6	11	15	11	8	8	13	11	79
	Germany	14	22	31	a	a	19	3	22	97
	Greece	14	28	83	10	3	a	a	32	97
	Hungary	5	9	15	8	1	11	4	9	95
	Iceland	7	10	13	10	1	a	a	10	99
	Ireland	10	14	19	9	3	15	60	13	37
	Italy	7	12	19	8	4	a	a	13	96
	Japan	7	12	18	12	29	15	1	11	70
	Korea	4	9	13	10	33	7	16	9	51
	Luxembourg	8	9	11	a	a	7	11	10	89
	Mexico	12	23	59	9	16	a	a	26	84
	New Zealand	5	6	8	2	4	4	n	6	96
	Norway	4	6	9	a	a	1	1	6	99
	Poland	8	26	45	10	3	a	a	27	97
Portugal	20	36	100	32	2	124	5	36	93	
Spain	14	21	29	21	9	25	31	18	60	
Sweden	7	8	10	a	a	9	3	8	97	
Switzerland	6	9	16	16	4	7	2	9	94	
United Kingdom	6	8	9	6	5	a	a	8	95	
United States	4	5	7	6	4	4	1	5	95	
	Country mean	8	13	24	11	8	17	15	14	84
NON-OECD COUNTRIES	Brazil	15	26	39	a	a	15	1	27	99
	Latvia	4	5	12	3	4	a	a	6	96
	Liechtenstein	31	57	88	a	a	a	a	57	100
	Russian Federation	6	10	14	a	a	10	76	8	24
	Netherlands ¹	6	10	14	2	4	4	n	6	96
Ratio of students to computers, by school location										
		Fewer than 3 000 people [village]		From 15 000 to 100 000 people [town]		Over 1 000 000 people [close to the centre of a city]		Over 1 000 000 people [elsewhere in a city]		
		50 th percentile (median)	% students represented in the sample	50 th percentile (median)	% students represented in the sample	50 th percentile (median)	% students represented in the sample	50 th percentile (median)	% students represented in the sample	
OECD COUNTRIES	Australia	6	5	6	23	5	15	5	20	
	Austria	10	6	6	28	4	5	15	11	
	Belgium	20	4	10	51	8	1	a	a	
	Czech Republic	19	6	15	40	13	2	16	10	
	Denmark	6	29	9	25	9	8	11	3	
	Finland	7	17	9	34	10	15	8	6	
	France	9	7	9	52	57	1	8	3	
	Germany	18	6	23	43	15	2	22	4	
	Greece	18	8	32	38	33	9	17	6	
	Hungary	12	1	8	39	10	10	7	9	
	Iceland	m	m	m	m	m	m	m	m	
	Ireland	14	28	16	13	12	12	9	8	
	Italy	9	2	13	54	a	a	12	12	
	Japan	a	a	13	28	18	9	15	4	
	Korea	7	3	5	10	11	15	11	29	
	Luxembourg	a	a	8	19	a	a	a	a	
	Mexico	11	7	23	26	33	6	22	9	
	New Zealand	6	14	6	33	7	12	6	13	
	Norway	5	38	8	20	a	a	a	a	
	Poland	7	3	27	41	39	7	4	2	
Portugal	20	4	27	39	101	7	26	1		
Spain	12	2	21	32	22	4	29	5		
Sweden	8	23	8	34	10	4	4	1		
Switzerland	9	12	9	25	a	a	a	a		
United Kingdom	8	10	7	35	8	4	8	4		
United States	4	6	6	33	6	5	6	7		
	Country mean	11	10	13	33	20	7	12	8	
NON-OECD COUNTRIES	Brazil	91	4	140	26	108	15	223	9	
	Latvia	19	18	29	27	23	6	a	a	
	Liechtenstein	4	21	a	a	a	a	a	a	
	Russian Federation	50	26	54	22	57	9	62	6	
	Netherlands ¹	a	a	10	63	a	a	a	a	

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D3.2.

Availability of computers and computer networks in schools in which 15-year-olds are enrolled (2000)
 Percentage of computers available to students, teachers and administrative staff and computers connected to the Internet / WWW and local area networks,
 as reported by school principals, weighted by student enrolment

	Percentage of computers available to 15-year-olds	Percentage of computers available only to teachers	Percentage of computers available only to administrative staff	Percentage of computers connected to the Internet / World Wide Web	Percentage of computers connected to a local area network (LAN)
	%	%	%	%	%
OECD COUNTRIES					
Australia	70	16	8	80	75
Austria	75	9	7	69	56
Belgium	62	9	16	45	33
Czech Republic	63	20	15	40	46
Denmark	63	8	10	65	50
Finland	77	11	8	84	57
France	59	9	13	26	19
Germany	68	10	13	37	25
Greece	51	24	33	26	23
Hungary	72	11	10	58	65
Iceland	51	15	8	83	62
Ireland	69	10	8	47	28
Italy	61	10	13	24	21
Japan	66	20	4	35	40
Korea	56	34	5	61	70
Luxembourg	70	9	7	88	86
Mexico	62	16	17	14	17
New Zealand	72	14	8	62	65
Norway	51	18	14	50	30
Poland	67	14	13	35	25
Portugal	61	28	34	35	31
Spain	58	18	9	41	37
Sweden	55	14	10	74	62
Switzerland	70	14	9	47	37
United Kingdom	78	10	7	51	53
United States	73	22	6	39	61
Country mean	65	15	12	51	46
NON-OECD COUNTRIES					
Brazil	53	19	34	27	27
Latvia	78	24	19	42	57
Liechtenstein	77	19	8	79	67
Russian Federation	74	10	13	6	18
Netherlands ¹	62	12	10	45	55

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D3.3.

The extent to which learning is hindered by a lack of computers for instruction or lack of multi-media resources for instruction in schools in which 15-year-olds are enrolled (2000)

Mean percentage of 15-year-olds enrolled in schools where principals reported that learning is hindered a lot, to some extent, very little or not at all by insufficient numbers of computers for instruction and multi-media resources for instruction

	Learning is hindered by a lack of computers for instruction				Learning is hindered by a lack of multi-media resources for instruction			
	Not at all	Very little	To some extent	A lot	Not at all	Very little	To some extent	A lot
	%	%	%	%	%	%	%	%
OECD COUNTRIES								
Australia	32	38	27	3	29	39	31	1
Austria	30	32	23	15	22	35	32	11
Belgium	49	32	15	3	42	34	17	7
Canada	33	36	26	4	30	46	22	3
Czech Republic	37	25	28	10	34	27	31	9
Denmark	32	40	21	6	48	39	10	3
Finland	16	41	35	7	15	40	37	9
France	39	33	23	5	40	26	29	5
Germany	20	30	35	15	15	33	33	20
Greece	15	17	40	28	11	21	45	24
Hungary	69	18	9	4	41	34	23	2
Iceland	26	29	41	4	16	36	42	5
Ireland	34	24	30	12	21	26	41	13
Italy	42	26	26	6	29	25	34	12
Japan	32	37	26	5	20	38	33	9
Korea	30	46	18	6	21	39	32	8
Luxembourg	24	53	23	n	19	58	23	n
Mexico	16	16	27	42	17	18	23	42
New Zealand	25	35	35	5	25	44	29	2
Norway	12	28	52	9	9	29	51	10
Poland	33	29	27	12	38	32	24	6
Portugal	27	35	31	8	25	41	27	7
Spain	43	27	23	7	29	28	32	11
Sweden	21	29	40	11	18	28	46	8
Switzerland	40	37	19	4	37	38	19	6
United Kingdom	18	26	37	19	13	30	42	16
United States	35	33	24	7	33	39	22	6
Country mean	31	31	26	11	26	34	28	12
NON-OECD COUNTRIES								
Brazil	20	17	27	36	53	22	13	12
Latvia	25	35	24	16	13	30	34	22
Liechtenstein	26	33	41	n	59	20	20	n
Russian Federation	11	3	31	55	18	11	36	35
Netherlands ¹	27	34	25	14	26	37	26	11

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D3.4.

Availability of computers to use at home and at school for 15-year-olds (2000)

Mean percentage of 15-year-olds who reported that computers are available to use at home and at school almost every day, a few times each week, between once a week and once a month, less than once a month and never

	Availability of computers to use at home					Availability of computers to use at school				
	Almost every day	A few times each week	Between once a week and once a month	Less than once a month	Never	Almost every day	A few times each week	Between once a week and once a month	Less than once a month	Never
	%	%	%	%	%	%	%	%	%	%
OECD COUNTRIES										
Australia	85	4	1	1	9	52	30	10	5	2
Belgium	65	11	5	4	16	13	29	26	12	20
Canada	81	4	2	1	12	52	24	12	7	5
Czech Republic	48	6	3	2	41	10	29	30	10	21
Denmark	77	7	4	3	9	49	29	15	6	2
Finland	73	5	3	2	18	19	40	24	12	4
Germany	72	8	4	3	13	6	16	27	21	30
Hungary	41	8	3	3	44	13	58	17	4	7
Ireland	62	4	2	2	29	16	25	20	13	25
Luxembourg	63	11	6	5	14	16	29	32	10	13
Mexico	23	5	3	3	66	22	25	8	9	37
New Zealand	74	4	2	2	18	48	22	13	11	5
Scotland	72	3	2	2	21	43	36	11	5	5
Sweden	90	3	1	1	6	37	31	17	10	5
Switzerland	76	8	3	3	10	22	23	28	14	12
United States	68	7	5	4	15	46	21	12	11	10
Country mean	64	6	3	3	24	27	29	20	10	14
NON-OECD COUNTRIES										
Brazil	24	5	4	4	64	8	13	10	13	55
Latvia	23	6	4	4	64	14	35	22	11	18
Liechtenstein	75	8	3	2	12	20	29	41	5	5
Russian Federation	15	5	4	4	73	5	24	24	10	38

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D3.5.

Frequency of use of computers at home and at school by 15-year-olds (2000)

Mean percentage of 15-year-olds who reported using computers at home and at school almost every day, a few times each week, between once a week and once a month, less than once a month and never

	Use of computers at home					Use of computers at school				
	Almost every day	A few times each week	Between once a week and once a month	Less than once a month	Never	Almost every day	A few times each week	Between once a week and once a month	Less than once a month	Never
			%	%				%	%	
OECD COUNTRIES										
Australia	44	30	12	5	10	15	35	24	17	8
Belgium	38	26	13	7	17	5	26	32	12	25
Canada	51	21	10	4	13	18	21	23	22	16
Czech Republic	31	15	8	4	41	4	24	34	11	26
Denmark	44	25	14	7	9	23	36	26	11	4
Finland	45	22	10	5	18	6	41	30	16	7
Germany	43	23	14	7	14	4	14	25	20	37
Hungary	29	14	7	4	46	7	58	19	5	10
Ireland	32	23	10	5	30	4	22	25	14	35
Luxembourg	44	22	14	7	13	10	26	34	12	17
Mexico	14	10	4	4	68	8	26	8	8	50
New Zealand	36	27	13	6	18	18	16	21	27	17
Norway	53	22	11	6	9	6	22	33	28	11
Scotland	38	26	10	4	21	18	39	18	14	12
Sweden	60	21	9	3	6	16	29	27	17	11
Switzerland	39	25	17	7	12	5	17	37	20	21
United States	49	18	12	6	15	18	19	23	23	17
Country mean	39	21	11	5	24	10	28	26	16	19
NON-OECD COUNTRIES										
Brazil	18	7	7	5	64	5	7	14	15	59
Latvia	16	9	5	4	65	6	35	26	12	21
Liechtenstein	39	24	17	5	14	5	24	50	11	10
Russian Federation	12	6	4	4	74	4	22	24	11	39

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D3.6.

15-year-olds who use computers to help them learn school material (2000)

Mean percentage of 15-year-olds who reported using computers to help them learn school material almost every day, a few times each week, between once a week and once a month, less than once a month and never

	Almost every day	A few times each week	Between once a week and once a month	Less than once a month	Never
	%	%	%	%	%
	OECD COUNTRIES				
Australia	12	30	29	17	12
Belgium	8	16	21	21	35
Canada	10	21	28	21	20
Czech Republic	6	14	21	21	37
Denmark	15	38	28	12	7
Finland	6	18	32	27	17
Germany	11	23	28	21	18
Hungary	9	19	23	20	28
Ireland	7	20	25	22	26
Luxembourg	14	23	25	17	20
Mexico	17	34	17	14	18
New Zealand	13	25	28	21	13
Norway	8	21	28	25	19
Scotland	17	39	25	11	8
Sweden	13	26	29	19	12
Switzerland	6	17	27	24	26
United States	19	26	25	17	12
Country mean	11	24	26	19	19
NON-OECD COUNTRIES					
Brazil	14	25	21	20	20
Latvia	11	23	22	19	25
Liechtenstein	6	16	33	24	21
Russian Federation	12	27	25	17	18

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

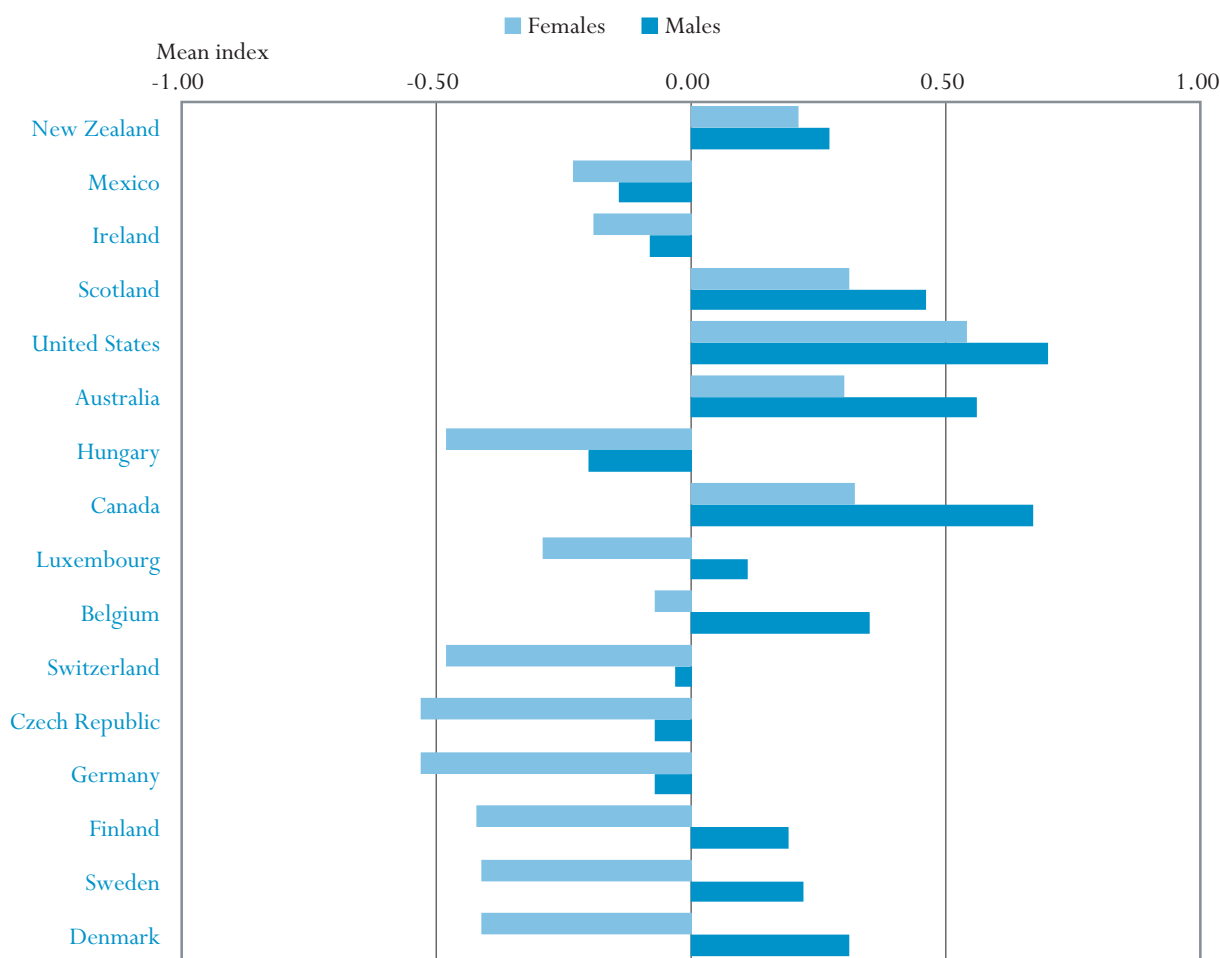
ATTITUDES AND EXPERIENCES OF MALES AND FEMALES USING INFORMATION TECHNOLOGY

- While schools may be helping to bridge inequities in access to computers by males and females at home, 15-year-old males in many countries actually use computers and the Internet more often at school than do females.
- On average in OECD countries, 15-year-old males reported a significantly greater confidence and perceived ability to use computers than females. Gender differences are greatest in Denmark, Finland and Sweden, and smallest in Australia, New Zealand, Scotland and the United States.

Chart D4.1.

Gender differences of comfort with and perceived ability to use computers among 15-year-olds (2000)

PISA index of comfort with and perceived ability to use computers for 15-year-old males and females, based on self-reports of students



Countries are ranked in ascending order of the difference between males and females on the PISA index of comfort with and perceived ability to use computers.

Source: OECD PISA database, 2001. Table D4.1. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Policy context

This indicator examines the attitudes towards as well as perceived comfort with and ability to use computers of 15-year-old males and females.

Bridging the “gender gap” in education has received considerable attention over the last decades as policy-makers and education practitioners work together to ensure equitable access to educational opportunities. The widespread introduction of computers into schools raised concerns about whether this new technology would act to moderate or reinforce inequities between males and females in an area that is traditionally perceived as male-dominated.

The relationship between attitudes towards and experiences with computers and gender is not straightforward. Many factors in and beyond a student’s classroom experience may influence the differences in knowledge and attitudes towards computers, including gender stereotypes, general patterns of socialisation between males and females, and parents’ and teachers’ attitudes.

To shed light on these issues, this indicator examines the attitudes and perceived comfort with and ability to use computers of 15-year-old males and females.

Evidence and explanations

The largest gender gaps for 15-year-olds occur in access to computers in the home.

15-year-olds in PISA were asked how often computers were available to use at home, at school, in the library and “at another place”. In all countries, more males than females reported that they have a computer available to use at home almost every day, a few times each week or between once a week and once a month. Similarly, in all OECD countries, more males reported having a link to the Internet in the home compared to females – in 23 out of 32 countries this difference was statistically significant. (For data see www.oecd.org/els/education/eag2002.)

Gender differences in computer availability at school tend not to be significant...

In most countries, gender differences in computer availability at school are not statistically significant (for data see www.oecd.org/els/education/eag2002). While ensuring the provision of equal access to computers is an important policy consideration, the existence of such technologies does not guarantee their equitable use. Ensuring that males and females receive equitable opportunities to use computers at school depends on many factors, including teacher and student attitudes and practices, the structure of educational activities, peer-group pressure, students’ familiarity with computers and gender stereotyping.

...but, in most countries, significantly more males than females actually use computers and the Internet at school...

In PISA, 15-year-old males and females were asked how often they used computers and the Internet at school. On average across OECD countries, 59 per cent of females reported that they use computers several times a month or several times a week or about once a month, compared to 64 per cent of males. In Austria, Ireland, Japan, Korea, Mexico and New Zealand, more females than males reported that they use computers with this frequency, although this gender difference was statistically significant in favour of females only in Korea and New Zealand. Gender differences were most marked in Finland, France, Germany, Greece, Norway, Sweden and Switzerland, where the number of males reporting that they used computers several times a month,

several times a week or about once a month exceeded that of females by more than 10 percentage points. Males also dominate the use of the Internet at school in all countries except Austria, Korea, Mexico and New Zealand. Males in Canada, Finland, France, Greece, Hungary, Norway, Poland, Portugal, Sweden, Switzerland and the United Kingdom exceed females in frequency of Internet use by more than 10 percentage points. (For data see www.oecd.org/els/education/eag2002.)

Several factors can influence a student's interest, confidence and perceived ability to use computers, including attitudes and comfort and familiarity with computers. PISA explored aspects related to the self-assessment of 15-year-old students' attitudes and familiarity with computers (Table D4.1 and Chart D4.1). On average in OECD countries, males reported being significantly more confident and having a higher perceived ability to use computers than females. The gender differences on the PISA index of comfort with and perceived ability to use computers are strong in countries such as Denmark, Finland and Sweden, where the comfort with and perceived ability to use computers of males exceeds that of females by more than 0.6 index points (*i.e.*, more than half a standard deviation). In Australia, New Zealand, Scotland and the United States, the differences between genders are smallest, and the indices for males and females are highest (Chart D4.1 and Table D4.1).

The individual variables that comprise this index reveal that males reported being significantly more comfortable than females at taking a test using a computer in all countries. In Denmark, Finland and Sweden, the difference between males and females who reported being comfortable at taking a test using a computer is more than 24 percentage points.

Similarly, in all countries, more males reported being very comfortable or comfortable using a computer. However, these gender differences were not statistically significant in Mexico, New Zealand, Scotland or the United States. By contrast, gender differences in comfort with using a computer to write a paper were small, and females had a slight advantage (Table D4.1).

PISA also investigated students' interest in computers (Table D4.2 and Chart D4.2). With the exception of Mexico and the United States, males reported consistently higher on the PISA index of interest in computers than females. The difference is statistically significant favouring males in all of these countries, except Ireland. The United States is the only country where more females reported that it is important to work with a computer (89 per cent of females versus 84 per cent of males) and that playing or working with a computer is really fun (94 per cent of females versus 89 per cent of males). On average across countries, 84 per cent of females and 92 per cent of males still believe that playing or working on the computer is fun. Similarly, more males than females reported using a computer because it interests them. Although this difference is small and not statistically significant in Ireland and Mexico, gender

...which may have less to do with access to technology than with attitudes and familiarity with computers...

...as well as with differences in interest in computers.

D4

Chart D4.2.

Gender differences in interest of 15-year-olds in computers (2000)

Distribution of mean percentages of 15-year-old males and females who reported that:



Note: Countries are represented by dots.

Source: OECD PISA database, 2001. Table D4.2. See Annex 3 for notes on methodology (www.oecd.org/els/education/eqq2002) and www.pisa.oecd.org.

differences are greatest for this question: on average 66 per cent of females and 80 per cent of males in OECD countries report using the computer because it interests them. Less than 55 per cent of female 15-year-olds in Australia, Denmark and New Zealand reported using a computer because it interests them (Table D4.2 and Chart D4.2).

Males tend to use computers more frequently to access the Internet, for electronic communication and for programming...

15-year-olds in PISA were asked how often they use computers to access the Internet, for electronic communication (*i.e.*, e-mails), to help them learn school material or for programming. In all countries, more males than females reported using the Internet almost every day, a few times each week or between once a week and once a month. Mexico and the United States are the only countries where this difference favouring males is not statistically significant. By contrast, in Germany and Scotland, this difference is more than 14 percentage points. Similarly, in all but two countries, males use programming more frequently than females.

In many countries, however, females are more likely to use computers to help them learn school material. (For data see www.oecd.org/els/education/eag2002.)

Students also reported how often they used computer software such as games, word processing, spreadsheets, drawing and painting or graphics or educational software. On average across OECD countries, males use these types of software more frequently than females. Gender differences in frequency of use are particularly marked for computer games, where the frequency of use is significantly higher for males in all countries. In Australia, Denmark, Finland, Sweden and Switzerland, the difference between males and females is over 33 percentage points. Although students use spreadsheet and drawing, painting or graphics software much more infrequently than games and word processing, this is predominantly a male past-time, although gender differences in favour of males for using spreadsheets and graphics software are small and not statistically significant in Ireland, Mexico and New Zealand. (For data see www.oecd.org/els/education/eag2002.)

With the exception of Mexico and Scotland, males score significantly higher on the PISA index of computer usage and experience than females. However in Belgium, the Czech Republic, Mexico and Switzerland, negative indices for both males and females indicate that all 15-year-olds reported less frequent use of and experience with computers compared to students in other countries. In Mexico, however, the index for females was higher. Male and female 15-year-olds in Australia, New Zealand, Scotland and the United States rated the highest on the PISA index of computer usage and experience, although the index was still higher for males in these countries. (For data see www.oecd.org/els/education/eag2002.)

Definitions and methodologies

Data used in this indicator derive from responses of 15-year-old students and school principals to questions concerning the use and availability of computers at home and at school in three background questionnaires used in the 2000 cycle of the OECD Programme for International Student Assessment (PISA).

In addition to a written test, 15-year-olds in PISA completed a student questionnaire designed to collect information about their family, home environment, reading habits, school and everyday activities. Responses to questions on the frequency of use of computers and the Internet at school and the availability of computers in the home (for data see www.oecd.org/els/education/eag2002) derive from this student background questionnaire. A second background questionnaire on computer familiarity was completed by students in 20 countries as part of an international option. It explored students' interest in computers, the self-assessment of their attitudes and ability to work with computers, and use and experience with computers. This indicator uses data from this questionnaire on the availability and use of computers at home and at school (for data see www.oecd.org/els/education/eag2002), students'

...and the same is true for the use of different types of software, such as games, word processing, spreadsheets, drawing, painting or educational software...

...as well as for computer use and experience.

Results from this indicator derive from background questionnaires completed by 15-year-old male and female students as part of the Programme for International Student Assessment (PISA) undertaken by the OECD during 2000.

D4

comfort with and perceived ability to use computers (Chart D4.1 and Table D4.1), their interest in computers (Chart D4.2 and Table D4.2) and use of computers and computer software (for data see www.oecd.org/els/education/eag2002). The responses were weighted to make them proportional to the number of 15-year-olds in each school.

*Index of comfort with
and perceived ability to
use computers*

The PISA index of comfort with and perceived ability to use computers is constructed with the average score across countries set at 0 and the standard deviation set at 1. A positive value indicates that students reported more frequently than on average in OECD countries that it is very important to them to work with a computer, that they are comfortable using a computer, that they are comfortable using a computer to write a paper or to take a test, and that they rate their ability to use a computer as higher than that of other 15-year-olds.

*Index of interest in
computers*

The PISA index of interest in computers is constructed with the average score across countries set at 0 and the standard deviation set at 1. A positive value indicates that students reported more frequently than on average in OECD countries that it is very important to them to work with a computer, that playing or working with a computer is fun, that they use a computer because they are very interested, and that they forget the time when they are working with a computer.

*Index of computer usage
and experience*

The PISA index of computer usage and experience is constructed with the average score across countries set at 0 and the standard deviation set at 1. A positive value on the index indicates that students reported more frequently than on average in OECD countries that they use the computer to help them learn school material, for programming, for word processing, spreadsheets, drawing, painting or graphics and educational software.

In the tables and charts used in this indicator, differences between the means of males and females are identified as statistically significant at a confidence level of 95 per cent. This means that a difference of this size or larger would be observed less than 5 per cent of the time if there were really no difference in corresponding population values.

Table D4.1.

Perceived comfort with and ability to use computers of 15-year-olds, by gender (2000)

PISA index of comfort with and perceived ability to use computers, by gender, and mean percentage of 15-year-old males and females who reported that they were very comfortable or comfortable; and somewhat comfortable or not at all comfortable with using a computer, using a computer to write a paper, or taking a test on a computer

	PISA index of comfort with and perceived ability to use computers ¹		Using a computer				Using a computer to write a paper				Taking a test using a computer				
			Very comfortable or comfortable		Somewhat comfortable or not at all comfortable		Very comfortable or comfortable		Somewhat comfortable or not at all comfortable		Very comfortable or comfortable		Somewhat comfortable or not at all comfortable		
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	
			%	%	%	%	%	%	%	%	%	%	%	%	
OECD COUNTRIES	Australia	0.30	0.56	86	91	14	9	90	88	10	12	64	75	36	25
	Belgium	-0.07	0.35	72	86	28	14	76	80	24	20	57	73	43	27
	Canada	0.32	0.67	85	92	15	8	89	88	11	12	67	77	33	23
	Czech Republic	-0.53	-0.07	47	72	53	28	63	65	37	35	57	71	43	29
	Denmark	-0.41	0.31	57	80	43	20	74	84	26	16	34	66	66	35
	Finland	-0.42	0.19	64	84	36	16	69	74	31	26	31	60	69	40
	Germany	-0.53	-0.07	49	73	51	27	56	63	44	37	48	65	52	35
	Hungary	-0.48	-0.20	80	89	20	11	40	45	60	55	57	63	43	37
	Ireland	-0.19	-0.08	73	77	27	23	64	58	36	42	44	51	56	49
	Luxembourg	-0.29	0.11	58	77	42	23	62	67	38	33	52	68	48	32
	Mexico	-0.23	-0.14	70	72	30	28	73	69	27	31	54	61	46	39
	New Zealand	0.21	0.27	85	87	15	13	83	78	17	22	63	67	37	33
	Scotland	0.31	0.46	83	87	17	13	83	82	17	18	65	70	35	30
	Sweden	-0.41	0.22	67	88	33	12	76	86	24	14	19	43	81	57
	Switzerland	-0.48	-0.03	47	73	53	27	61	65	39	35	52	66	48	34
United States	0.54	0.70	88	91	12	9	93	89	7	11	74	79	26	21	
<i>Country mean</i>	<i>-0.17</i>	<i>0.21</i>	<i>70</i>	<i>82</i>	<i>30</i>	<i>18</i>	<i>72</i>	<i>74</i>	<i>28</i>	<i>26</i>	<i>52</i>	<i>66</i>	<i>48</i>	<i>34</i>	
NON-OECD COUNTRIES	Brazil	-0.62	-0.35	57	68	43	32	51	58	49	42	38	49	62	51
	Latvia	-0.35	-0.07	59	74	41	26	63	66	37	34	52	65	48	35
	Liechtenstein	-0.52	-0.02	43	77	57	23	61	63	39	37	61	68	39	32
	Russian Federation	-0.39	-0.24	53	62	47	38	62	64	38	36	53	59	47	41

Note: Values marked in bold indicate that the difference between the means of males and females is statistically significant.

1. For the definitions of the indices see the Definitions and Methodologies section of this indicator.

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D4.2.

15-year-old students' interest in using computers, by gender (2000)

PISA index of interest in computers, by gender, and mean percentage of 15-year-old males and females who agree that working with computers is important to them, playing or working with computers is really fun, they use computers because they are interested in this, and they forget the time when working on computers

	PISA index of interest in computers ¹		It is important to work with a computer		Playing or working with a computer is really fun		Student uses computer because it interests them		Student forgets the time when working with a computer		
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	
			%	%	%	%	%	%	%	%	
OECD COUNTRIES	Australia	-0.41	-0.04	64	72	74	87	52	71	52	58
	Belgium	-0.22	0.18	60	73	87	94	62	78	58	72
	Canada	-0.24	0.07	58	70	82	90	58	76	65	68
	Czech Republic	-0.21	0.14	61	69	85	93	68	81	57	70
	Denmark	-0.66	0.18	49	75	74	94	37	77	47	70
	Finland	-0.39	0.10	47	66	78	92	68	85	50	63
	Germany	0.04	0.43	69	84	89	96	70	87	73	83
	Hungary	-0.21	0.14	58	69	84	90	64	81	61	71
	Ireland	-0.02	0.02	55	58	92	94	72	75	75	74
	Luxembourg	0.12	0.45	70	83	88	93	74	88	77	86
	Mexico	0.29	0.27	88	89	87	88	84	84	87	85
	New Zealand	-0.41	-0.15	55	63	78	87	54	69	55	56
	Scotland	0.03	0.26	69	76	87	95	69	83	72	73
	Sweden	-0.18	0.29	59	81	79	95	74	88	59	67
	Switzerland	-0.12	0.24	60	76	83	91	65	82	70	78
United States	0.33	0.29	89	84	94	89	78	83	73	73	
<i>Country mean</i>	<i>-0.14</i>	<i>0.18</i>	<i>63</i>	<i>74</i>	<i>84</i>	<i>92</i>	<i>66</i>	<i>80</i>	<i>64</i>	<i>72</i>	
NON-OECD COUNTRIES	Brazil	0.34	0.39	93	93	95	95	91	94	69	70
	Latvia	0.28	0.34	79	77	93	92	90	91	74	81
	Liechtenstein	-0.02	0.35	69	81	84	92	68	89	69	78
	Russian Federation	0.18	0.18	77	75	92	92	90	90	80	85

Note: Values marked in bold indicate that the difference between the means of males and females is statistically significant.

1. For the definitions of the indices see the Definitions and Methodologies section of this indicator.

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

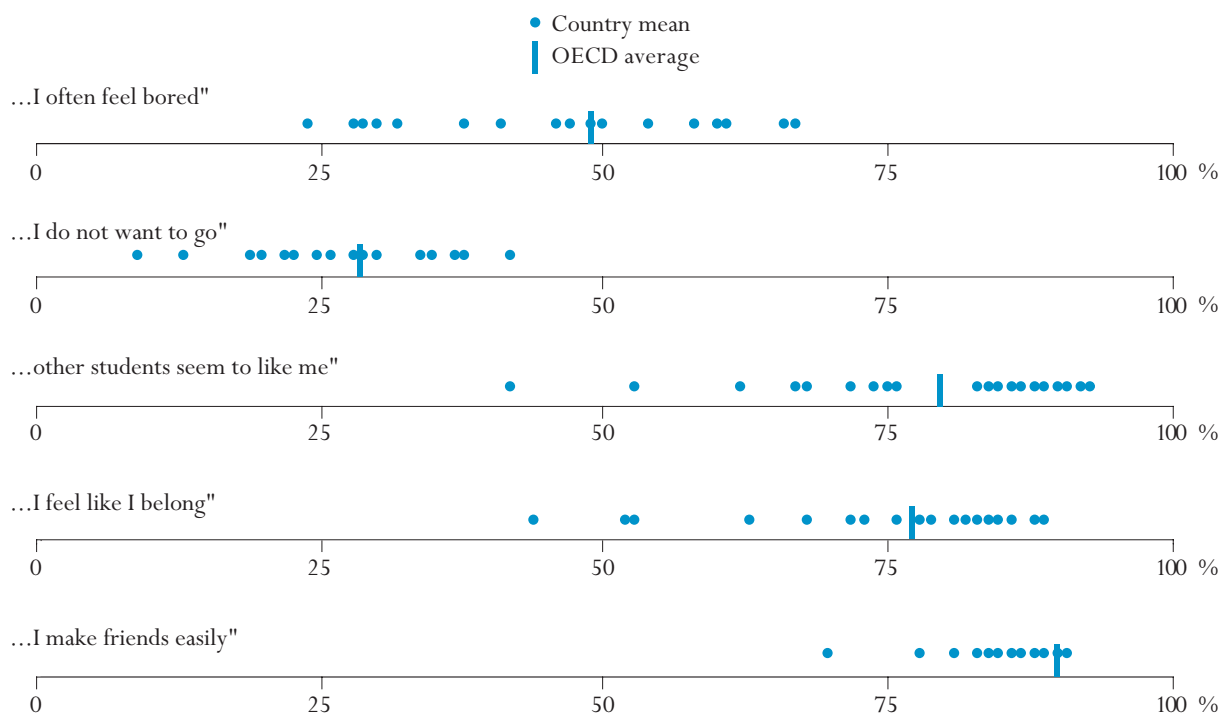
SCHOOL AND CLASSROOM CLIMATE

- Compared to the OECD mean, 15-year-olds reported receiving more support from their teachers in Australia, Canada, New Zealand, Portugal, Sweden, the United Kingdom and the United States and less in Austria, Belgium, the Czech Republic, Germany, Italy, Korea, Luxembourg and Poland.
- On average, one 15-year-old in three reported that more than five minutes are spent at the start of the class doing nothing, and more than one in four complained that there is noise and disorder.
- More than half of the 15-year-olds in Australia, Denmark, Ireland, New Zealand, Norway, Sweden and the United Kingdom reported that they regularly use the science laboratory compared to less than 10 per cent in Finland and Hungary.
- School resources tend to be used more frequently, schools tend to be more autonomous, teachers' morale and commitment tend to be higher, and teacher-student relations tend to be relatively better in high performing countries. In countries with relatively low performance, negative school climate indices tend to cluster, and the indices on the use of school resources, teachers' morale and commitment, school autonomy and teacher-student relations tend to fall below the OECD average.

Chart D5.1.

Broader engagement of 15-year-olds with school (2000)

Distribution of mean percentages of 15-year-olds who agreed or strongly agreed that "School is a place where..."



D5

Note: Countries are represented by dots.

Source: OECD PISA database, 2001. Table D5.4. See Annex 3 for notes on methodology (www.oecd.org/els/education/eaq2002) and www.pisa.oecd.org.

Policy context

This indicator shows various aspects of the classroom and learning climate as well as student engagement with school.

Students between the ages of six and 15 spend on average about 900 hours a year in the classroom, where they co-operate with teachers and with each other (see Indicator D1). The quality of these interactions and the use that is made of classroom time determine to a large extent how much students can profit from schooling.

Classroom experiences affect the substance and the mode of learning, and can influence students' motivation and learning styles. PISA provides evidence that both teacher and student-related factors of classroom climate and practice closely relate to students' individual performance.

In addition, students' attitudes towards and involvement with school are important aspects of the learning climate. Research shows that negative attitudes may lead to poor attendance and disruptive behaviour and, conversely, that if students become involved in their school curricula or extra-curricular activities and develop strong ties with other students and teachers, they are more likely to do well in their studies.

This indicator shows various aspects of the classroom and learning climate and reports on student attitudes towards school.

Evidence and explanations

Learning climate in the classroom

In PISA, 15-year-olds were asked about several aspects of their classroom experiences in their language classes: their teacher's supportiveness, the disciplinary climate, the use of school resources, and homework policies in the school. Based on their responses a *teacher support index*, a *disciplinary climate index*, an *achievement press index*, and a *use of school resources index* were developed (Chart D5.2).

D5

PISA indices of classroom learning climate

The PISA indices on the learning climate of the classroom summarise responses from 15-year-olds to a series of related questions and are standardised so that the OECD mean is 0 and the standard deviation is 1. A negative value for a country on an index does not necessarily imply that 15-year-olds in a country responded negatively to the underlying questions but merely indicates that they responded less positively than all 15-year-olds across OECD countries. For the content of the indices and for more technical explanation, see the Definitions and methodologies section of this indicator.

Chart D5.2.

Indices of classroom climate for 15-year-olds (2000)
*PISA indices of teacher support, disciplinary climate, achievement press
 and use of school resources, based on self-reports of students*



D5

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eqg2002).

Data are ranked in descending order of the value on the PISA index of teacher support.

Source: OECD PISA database, 2001. Tables D5.1, D5.2 and D5.3. See Annex 3 for notes on methodology (www.oecd.org/els/education/eqg2002) and www.pisa.oecd.org.

On average, six 15-year-olds in ten reported that their teacher shows an interest in all students' learning most of the time, whereas one in ten says this never happens, but the perceived level of teacher support varies widely between countries.

Teacher support

On average across OECD countries, about six 15-year-olds in ten reported that their teacher of language of instruction classes shows an interest in every student's learning in most or all lessons, gives students an opportunity to express themselves, helps them with their work, continues teaching until all students understand, helps with learning and checks homework (Table D5.1).

The average level of perceived teacher support varies between countries. For example, more than three 15-year-olds in four in Australia, Portugal and the United Kingdom reported that their teachers are interested in every student's progress always or at least most of the time and only 5 per cent or less say that this never happens. By contrast, in Italy, Korea and Poland, only one 15-year-old in three reported that the teacher shows an interest in all students' learning, and nearly as many think that this never happens. Similarly, in Australia, Iceland, New Zealand and the United Kingdom, four 15-year-olds in five or more reported that their language teacher helps them with their work most of the time or always, but only about one in three say so in the Czech Republic, Korea or Mexico. Between two-thirds and three-quarters of the 15-year-olds in Australia, Canada, Denmark, Iceland, New Zealand, Portugal, Sweden and the United Kingdom reported that their language teacher teaches them until all students understand, compared to less than half of the 15-year-olds in the Czech Republic, Japan, Korea and Poland (Table D5.1)

Fifteen-year-olds in the Czech Republic, Germany, Korea, Luxembourg and Poland reported the least support from their teachers, whereas 15-year-olds in Australia, Canada, New Zealand, Portugal, the United Kingdom and the United States report high levels of teacher support. There is more than a standard deviation difference between the country mean PISA teacher support index in the United Kingdom (0.50) and Korea (-0.67). On average, therefore, 15-year-olds in the United Kingdom reported that they perceive receiving at least as much or more support from their teachers as the top third of all 15-year-olds in OECD countries. By contrast, 15-year-olds in Korea reported that they receive as much or less support from their language teachers than the bottom third of all 15-year-olds in the OECD (Table D5.1).

Disciplinary climate

In all countries, there is a positive link between the disciplinary climate in the language (of instruction) classes and student performance. The relationship is strong in Australia, Japan, Hungary, Poland and the United Kingdom, and weaker in Belgium, France, Luxembourg and Mexico. Even after accounting for other factors (including home background), disciplinary climate seems to be one of the factors that relate to learning outcomes. When students themselves say they cannot work very well in class, or that students do not listen to the teacher, whatever the cause, work is hindered. PISA suggests that discipline problems disturb students' learning quite frequently. For example, 28 per cent of all 15-year-olds in OECD countries reported noise and disorder in most or

On average in OECD countries, one 15-year-old in three reported that more than five minutes are spent at the start of the class doing nothing, and 28 per cent complained that there is noise and disorder.

every language (of instruction) class and a particularly large proportion of 15-year-olds – 40 per cent or more – reported this in Finland, France, Greece and Italy. According to students' reports, time wasted at the beginning of lessons is the most frequent disciplinary problem. Of all students in OECD countries, over one-third reported that most or all language (of instruction) classes start by spending more than five minutes doing nothing. However, while more than half of 15-year-olds in Belgium, Denmark, Greece, Iceland and Norway reported frequent loss of time at the beginning of lessons, fewer than one in four 15-year-olds reported the same in Hungary, Japan and Mexico (Table D5.1).

Pressure to achieve

Schools offer a variety of subjects and no student is equally interested in all of them. Students optimise their learning efforts according to their personal interests and goals, the demands of their parents, and the requirements of their teachers. Setting desirable and attainable goals and encouraging students to reach them are major challenges of the teaching profession. In PISA, 15-year-olds were asked how frequently their teacher in the language of instruction wants them to work hard and do their work with care, encourages them to do better, and makes them learn a lot. From students' responses a 'pressure to achieve' index was created. Compared to the OECD average, 15-year-olds in Australia, Canada, Finland, Hungary, Iceland, Ireland, Italy, New Zealand, the United Kingdom and the United States reported higher pressure to achieve from the teacher (Table D5.2).

Interestingly, 15-year-olds in Australia, Canada, New Zealand, the United Kingdom and the United States seem to experience a lot of pressure to achieve while enjoying a relatively high level of teacher support, suggesting that teacher supportiveness and achievement pressure do not necessarily work against each other.

By contrast, in Austria, Belgium, the Czech Republic, Japan, Korea and Luxembourg, teacher support and pressure to achieve are below the OECD average. In a third group of countries including France, Italy and Poland, higher than average pressure to achieve is coupled with lower than average support from teachers. In Denmark, Finland, Norway and Sweden, the mean pressure to achieve and the mean teacher support index both appear to be near the OECD average (Tables D5.1 and D5.2).

Use of educational resources

In PISA, school principals were asked the extent to which learning is hindered by lack of textbooks, computers, instruction materials in the library, multi-media equipment, science laboratories, and facilities for art activities. Furthermore, 15-year-olds were asked how frequently they use these resources. Educational resources can enhance learning opportunities in schools and their availability is a pre-requisite to effective teaching, but the integration of educational resources into classroom work and school learning mainly depends on teachers. Access

15-year-olds in Australia, Canada, New Zealand, the United Kingdom and the United States feel more pressure to achieve...

...and, at the same time, enjoy a high level of teacher support.

The pattern is different in other countries.

One 15-year-old in three reported using the school library regularly in Australia, Denmark, Mexico, New Zealand, Portugal and Sweden...

...while less than one in ten in Austria, Belgium, the Czech Republic, Finland, Greece, Ireland and Italy do so.

to books and other media in school and encouragement to use them is a major issue. In addition to the adults in the home, teachers are in a unique position to develop students' reading and information use habits. The library, which is becoming a multimedia centre increasingly in OECD countries, can be an important tool for this. Over one-third of 15-year-olds in Australia, Denmark, Mexico, New Zealand, Portugal and Sweden reported in PISA that they use the school library regularly (at least several times a month).

By contrast, less than one 15-year-old in ten reported using the school library regularly in Austria, Belgium, the Czech Republic, Finland, Greece, Ireland and Italy (Table D5.3).

Shortage of educational material in the school library may also hinder the use of the library.

It is difficult to discern the extent to which curriculum and textbook policy are linked to habits of library use in a country. For example, in Austria, 15-year-olds are given a large set of textbooks and other instructional material, while students in Hungary must buy their own textbooks. In other countries, like Sweden for example, students typically are loaned textbooks from the school library.

While owning many books may be one reason not to use the school library, insufficient resources may be another. In Finland, Greece, Ireland, Mexico and Norway, more than 40 per cent of 15-year-olds go to schools where principals report that the shortage of instructional material in the library hinders learning to some extent or a lot. By contrast, in Australia, Denmark, France, Hungary, Luxembourg, New Zealand, Portugal and Switzerland, less than 20 per cent of 15-year-olds go to schools where, according to principals, the shortage of educational material hinders learning (Table D5.3).

More than half of 15-year-olds in Australia, Denmark, Ireland, New Zealand, Norway, Sweden and the United Kingdom reported using the science laboratory regularly, compared to less than 10 per cent in Finland and Hungary.

Differences between countries in the reported use of science laboratories are even more marked than those for using school libraries. On average across OECD countries, one 15-year-old in three reported using the science laboratory regularly. In Australia, Denmark, Ireland, New Zealand, Norway, Sweden and the United Kingdom, six to eight 15-year-olds in ten reported using the science laboratory at least several times a month, compared to less than two 15-year-olds in ten in the Czech Republic, Greece and Japan, and less than 1 in Finland and Hungary (Table D5.3).

To become efficient users of school resources, students need the encouragement and support of teachers. PISA suggests that in countries where teacher support is above the OECD average, the mean index on the use of school resources also tends to be above the OECD average. Conversely, in countries with a relatively low teacher support index, the use of school resources also tends to be low. Further research and analysis is needed to explore whether and to what extent professional development and the specification of teachers' working time influence teachers' efforts to use school resources effectively.

Homework policy

In PISA, 15-year-olds were asked about their school's homework policy. Two-thirds or more of 15-year-olds in Austria, Canada, Iceland, Korea, Mexico, Portugal and the United States reported that homework always or at least most of the time counts towards their school marks. By contrast, homework is less likely to be used in the formal evaluation of students in the Czech Republic, France, Germany, Hungary, Ireland, Italy, Luxembourg, New Zealand, Switzerland and the United Kingdom (Table D5.2).

In about half of OECD countries, 90 per cent or more of 15-year-olds reported that homework counts in students' marks at least sometimes.

In Belgium, Ireland, Korea, Mexico, New Zealand, the United Kingdom and the United States, more than half of the 15-year-olds reported that teachers grade their homework regularly. By contrast, in Germany and Switzerland only about 10 per cent and in Hungary only 4 per cent of the 15-year-olds reported that their homework is graded regularly. In Germany, Greece, Switzerland and the United Kingdom, more than 36 per cent of 15-year-olds reported that their teachers make useful comments on their homework most of the time. By contrast, only 15 per cent of 15-year-olds in the Czech Republic, Finland, Hungary, Iceland or Japan reported that they receive useful comments on their homework from teachers (Table D5.2).

In some countries, teachers grade homework regularly while in others, they rarely do so.

School climate

Learning conditions affect students' progress directly and are part of the wider school context in which teachers and students interpret assignments and evaluate teaching-learning situations. In PISA, over and above the relationships between individual student performance and school climate, the extent to which school climate factors are related to performance differences among schools was explored. Seven indices of school climate and practice were found to have a statistically significant association with school-level performance in the three subject domains assessed in PISA. Three of these (the indices on teacher related factors affecting of school climate, the school principal's perception of teachers' morale and commitment, and the school's autonomy) represent the school principal's view of the learning climate of the school. Three other indices (students' perception of teacher-student relations, disciplinary climate of the classroom and students' perception of pressure to achieve) represent students' views of the classroom and of the learning climate in the school. The seventh indicator refers to the frequency of the use of school resources.

Overall, the set of seven school climate indices explains around 30 per cent of the variation in reading literacy performance among schools and around 20 per cent of the variation among countries. The joint effect of the factors underlying these indices and the average economic social and cultural status of the student populations explain around 70 per cent of the variation between schools and around 40 per cent of the variation between countries.

The PISA indices on school climate

The PISA indices on school climate summarise responses from students and school principals to a series of related questions (See the Definitions and methodologies section of this indicator for a description of the indices.)

The PISA index on **teacher-related factors affecting school climate** was derived from principals' responses to questions about the hindrances to learning in the school.

The index on **teachers' morale and commitment** is based on principals' agreement with statements like 'the morale of teachers in this school is high'; 'teachers work with enthusiasm', 'teachers take pride in this school' and 'teachers value academic achievement'.

The PISA index on **school autonomy** is based on principals' information on the areas in which the school (principal) has no responsibility.

The PISA index on **teacher-student relations** is based on 15-year-olds' agreement with statements like 'students get along well with most teachers', 'most teachers are interested in students' well-being', 'most teachers listen to what students have to say', 'if students need extra help, they get it from their teachers' and 'most teachers treat students fairly'.

The PISA index on the classroom's **disciplinary climate** is based on 15-year-olds responses to questions about the frequency of noise and disorder, wasting classroom time doing nothing, students not listening to teachers.

The PISA index on **pressure to achieve** is based on 15-year-olds' responses to questions on how often their teacher wants them to work hard, tells students that they can do better, makes them learn a lot and disapproves of careless work.

The PISA index on the **use of school resources** is also based on 15-year-olds' responses concerning the frequency with which they use the library, computers, the science laboratory and other educational resources.

In most high performing countries, 15-year-olds tend to use school resources more frequently, schools tend to have a higher level of autonomy, teachers' morale and commitment tend to be higher, and teacher-student relations tend to be better.

The majority of countries performing above the OECD average on the PISA scales have high or average values on five of the seven school climate indices: the school-level mean indices of *the use of educational resources, school autonomy, teachers' morale and commitment, pressure to achieve* and *teacher-student relations*.

In Australia, Canada, Denmark, Finland, Iceland, New Zealand, Sweden, the United Kingdom and the United States, all five of these school climate indices have values above or around the OECD mean. The coincidence of these five factors are related to a regulation type that can be characterised by substantial school autonomy and an orientation to outcomes rather than control over school inputs and content. (For data see www.oecd.org/els/education/eag2002.)

In countries where the average performance of 15-year-olds is below the OECD average, more than half of the school climate indices also tend to have values below the OECD average. In Germany and Greece, for example, all but one of the seven indices are negative. Five indices in Italy, Luxembourg, Portugal and Spain, and four of the seven indices in the Czech Republic, Japan and Mexico are below the OECD mean. The two exceptions are Hungary and Poland, where six and four respectively of the school climate indices have values above the OECD mean. (For data see www.oecd.org/els/education/eag2002.)

In countries with below-average performance, negative school climate indices tend to cluster...

In this latter group of countries, with the exception of Portugal, the use of school resources index is significantly lower than the OECD average. The school autonomy index is negative in seven of these countries (except the Czech Republic, Hungary and Poland). In Germany, Greece, Portugal and Mexico, principals perceive teacher-related problems as hindering learning (although the same problems are also reported in some of the high performing countries, including Australia, Canada, Finland, Ireland and New Zealand). Teacher-student relations are less favourable than the OECD mean in the Czech Republic, Germany, Greece, Italy, Luxembourg and Poland. In five of these countries (the Czech Republic, Italy, Spain, Poland and Portugal), principals perceive low teacher morale and commitment. Similar problems also exist in Belgium, Korea and the United States although the performance level in these countries is around or above the OECD average. (For data see www.oecd.org/els/education/eag2002.)

...and the indices on the use of school resources, teachers' morale and commitment, school autonomy and teacher-student relations tend to fall below the OECD average.

PISA provides evidence that school climate indices in most countries are associated with the socio-economic composition of the student population (for data see www.oecd.org/els/education/eag2002), which can be critical in countries with relatively large overall differences in student performance and where a substantial part of these differences is attributable to differences between schools. For example, in Germany, the variation in performance between schools is well above the OECD average. The significant positive correlations between the mean socio-economic status of schools and teacher-related factors affecting school climate, teacher-student relations, school autonomy, and disciplinary climate indicate that schools with a more affluent student intake tend to have fewer problems with teacher and student discipline, better teacher-student relations and more autonomy. This also means that students with a lower socio-economic status are less likely to be enrolled in schools where the learning climate is more favourable.

School climate factors are often associated with the social, economic and cultural status of the school's intake.

Broader engagement with school

School and school-related work constitutes a large proportion of a 15-year-old's time. Can schools focus young students' attention amidst competing stimuli? Evidence from PISA suggests that, on average, 48 per cent of 15-year-olds often feel bored at school and 29 per cent say school is a place where they do not want to go (Chart D5.1 and Table D5.4).

Half of the 15-year-olds in PISA report that they often feel bored at school...

...yet for most 15-year-olds school is an important social sphere where they make connections with peers.

At the same time, PISA suggests that schools play an important role in the social life of 15-year-olds, and schools remain an important place for teenagers to meet. PISA asked 15-year-olds to what extent they feel they belong in school. Table D5.4 summarises their responses and suggests that for the majority of 15-year-olds, school is a place where they make friends easily (82 per cent), where they feel they belong (75 per cent), and where other 15-year-olds seem to like them (77 per cent). However, on average in OECD countries, 9 per cent feel like an outsider or feel left out of things, 14 per cent feel awkward and out of place, and 10 per cent feel lonely (Chart D5.1 and Table D5.4).

Definitions and methodologies

Results from this indicator derive from background questionnaires completed by 15-year-olds and their school principals as part of the Programme for International Student Assessment (PISA) undertaken by the OECD during 2000.

The PISA indices reported in this section summarise responses from students and school principals to a series of related questions. Responses were weighted to represent the school's population of 15-year-olds. The questions were selected from larger constructs on the basis of theoretical considerations and previous research. Structural equation modelling was used to confirm the theoretically expected attributes of the indices and to validate their comparability across countries. A separate model was estimated for each country and, collectively, for all OECD countries.

Negative values on an index do not necessarily imply that students and school principals responded negatively to the underlying questions. Rather they indicate that a group of students (or all students collectively in one country) or principals responded less positively than did students or principals on average across OECD countries. A positive value on an index indicates that a group of students or principals responded more favourably, or more positively, than all students or principals, on average, in OECD countries.

Indices based on students' responses

Index of teacher support

The PISA index of *teacher support* was derived from students' reports on the frequency with which the teacher: shows an interest in every student's learning; gives students an opportunity to express opinions; helps students with their work; continues teaching until students understand; does a lot to help students; and helps students with their learning. A four-point scale with response categories 'never', 'some lessons', 'most lessons' and 'every lesson' was used.

Index of disciplinary climate

The PISA index of *disciplinary climate* summarises students' reports on the frequency with which in their <language class>: the teacher has to wait a long time for students to <quieten down>; students cannot work well; students don't listen to what the teacher says; students don't start working for a long time after the lesson begins; there is noise and disorder; and at the start of class, more than five minutes are spent doing nothing. A four-point scale with response categories 'never', 'some lessons', 'most lessons' and 'every lesson' was used. This index was inverted so that low values indicate a poor disciplinary climate.

The PISA index of pressure to achieve was derived from students' reports on the frequency with which the teacher in their <language class> wants students to work hard, tells students that they can do better, does not like it when students deliver <careless> work; and students have to learn a lot. A four-point scale with response categories 'never', 'some lessons', 'most lessons' and 'every lesson' was used.

Index of pressure to achieve

The PISA index on the *use of school resources* was derived from the frequency with which students reported using the following resources in their school: the school library, calculators, the Internet and <science> laboratories. Students responded on a five-point scale with the following categories: 'never or hardly ever', 'a few times a year', 'about once a month', 'several times a month', and 'several times a week'. The indices were derived using the WARM method.

Index of the use of school resources

The PISA index of *time spent on homework* is derived from students' reports on the frequency with which homework is completed: never, sometimes, most of the time, or always; and the amount of time spent per week doing homework for <test language>, mathematics and science classes using a four-point scale with categories: 'never', 'less than 1 hour a week', 'between 1 and 3 hours a week' and '3 hours or more a week.' High values mean that the student reported investing a large amount of time in homework and completes it on time.

Index of the time spent on homework

The PISA index of *teacher-student relations* was derived from students' reports on their agreement with the following statements using a four-point scale with response categories 'strongly disagree', 'disagree', 'agree' and 'strongly agree': students get along well with most teachers; most teachers are interested in students' well being; most of my teachers really listen to what I have to say; if I need extra help, I will receive it from my teachers; and most of my teachers treat me fairly.

Index of teacher-student relations

To capture wider aspects of a student's family and home background, the PISA index of economic, social and cultural status was created on the basis of the following variables: the International Socio-Economic Index of Occupational Status; parents' highest level of education converted into years of schooling; the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to "classical" culture in the family home. For a detailed description of these variables see the *PISA Technical Report* on www.pisa.oecd.org.

Index of economic, social and cultural status (ESCS)

PISA indices based on principals' responses

The PISA index of *principals' perceptions of teacher-related factors affecting school climate* was based on principals' reports on the extent to which the learning of 15-year-olds is hindered by: low expectations of teachers; poor student-teacher relations; teachers not meeting individual students' needs; teacher absenteeism; staff resisting change; teachers being too strict with students; and students not being encouraged to achieve their full potential. A four-point scale with

Index of school principals' perceptions of teacher-related factors affecting school climate

categories ‘not at all’, ‘very little’, ‘to some extent’ and ‘a lot’ was used. This index was inverted so that low values indicate a poor disciplinary climate.

Index of school principals’ perception of teachers’ morale and commitment

The PISA index of *principals’ perception of teachers’ morale and commitment* was based on the extent to which school principals agreed with the following statements: the morale of the teachers in this school is high; teachers work with enthusiasm; teachers take pride in this school; and teachers value academic achievement. A four-point scale with response categories ‘strongly disagree’, ‘disagree’, ‘agree’ and ‘strongly agree’ was used.

Index of school autonomy

School principals were asked to report whether teachers, department heads, the school principal, an appointed or elected board, or education authorities at higher levels have the main responsibility for: hiring and firing teachers; establishing starting salaries; determining salary increases; formulating school budgets; allocating budgets within the school; establishing student disciplinary policies; establishing student assessment policies; approving student admissions; choosing textbooks; determining course content; and deciding which courses are offered. The PISA index of *school autonomy* was based on the categories which principals classified as not being a school responsibility.

Table D5.1.
Classroom climate for 15-year-olds (2000)
PISA indices of teacher support and disciplinary climate and change in the PISA reading literacy score

	Teacher support							PISA index of teacher support ¹	Change in the PISA reading literacy score per unit of the PISA index of teacher support ²	
	Percentage of students who report that in most or every test language lesson, the teacher ...									
	shows an interest in every student's learning	gives students an opportunity to express opinions	helps students with their work	continues teaching until the students understand	does a lot to help students	helps students with their learning	checks students' homework	Mean index		
OECD COUNTRIES	Australia	72	77	80	72	70	77	49	0.41	7.37
	Austria	48	67	54	56	52	32	64	-0.25	-0.62
	Belgium	42	56	44	58	54	37	60	-0.28	-4.83
	Canada	69	73	76	68	67	75	49	0.31	4.42
	Czech Republic	47	57	32	41	51	24	47	-0.50	0.77
	Denmark	62	76	74	67	66	67	49	0.17	11.65
	Finland	52	72	72	59	57	66	42	0.02	5.48
	France	55	61	50	57	48	42	44	-0.20	-2.53
	Germany	41	62	52	53	51	34	61	-0.34	-12.55
	Greece	69	77	41	62	65	69	53	0.14	2.20
	Hungary	58	71	73	58	67	51	52	0.05	-2.43
	Iceland	53	51	79	72	69	75	61	0.13	8.87
	Ireland	70	66	62	64	64	61	63	0.13	-0.13
	Italy	22	72	50	63	61	41	50	-0.28	-11.46
	Japan	48	58	61	48	48	51	35	-0.17	6.23
	Korea	31	43	17	41	49	41	54	-0.67	5.56
	Luxembourg	45	57	46	56	49	32	51	-0.34	-5.13
	Mexico	70	76	36	62	53	61	76	0.07	-2.60
	New Zealand	69	73	79	67	69	76	56	0.34	5.26
	Norway	48	62	69	59	60	70	41	-0.03	14.95
Poland	38	60	41	43	44	35	46	-0.39	9.20	
Portugal	83	77	71	68	70	79	51	0.47	-1.33	
Spain	62	63	59	66	57	63	68	0.09	2.53	
Sweden	64	71	74	69	70	76	51	0.21	6.20	
Switzerland	56	68	66	66	63	47	56	0.01	-13.40	
United Kingdom	75	76	80	75	75	79	69	0.50	6.66	
United States	66	66	70	63	63	69	65	0.34	6.87	
<i>OECD total</i>	56	65	58	59	58	57	57	0.00	2.82	
<i>Country mean</i>	56	66	59	60	60	56	54	0.02	2.96	
NON-OECD COUNTRIES	Brazil	73	70	62	69	74	75	49	0.38	4.60
	Latvia	40	60	56	54	53	53	59	-0.20	15.56
	Liechtenstein	51	69	72	70	65	42	65	0.09	-14.19
	Russian Federation	55	69	65	61	65	70	64	0.16	6.40
	Netherlands ³	38	57	67	65	57	39	30	-0.21	-5.54

	Disciplinary climate						PISA index of disciplinary climate ¹	Change in the PISA reading literacy score per unit of the PISA index of disciplinary climate ²	
	Percentage of students who report that in most or every test language lesson ...								
	the teacher has to wait a long time for students to quieten down	students cannot work well	students don't listen to what the teacher says	students don't start working for a long time after the lesson begins	there is noise and disorder	at the start of class, more than five minutes are spent doing nothing	Mean index		
OECD COUNTRIES	Australia	31	18	21	26	32	42	-0.09	16.69
	Austria	32	20	21	29	19	38	0.19	4.98
	Belgium	35	14	23	30	36	51	-0.12	3.15
	Canada	35	16	23	29	33	46	-0.14	13.28
	Czech Republic	32	17	26	21	26	27	0.14	12.37
	Denmark	27	17	19	22	33	55	-0.20	9.71
	Finland	39	15	29	21	42	44	-0.16	9.56
	France	35	15	27	36	42	38	-0.05	1.53
	Germany	36	23	24	27	22	34	0.10	10.13
	Greece	43	39	29	34	46	58	-0.42	2.96
	Hungary	34	25	22	16	23	16	0.23	16.05
	Iceland	34	16	20	20	28	50	-0.08	8.90
	Ireland	29	16	25	25	26	41	0.09	15.41
	Italy	48	22	35	29	46	49	-0.24	14.11
	Japan	9	20	16	17	17	25	0.49	17.15
	Korea	17	21	32	23	29	32	0.20	6.88
	Luxembourg	31	21	24	26	27	36	0.12	2.41
	Mexico	28	17	19	19	24	23	0.17	2.03
	New Zealand	33	22	23	26	32	46	-0.15	12.47
	Norway	42	23	27	33	39	56	-0.36	7.79
Poland	26	13	19	19	18	27	0.37	20.88	
Portugal	25	19	20	24	24	42	-0.05	10.57	
Spain	41	18	24	35	34	48	-0.17	12.18	
Sweden	43	23	29	31	38	30	-0.19	12.44	
Switzerland	27	18	18	23	18	27	0.30	9.81	
United Kingdom	31	17	20	23	27	41	0.02	20.10	
United States	26	17	24	23	28	37	0.03	13.17	
<i>OECD total</i>	28	18	23	24	28	35	0.09	11.99	
<i>Country mean</i>	32	19	24	25	30	39	0.00	9.45	
NON-OECD COUNTRIES	Brazil	36	24	28	38	40	50	-0.34	-5.95
	Latvia	19	17	19	16	17	21	0.38	9.04
	Liechtenstein	25	21	15	15	10	21	0.35	-2.59
	Russian Federation	19	16	16	13	12	27	0.45	10.06
	Netherlands ³	39	16	21	37	39	69	-0.33	2.63

1. For the definitions of the indices see the Definitions and Methodologies section of this indicator.

2. Unit changes marked in bold are statistically significant.

3. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eaq2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eaq2002) and www.pisa.oecd.org.

Table D5.2.
 Homework policy and pressure on 15-year-olds to achieve (2000)

	Homework policy				Achievement press				PISA index of achievement press ¹			Change in the PISA reading literacy score per unit of the PISA index of achievement press ²	Correlation of the PISA school's mean achievement press index with the school index of economic, social and cultural status (ESCS) ²	
	Percentage of students who report that most of the time or always...				Percentage of students who report that in most or all test language lessons...				Mean index					
	My teachers grade my home-work	My teachers make useful comments on my home-work	I am given interesting home-work	My home-work is counted as part of my marks	The teacher wants students to work hard	The teacher tells students that they can do better	The teacher does not like it when students deliver careless work	Students have to learn a lot	All students	Bottom quarter	Top quarter			
OECD COUNTRIES	Australia	43	24	11	53	85	41	57	54	0.09	-0.22	0.40	-10.06	0.14
	Austria	47	19	15	77	64	42	49	57	-0.14	-0.62	0.39	-6.39	0.04
	Belgium	63	23	16	57	52	32	47	40	-0.36	-0.79	0.04	1.95	0.52
	Canada	41	22	10	66	84	41	62	59	0.20	-0.19	0.56	-9.71	0.07
	Czech Republic	19	13	10	27	28	51	35	52	-0.43	-0.94	0.11	-3.41	-0.10
	Denmark	38	29	8	54	83	21	66	74	0.16	-0.13	0.45	2.97	-0.04
	Finland	15	12	8	51	72	36	47	56	-0.14	-0.47	0.21	-14.69	-0.24
	France	32	24	19	43	45	49	40	43	-0.34	-0.68	0.02	-5.84	m
	Germany	12	42	8	43	71	50	48	57	-0.02	-0.43	0.38	-11.07	-0.12
	Greece	43	39	35	58	61	70	42	41	-0.07	-0.48	0.34	11.73	0.19
	Hungary	4	11	16	16	64	61	61	57	0.13	-0.22	0.47	-2.31	-0.04
	Iceland	46	15	8	74	80	51	65	64	0.26	-0.14	0.68	-13.21	-0.01
	Ireland	53	27	11	12	85	54	65	59	0.36	0.09	0.62	-7.32	-0.03
	Italy	22	30	23	34	84	83	50	60	0.37	0.06	0.68	-6.31	0.04
	Japan	35	10	3	64	74	29	16	66	-0.41	-0.91	0.15	4.36	0.04
	Korea	63	17	4	72	72	47	53	58	0.06	-0.34	0.41	13.27	0.76
	Luxembourg	15	21	9	24	57	42	41	46	-0.30	-0.49	-0.09	1.48	-0.20
	Mexico	71	23	28	81	50	63	40	49	-0.11	-0.54	0.26	-0.37	0.27
	New Zealand	53	31	15	33	89	52	63	61	0.34	0.05	0.66	-18.04	0.51
	Norway	30	16	8	56	67	36	35	53	-0.26	-0.59	0.05	-11.93	0.06
	Poland	21	18	17	48	59	47	49	58	-0.04	-0.43	0.38	3.37	0.51
	Portugal	45	20	18	75	59	65	48	63	0.13	-0.15	0.41	-5.10	-0.05
	Spain	48	26	17	55	48	56	53	66	0.01	-0.41	0.48	2.04	0.14
	Sweden	30	28	9	62	84	39	47	67	0.06	-0.22	0.33	-16.33	0.15
	Switzerland	10	36	14	25	62	35	41	50	-0.27	-0.67	0.13	-9.58	-0.33
	United Kingdom	76	50	14	22	91	49	55	63	0.30	0.04	0.58	-12.88	0.07
	United States	61	24	13	79	83	50	58	59	0.42	0.09	0.78	-1.51	0.20
	OECD total	47	24	14	61	71	49	47	58	0.06	-0.31	0.45	-0.95	
	Country mean	39	24	14	50	68	48	49	57	0.00	-0.36	0.37	-2.34	0.18
NON-OECD COUNTRIES	Brazil	50	30	40	51	68	77	57	79	0.61	0.15	1.06	8.02	0.23
	Latvia	57	17	12	50	46	53	49	59	-0.10	-0.54	0.38	1.55	m
	Liechtenstein	8	44	9	22	65	33	34	56	-0.27	-0.57	0.32	-12.31	-0.30
	Russian Federation	39	22	21	42	59	60	61	82	0.47	0.11	0.81	-4.99	-0.01
	Netherlands ³	7	15	8	18	70	29	49	44	-0.26	-0.55	-0.26	-10.38	-0.17

1. For the definition of the index see the Definitions and Methodologies section of this indicator.

2. Unit changes and correlations marked in bold are statistically significant.

 3. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

 Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D5.3.
Quality and use of school resources for 15-year-olds (2000)

	Quality and use of the school library			Availability and use of computers			Quality and use of science laboratory equipment			PISA index of use of school resources ²	Change in the PISA reading literacy score per unit of the PISA index of use of school resources ³
	Percentage of students enrolled in schools where principals report that learning is hindered to some extent or a lot by lack of instructional material in the library ¹	Percentage of students who report that they ² ...		Percentage of students enrolled in schools where principals report that learning is hindered to some extent or a lot by lack of computers ¹	Percentage of students who report that they ² ...		Percentage of students enrolled in schools where principals report that learning is hindered to some extent or a lot by inadequate science laboratory equipment ¹	Percentage of students who report that they ² ...		Mean index ²	
		never use the school library	use the school library at least several times a month		never use computers in the school	use computers in the school at least several times a month		never use the science laboratory	use the science laboratory at least several times a month		
OECD COUNTRIES											
Australia	17	11	35	30	8	60	16	16	61	1.27	11.98
Austria	22	67	4	38	15	68	34	57	25	0.16	28.06
Belgium	24	69	4	19	27	48	19	43	27	-0.57	49.50
Canada	20	19	22	31	14	50	19	20	44	0.73	8.44
Czech Republic	25	74	4	37	33	47	22	62	17	-0.76	34.30
Denmark	14	14	43	28	2	79	21	11	77	1.47	10.35
Finland	43	53	6	43	6	64	43	67	9	0.02	3.75
France	15	31	20	28	35	22	13	43	33	m	m
Germany	35	73	10	50	38	32	32	41	37	-0.29	-0.94
Greece	50	60	6	68	31	37	64	50	14	-1.00	-14.67
Hungary	12	42	11	13	15	72	27	70	8	-0.30	31.51
Iceland	37	29	21	45	10	66	53	47	23	0.54	2.95
Ireland	48	69	7	41	35	42	42	22	59	-0.38	16.24
Italy	34	71	3	32	26	53	37	51	21	-0.78	7.48
Japan	24	50	16	31	60	22	34	50	19	-1.17	12.43
Korea	35	65	13	24	30	57	28	25	40	-0.76	-2.80
Luxembourg	16	51	11	23	22	49	14	55	24	-0.40	-65.96
Mexico	60	16	33	68	49	30	66	33	35	-0.55	33.89
New Zealand	11	10	32	40	16	41	19	15	65	0.75	14.53
Norway	59	20	22	61	11	44	49	10	62	0.86	5.52
Poland	32	19	21	39	27	55	43	37	33	-0.18	53.20
Portugal	17	16	38	39	30	33	23	47	33	-0.09	-3.57
Spain	27	44	14	30	40	37	32	37	29	-0.53	9.46
Sweden	27	15	36	51	10	60	16	6	83	1.38	3.60
Switzerland	15	46	12	23	23	43	16	44	29	-0.13	22.42
United Kingdom	38	31	18	56	9	63	42	7	67	0.70	14.04
United States	21	21	20	31	12	44	23	23	34	0.38	39.74
OECD total	29	36	18	38	29	41	32	33	34		
Country mean	30	39	18	38	24	49	32	37	37	0.00	16.18
NON-OECD COUNTRIES											
Brazil	36	21	28	63	61	14	55	57	11	-1.25	20.00
Latvia	47	14	28	40	30	45	60	50	18	m	m
Liechtenstein	21	43	9	41	12	57	58	33	41	0.40	m
Russian Federation	78	12	42	86	52	32	79	17	50	-0.18	34.20
Netherlands ⁴	31	48	18	39	28	44	20	65	11	-0.34	52.39

1. Based on school principals' responses.

2. Based on students' responses. For the description of the index of the use of school resources see the section on Definitions and Methodologies of this indicator.

3. Unit changes marked in bold are statistically significant.

4. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

Table D5.4.

Broader engagement of 15-year-olds with school (2000)

Percentage of 15-year-olds who agree or strongly agree with the following statements relating to their broader engagement with school

		Percentage of students who agree or strongly agree with the statement that "My school is a place where..."							
		I feel like an outsider (or left out of things)"	I make friends easily"	I feel like I belong"	I feel awkward and out of place"	other students seem to like me"	I feel lonely"	I do not want to go"	I often feel bored"
OECD COUNTRIES	Australia	9	89	85	11	92	8	34	60
	Austria	7	86	85	18	72	10	29	49
	Belgium	10	86	53	19	87	7	42	46
	Canada	9	89	81	12	93	9	37	58
	Czech Republic	11	86	73	9	84	9	29	47
	Denmark	6	85	84	10	75	10	19	41
	Finland	6	84	86	11	84	8	26	60
	France	8	87	44	16	86	7	37	32
	Germany	6	81	82	15	67	8	25	49
	Greece	10	88	83	13	85	10	22	66
	Hungary	10	87	89	9	85	9	38	29
	Iceland	10	81	85	11	86	10	23	30
	Ireland	7	89	83	9	93	8	34	67
	Italy	7	90	73	9	88	16	38	54
	Japan	6	70	76	22	62	9	25	32
	Korea	15	83	68	15	42	10	30	46
	Luxembourg	9	84	72	19	68	11	30	50
	Mexico	10	84	88	11	76	12	9	28
	New Zealand	9	90	83	12	91	9	34	60
	Norway	6	85	79	10	86	8	23	58
	Poland	10	78	63	14	53	12	28	38
	Portugal	8	91	83	19	90	8	13	24
	Spain	5	90	52	12	89	7	30	66
	Sweden	6	87	78	7	88	9	20	58
	Switzerland	7	85	76	14	74	8	28	38
	United Kingdom	7	91	83	9	93	6	28	54
United States	11	81	78	14	83	12	35	61	
	<i>OECD total</i>	<i>9</i>	<i>82</i>	<i>75</i>	<i>14</i>	<i>77</i>	<i>10</i>	<i>29</i>	<i>48</i>
	<i>Country mean</i>	<i>8</i>	<i>85</i>	<i>77</i>	<i>13</i>	<i>80</i>	<i>9</i>	<i>28</i>	<i>48</i>
NON-OECD COUNTRIES	Brazil	5	89	86	10	88	8	20	30
	Latvia	9	79	86	15	63	14	18	31
	Liechtenstein	9	83	83	17	69	9	31	47
	Russian Federation	6	82	86	13	50	10	17	27
	Netherlands ¹	5	89	76	10	91	4	100	38

1. Response rate is too low to ensure comparability (see Annex 3 at www.oecd.org/els/education/eag2002).

Source: OECD PISA database, 2001. See Annex 3 for notes on methodology (www.oecd.org/els/education/eag2002) and www.pisa.oecd.org.

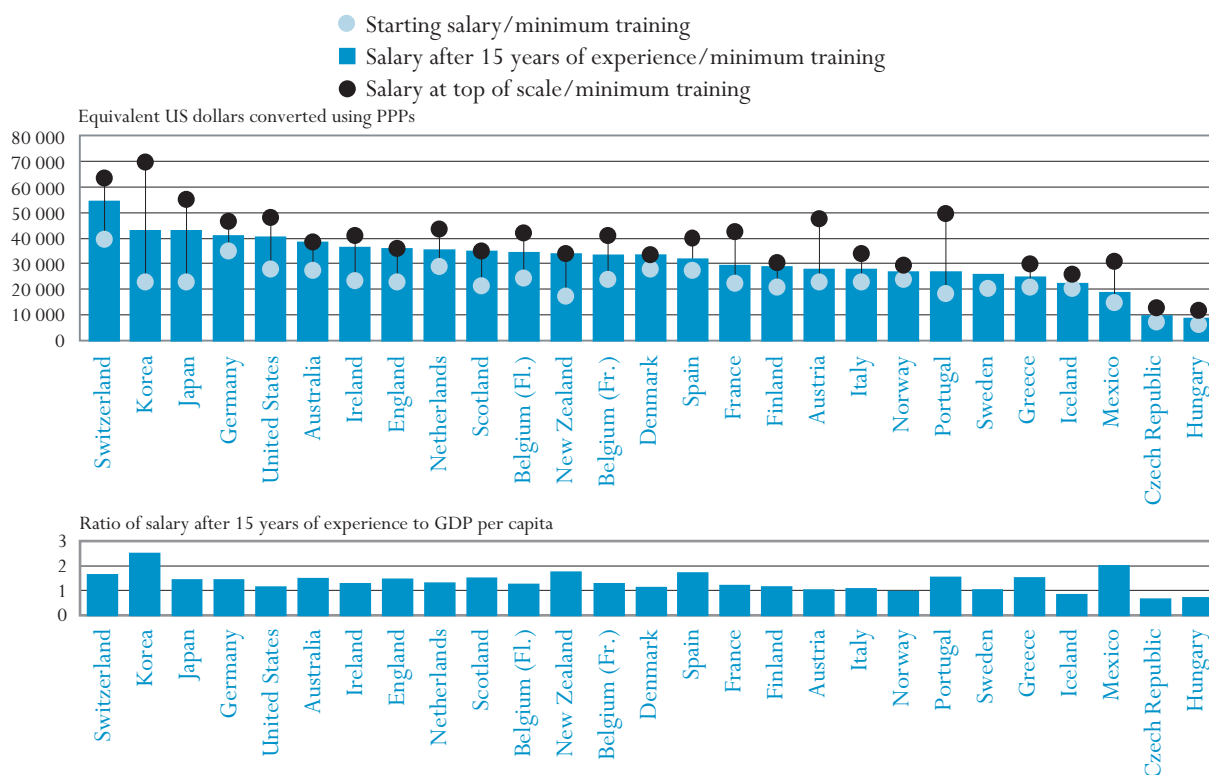
SALARIES OF TEACHERS IN PUBLIC PRIMARY AND SECONDARY SCHOOLS

- The mid-career salaries of lower secondary teachers range from less than US\$ 10 000 in the Czech Republic and Hungary to US\$ 40 000 and more in Germany, Japan, Korea, Switzerland and the United States. Some countries make a major investment in human resources despite lower levels of national income.
- An upper secondary teacher's salary per teaching hour is, on average, 42 per cent higher than that of a primary teacher, but the difference between these two levels of education is 10 per cent or less in Australia, New Zealand, Scotland and the United States, and more than 80 per cent in Spain and Switzerland.
- Teachers in Australia, Denmark, England, New Zealand and Scotland reach the highest step on the salary scale in 11 years or less, while a teacher in Austria, the Czech Republic, France, Greece, Hungary, Italy, Japan, Korea and Spain must teach for more than 30 years before reaching the maximum.
- Schools have at least some responsibility in deciding on the levels and extent of compensation for additional responsibilities and overtime in about half of the OECD countries.

Chart D6.1.

Teachers' salaries in lower secondary education (2000)

Annual statutory teachers' salaries in public institutions in lower secondary education, in equivalent US dollars converted using PPPs, and the ratio of salary after 15 years of experience to GDP per capita



Countries are ranked in descending order of teachers' salary in lower secondary education after 15 years of experience and minimum training. Source: OECD. Table D6.1. See Annex 3 for notes (www.oecd.org/els/education/eag2002).

This indicator shows the starting, mid-career and maximum statutory salaries of teachers in public primary and secondary education, as well as various incentive schemes used in teacher rewards systems.

Policy context

Education systems employ a large number of professionals in an increasingly competitive market. Ensuring that there is a sufficient number of skilled teachers is a key concern in all OECD countries. Salaries and working conditions of teachers, including starting salaries and pay scales, and the costs incurred by individuals in becoming teachers, compared to salaries and costs in other high-skill occupations are key factors in determining the supply of qualified teachers. Both affect the career decisions of potential teachers and the types of people who are attracted to the teaching profession.

Teachers' salaries are the largest single cost in providing education, making this compensation a critical consideration for policy-makers seeking to maintain the quality of teaching and a balanced education budget. The size of education budgets naturally reflects trade-offs between many interrelated factors, including teachers' salaries, the ratio of students to teaching staff, the instruction time planned for students, and the designated number of teaching hours.

Evidence and explanations

Comparing teachers' salaries

The first part of this indicator compares the starting, mid-career and maximum statutory salaries of teachers with the minimum level of qualifications required for certification in public primary and secondary education. First, teachers' salaries are examined in absolute terms at starting, mid-career and top-of-the-scale salary points, expressed in equivalent US dollars converted using purchasing power parities. This provides information on the influence of teaching experience on national salary scales, and on the cost of teaching time in different countries. Second, teachers' salaries are compared to GDP per capita to assess the value of teachers' salaries in terms of affordability for countries. Third, bonus schemes are examined.

The annual statutory salaries of lower secondary teachers with 15 years of experience range from below US\$ 10 000 in the Czech Republic and Hungary, to over US\$ 50 000 in Switzerland. This difference, which appears even after an adjustment for purchasing power parities has been made, can be explained to some extent by differences in GDP per capita between OECD countries, but it has a large impact on the variation in education costs per student (Table D6.1).

Statutory salaries, as reported in this indicator, refer to scheduled salaries according to official pay scales. These must be distinguished from the actual wage bills incurred by governments and teachers' average salaries, which are also influenced by other factors such as the age structure of the teaching force or the prevalence of part-time work. Furthermore, since teaching time and teachers' workload can vary considerably between countries, these factors

should be considered when comparing statutory salaries for teachers in countries.

An alternative measure of salaries and the cost of teaching time is the statutory salary for a full-time classroom teacher relative to the number of hours per year which that teacher is required to spend teaching students (see Indicator D7). Although this measure does not adjust salaries for the amount of time that teachers spend in various teaching-related activities, it can nonetheless provide a rough estimate of the cost of the actual time teachers spend in the classroom. The average statutory salary per teaching hour after 15 years of experience is US\$ 36 in primary, US\$ 44 in lower secondary, and US\$ 53 in upper secondary general education. In primary education, the Czech Republic, Hungary, Mexico and Turkey have relatively low salary costs per teaching hour (US\$ 22 or less). By contrast, costs are relatively high (more than US\$ 50 in Japan, Korea and Switzerland). There is even more variation in salary cost per teaching hour in general upper secondary schools, ranging from US\$ 20 or less in the Czech Republic and Hungary to US\$ 80 or more in Japan, Korea and Switzerland (Table D6.1).

Among other considerations, countries invest in teaching resources relative to their ability to fund educational expenditure. Comparing statutory salaries to GDP per capita is, therefore, another way of assessing the relative value of teachers' salaries across countries.

Mid-career salaries for primary teachers relative to GDP per capita are lowest in the Czech Republic (0.65), Hungary (0.71) and Iceland (0.80) and highest in Korea (2.49), New Zealand (1.70) and Turkey (2.06). The mid-career salary of a primary teacher in Spain is around the OECD average but its ratio to GDP per capita is relatively high compared with other OECD countries. In lower secondary education, mid-career salaries relative to GDP are highest in Korea (2.48) and Mexico (2.05). In upper secondary general education, the lowest ratios are found in the Czech Republic (0.80), Hungary (0.89) and Norway (0.92), and mid-career salaries relative to the GDP are highest in Korea (2.48), Mexico (2.18) and Turkey (1.91) (Table D6.1).

There is a significant association between teachers' salaries and GDP per capita (the correlation is approximately 0.60), although the relationship is not straightforward. Some countries, such as the Czech Republic and Hungary, have both relatively low GDP per capita and low teachers' salaries. Others there have a relatively low GDP per capita and teachers' salaries that are comparable to those in countries with much higher GDP (*e.g.*, Greece, Korea, Mexico, Portugal and Turkey). Yet other countries with relatively high GDP per capita have lower than OECD average teachers' salaries (Iceland and Norway), whereas others have a high GDP per capita and high teachers' salaries (Switzerland and the United States) (Chart D6.1).

The average statutory salary per teaching hour after 15 years of experience is US\$ 36 in primary, US\$ 44 in lower secondary, and US\$ 53 in upper secondary general education.

Comparing statutory salaries relative to GDP per capita adds a further perspective on teachers' salaries across countries.

Mid-career salaries for primary teachers relative to GDP per capita are comparatively low in the Czech Republic, Hungary and Iceland, and relatively high in Korea, New Zealand and Turkey.

Some countries make a major investment in human resources despite lower levels of national income.

Teachers' salary scales and enhancements

In most countries, salaries increase with the level of education.

In Australia, England, Greece, Ireland, Japan, Korea, New Zealand, Norway, Portugal, Scotland and the United States, upper secondary and primary teachers' salaries are comparable, while in the remaining OECD countries, teachers' salaries increase with the level of education in absolute terms. For example, in Belgium, Hungary, the Netherlands and Switzerland, the mid-career salary of an upper secondary teacher is at least 25 per cent higher than that of a primary school teacher (Table D6.1).

An upper secondary teacher's salary per contact hour is, on average, 42 per cent higher than that of a primary teacher.

Even in countries where statutory salaries are the same in primary and secondary education, salaries per teaching hour are usually higher in upper secondary education than in primary education, since in most countries, secondary teachers are required to teach fewer hours than primary teachers. On average across countries, upper secondary teachers' salary per hour exceeds that of primary teachers by 42 per cent. However, in Australia, New Zealand, Scotland and the United States, this difference is only 10 per cent or less, whereas it is between 50 to 87 per cent in Belgium, France, Hungary, Iceland, Korea, the Netherlands, Portugal, Spain and Switzerland (Table D6.1).

Teaching experience and qualifications influence teachers' salary scales in many OECD countries.

Comparing gross teachers' salaries between countries at the point of entry into the teaching profession, after 15 years of experience, and at the top of the salary scale, provides information on the extent to which teaching experience influences salary scales within countries. The difference between statutory starting salaries and subsequent increases is an indication of the financial return to experience. On average, across OECD countries, statutory salaries for primary and lower secondary teachers with 15 years of experience are 37 to 39 per cent higher than starting salaries.

Teachers in Australia, Denmark, England, New Zealand and Scotland reach the highest step on the salary scale within 8 to 11 years. In Belgium, Finland, Germany, Ireland, the Netherlands, Norway and Portugal, the curve flattens after 20 to 28 years. In Austria, the Czech Republic, France, Greece, Hungary, Italy, Japan, Korea and Spain, teachers reach the top of the salary scale after more than 30 years of service (Table D6.1).

Teachers in Austria, Japan, Korea, Mexico or Portugal start with a relatively low salary level, but the ratio of the top to the starting salary is 2:1 or more. By contrast, top salaries of teachers in Denmark, Norway and Iceland are less than 30 per cent higher than starting salaries. In Iceland, long service is rewarded by a reduction in the number of statutory teaching hours rather than by higher salaries. In Greece, salary increments and reduced teaching time are both used to reward long service (Table D6.1).

In addition, bonus schemes can compensate for permanent or

in addition to basic pay scales, many school systems have developed incentive schemes for teachers, which may take the form of financial remuneration and/or a reduction in the number of teaching hours. Together with the

starting salary, such incentive schemes affect a person's decision to enter the teaching profession. Initial incentives for graduate teachers may include family allowances and bonuses for working in certain locations, higher initial salaries for higher than minimum teaching certification or qualifications, and additional compensation for those holding educational qualifications in multiple subjects or with certification to teach students with special educational needs.

temporary special duties and responsibilities that teachers take on ...

In most countries, allowances are paid to all or most teachers for taking on management responsibilities; teaching more classes or hours than are required under a full-time contract (*e.g.*, acting duties); and involvement in special tasks such as guidance counselling or training student teachers. Although in many countries, there are country level regulations for payment of allowances for overtime work, management responsibilities, and special tasks and activities, in about half of the OECD countries with comparable data (Australia, the Czech Republic, Denmark, England, France, Greece, Hungary, Iceland, Ireland, Italy, Mexico, New Zealand, Portugal and Sweden), schools have at least some responsibility in deciding on the levels and extent of compensation for such activities (Table D6.2).

Once in the teaching profession, teaching personnel must be recognised and rewarded for good teaching. Schools can provide incentives by awarding additional remuneration for completing professional development activities, for involvement in special activities, for taking on extra management responsibilities or for outstanding performance in teaching (Table D6.2).

...as well as for educational qualifications or outstanding performance.

In Sweden, teachers' salaries are based upon collective agreements. Educational qualifications, development activities and outstanding performance in teaching are criteria for raising salaries above base levels. In New Zealand, school principals dispose of a number of salary units in addition to the annual entitlement for teaching positions, which they can use to recruit, retain or reward teachers (Table D6.2 and Annex 3 at www.oecd.org/els/education/eag2002).

In Spain, in addition to the triennial salary supplement constituting the steps of the salary ladder, teachers may earn salary supplements by participating in professional development and earn an in-service qualification, which also increases their salary further (Table D6.2 and Annex 3 at www.oecd.org/els/education/eag2002).

D6

Salary supplements in Spain

All teachers in public and private institutions receive a small salary supplement (*trienios*) every three years. In pre-primary and primary education, teachers begin their careers at 22 years of age and can teach for a maximum of 43 years (*i.e.*, 14 *trienios*). In uppersecondary education, longer

initial training requirements mean that teachers start their careers two years later and can obtain a maximum experience of 41 years (*i.e.*, 13 *trienios*). Teachers in public education can receive a salary supplement every six years (*sexenio*), which is related to in-service training. Teachers must complete 100 hours of recognised in-service training courses during that time period to receive this supplement. Teachers in public education can receive a maximum of 5 *sexenios*. Since 1990, teachers in general secondary education can receive *catedrático condition*, which is a salary supplement for a specific in-service attained qualification. *Catedráticos* formerly referred to a distinct teacher with the same qualifications but higher entry requirements. In upper secondary general education, only teachers of non-technical subjects can receive this supplement, which refers to only 15 per cent of teachers.

Operation of salary units in New Zealand State and Integrated Schools

In 1996, salary units were introduced in the Secondary Teacher Collective Employment Contract and translated to the primary school sector in subsequent negotiations.

In addition to an annual entitlement to a specific number of teaching positions calculated according to national staffing regulations, schools receive entitlement to a number of salary units to be allocated to teaching staff. The value of each salary unit is set in the negotiation of the national collective employment contracts/collective agreements, and was \$2 750 per annum from 19 April 2000.

Each school determines the basis for allocating units, which are typically assigned on the basis of responsibilities (largely managerial; *i.e.*, Deputy Principal, Heads of Department, Deans), however they can also be used to recruit, retain or reward individual teachers.

Units may be allocated on a permanent or a fixed-term basis subject to the limitations prescribed in the relevant collective employment contract/collective agreement.

In addition to the effect on the immediate salary, teachers who are allocated one or more units permanently are entitled to progress beyond their maximum qualification salary step to the top step of the base scale.

In practice, approximately half of the entitlement units in primary schools were given as a single unit to teachers. In secondary schools, 56 per cent of units were allocated in one or two unit bundles to teachers. Due in part to the larger number of units able to be allocated in secondary schools, over half of all secondary teachers receive one or more units.

Pay scales are based on the simple principles of qualification levels and years of service but in reality, the structure of the teacher compensation system is far more complex. Many countries include regional allowances for teaching in remote regions, or a family allowance as part of the annual gross salary. Entitlements may include reduced rates on public transportation, tax allowances on purchasing cultural goods, and other quasi-pecuniary entitlements that contribute to teacher's basic income. There are large differences between the taxing and social benefit systems in OECD countries. This makes it important to compare teachers' salaries with caution.

Differences in tax wedges, social benefit systems, allowances and entitlements may enhance basic salaries of all teachers differently in OECD countries.

Definitions and methodologies

Data on statutory teachers' salaries and bonuses (Table D6.1) derives from the 2001 OECD-INES Survey on Teachers and the Curriculum and refer to the school year 1999-2000, and are reported in accordance with formal policies for public institutions.

Data are from the 2001 OECD-INES survey on Teachers and the Curriculum and refer to the school year 1999-2000.

Statutory salaries (Table D6.1) refer to scheduled salaries according to official pay scales. The salaries reported are gross (total sum of money paid by the employer) less the employer's contribution to social security and pension (according to existing salary scales). Salaries are "before tax", *i.e.*, before deductions for income taxes.

Gross teachers' salaries were converted using GDP and Purchasing Power Parities (PPPs) exchange rate data from the OECD National Accounts database. The reference date for GDP per capita is the calendar year 2000, while the period of reference for teachers' salaries is 30 June 1999 to 30 June 2000. The reference date for PPPs is 1999-2000. Data are adjusted for inflation with reference to January 2000 for countries with different financial years (*i.e.*, Australia and New Zealand) and for countries with slightly different salary periods (*e.g.*, Hungary, Iceland, Norway and Spain) only if this results in an adjustment of over 1 per cent. Small adjustments have been discounted because even for salaries referring to 1999-2000, the exact period for which they apply will only be slightly different. Reference statistics and reference years for teachers' salaries are provided in Annex 2.

Starting salaries refer to the average scheduled gross salary per year for a full-time teacher with the minimum training necessary to be fully qualified at the beginning of the teaching career.

Salaries after 15 years of experience refer to the scheduled annual salary of a full-time classroom teacher with the minimum training necessary to be fully qualified and have 15 years of experience. The maximum salaries reported refer to the scheduled maximum annual salary (top of the salary scale) of a full-time classroom teacher with the minimum training to be fully qualified for the job.

An adjustment to base salary is defined as any difference in salary between what a particular teacher actually receives for work performed at a school and the amount that he or she would be expected to receive on the basis of level of experience (*i.e.*, number of years in the teaching profession). Adjustments may be temporary or permanent, and they can effectively move a teacher “off-scale”, on to a different salary, or to a higher step on the same salary scale.

Table D6.1.

Teachers' salaries (2000)

Annual statutory teachers' salaries in public institutions at starting salary, after 15 years of experience and at the top of the salary scale, by level of education, in equivalent US dollars converted using PPPs

	Primary education				Lower secondary education				Upper secondary education, general programmes			
	Starting salary/ minimum training	Salary after 15 years of experience/ minimum training	Salary at top of scale/ minimum training	Ratio of salary after 15 years of experience to GDP per capita	Starting salary/ minimum training	Salary after 15 years of experience/ minimum training	Salary at top of scale/ minimum training	Ratio of salary after 15 years of experience to GDP per capita	Starting salary/ minimum training	Salary after 15 years of experience/ minimum training	Salary at top of scale/ minimum training	Ratio of salary after 15 years of experience to GDP per capita
OECD COUNTRIES												
Australia	26 887	38 297	38 300	1.43	26 946	38 312	38 314	1.43	26 946	38 312	38 314	1.43
Austria	21 953	26 570	44 461	1.03	22 574	27 691	47 055	1.07	24 192	30 584	53 808	1.19
Belgium (Fl.)	24 122	32 318	38 328	1.22	24 336	34 079	41 547	1.28	30 194	43 580	52 383	1.64
Belgium (Fr.)	22 983	31 282	37 459	1.18	23 466	33 173	40 666	1.25	29 275	42 707	51 540	1.61
Czech Republic	7 043	9 339	12 524	0.65	7 043	9 339	12 524	0.65	8 570	11 381	15 221	0.80
Denmark	29 116	32 883	32 883	1.16	29 116	32 883	32 883	1.16	28 825	38 279	40 931	1.35
England	22 428	35 487	35 487	1.48	22 428	35 487	35 487	1.48	22 428	35 487	35 487	1.48
Finland	18 489	25 183	26 140	1.03	20 720	28 690	30 124	1.18	21 517	30 124	31 878	1.23
France	20 199	27 172	40 091	1.17	22 358	29 331	42 357	1.26	22 358	29 331	42 357	1.26
Germany	31 213	37 905	41 021	1.52	3 4891	40 561	46 180	1.63	37 394	43 881	52 004	1.76
Greece	20 065	24 336	29 358	1.50	2 0387	24 658	29 680	1.52	20 387	24 658	29 680	1.52
Hungary	6 086	8 659	11 805	0.71	6 086	8 659	11 805	0.71	7 375	10 896	14 562	0.89
Iceland	20 222	22 202	25 738	0.80	20 222	22 202	25 738	0.80	21 071	26 162	31 394	0.95
Ireland	22 063	35 760	40 365	1.24	23 163	36 145	40 750	1.25	23 163	36 145	40 750	1.25
Italy	20 927	25 115	30 306	1.03	22 657	27 507	33 510	1.13	22 657	28 329	35 138	1.16
Japan	22 670	42 820	54 663	1.62	22 670	42 820	54 663	1.62	22 670	42 845	56 307	1.62
Korea	26 300	43 952	69 818	2.49	26 148	43 800	69 666	2.48	26 148	43 800	69 666	2.48
Mexico	11 235	14 824	24 536	1.62	14 383	18 760	30 859	2.05	m	m	m	m
Netherlands	27 411	32 686	39 563	1.18	28 443	34 985	43 466	1.26	28 713	48 840	57 907	1.77
New Zealand	17 354	33 653	33 653	1.70	17 354	33 653	33 653	1.70	17 354	33 653	33 653	1.70
Norway	23 752	26 831	29 051	0.92	23 752	26 831	29 051	0.92	23 752	26 831	29 051	0.92
Portugal	17 914	26 607	49 492	1.52	17 914	26 607	49 492	1.52	17 914	26 607	49 492	1.52
Scotland	20 931	34 798	34 798	1.45	20 931	34 798	34 798	1.45	20 931	34 798	34 798	1.45
Spain	25 029	29 261	37 238	1.52	27 046	31 616	39 804	1.65	29 081	33 985	42 521	1.77
Sweden	19 893	25 553	m	1.05	19 893	25 553	m	1.05	21 663	27 241	m	1.12
Switzerland	34 808	45 728	54 308	1.53	41 048	54 763	63 534	1.83	49 123	65 041	73 946	2.18
Turkey	12 410	14 094	15 760	2.06	a	a	a	a	11 354	13 038	14 704	1.91
United States	27 631	40 072	48 782	1.12	27 643	40 072	47 908	1.12	27 751	40 181	48 037	1.12
Country mean	21 469	29 407	36 145	1.32	22 727	31 221	38 674	1.35	23 808	33 582	41 366	1.45
NON-OECD COUNTRIES												
Argentina	9 027	12 545	14 897	1.00	14 623	21 188	25 742	1.69	14 623	21 188	25 742	1.69
Brazil	7 420	10 176	11 309	1.48	14 820	16 240	18 723	2.36	15 500	16 121	19 776	2.35
Chile	10 716	12 038	16 122	1.39	10 716	12 038	16 122	1.39	10 716	12 582	16 883	1.45
China	2 835	2 952	3 595	0.88	2 835	2 952	3 595	0.88	2 835	2 952	3 595	0.88
Egypt	2 269	5 065	m	1.58	2 269	5 065	m	1.58	2 269	5 065	m	1.58
India ¹	10 678	15 236	16 375	7.22	12 992	19 373	21 074	9.18	15 798	23 205	24 914	11.00
Indonesia	1 357	2 148	4 093	0.77	1 357	2 148	4 093	0.77	1 412	2 586	4 093	0.93
Jamaica	8 332	9 927	9 927	2.82	8 332	9 927	9 927	2.82	8 332	9 927	9 927	2.82
Jordan	7 838	10 200	26 475	2.66	7 838	10 200	26 475	2.66	7 838	10 200	26 475	2.66
Malaysia	6 158	10 225	14 623	1.33	11 784	18 632	25 775	2.43	11 784	18 632	25 775	2.43
Paraguay	8 874	8 874	8 874	2.00	13 911	13 911	13 911	3.13	13 911	13 911	13 911	3.13
Peru ²	5 523	5 523	5 523	1.19	5 462	5 462	5 462	1.18	5 462	5 462	5 462	1.18
Philippines	10 409	11 491	12 374	3.10	10 409	11 491	12 374	3.10	10 409	11 491	12 374	3.10
Russian Federation	3 735	3 735	3 735	0.54	3 735	3 735	3 735	0.54	3 735	3 735	3 735	0.54
Thailand	5 756	14 145	26 977	2.42	5 756	14 145	26 977	2.42	5 756	14 145	26 977	2.42
Tunisia ³	13 186	14 505	15 149	2.60	16 965	18 549	19 340	3.30	20 540	22 270	23 177	4.00
Uruguay ⁴	5 749	6 891	8 317	0.76	5 749	6 891	8 317	0.76	6 257	7 398	8 824	0.82
Zimbabwe	35 725	50 011	50 011	17.42	35 725	50 011	50 011	17.42	35 725	50 011	50 011	17.42

1. Salaries in National Capital Territory of Delhi. Teachers' salaries vary from state to state.

2. Year of reference 1999.

3. Including additional bonuses.

4. Salaries for a position of 20 hours per week. Most teachers hold two positions.

Source: OECD. See Annex 3 for sources and methodologies (www.oecd.org/els/education/eqg2002).

Table D6.1. (continued)
Teachers' salaries (2000)

Annual statutory teachers' salaries in public institutions at starting salary, after 15 years of experience and at the top of the salary scale, by level of education, in equivalent US dollars converted using PPPs

	Ratio of salary after 15 years of experience to starting salary			Years from starting to top salary (lower secondary education)	Salary per hour of net contact (teaching) time after 15 years of experience			Ratio of salary per teaching hour of upper secondary and primary teachers (after 15 years of experience)
	Primary education	Lower secondary education	Upper secondary education, general programmes		Primary education	Lower secondary education	Upper secondary education, general programmes	
OECD COUNTRIES								
Australia	1.42	1.42	1.42	8	43	47	48	1.10
Austria	1.21	1.23	1.26	34	39	42	49	1.27
Belgium (Fl.)	1.34	1.40	1.44	27	39	48	65	1.67
Belgium (Fr.)	1.36	1.41	1.46	27	39	46	64	1.64
Czech Republic	1.33	1.33	1.33	32	14	14	18	1.28
Denmark	1.13	1.13	1.33	8	51	51	68	1.33
England	1.58	1.58	1.58	8	m	m	m	m
Finland	1.36	1.38	1.40	20	38	50	57	1.49
France	1.35	1.31	1.31	34	30	46	48	1.60
Germany	1.21	1.16	1.17	28	48	55	64	1.31
Greece	1.21	1.21	1.21	33	31	39	39	1.26
Hungary	1.42	1.42	1.48	40	11	16	20	1.76
Iceland	1.10	1.10	1.24	18	35	35	56	1.60
Ireland	1.62	1.56	1.56	22	39	49	49	1.26
Italy	1.20	1.21	1.25	35	34	45	46	1.38
Japan	1.89	1.89	1.89	31	67	77	90	1.33
Korea	1.67	1.68	1.68	37	53	77	80	1.52
Mexico	1.32	1.30	m	14	19	16	m	m
Netherlands	1.19	1.23	1.70	22	35	40	56	1.60
New Zealand	1.94	1.94	1.94	10	34	35	35	1.04
Norway	1.13	1.13	1.13	28	38	42	53	1.41
Portugal	1.49	1.49	1.49	26	33	45	52	1.58
Scotland	1.66	1.66	1.66	11	37	39	39	1.06
Spain	1.17	1.17	1.17	42	33	56	62	1.87
Sweden	1.28	1.28	1.26	a	a	a	a	a
Switzerland	1.31	1.33	1.32	23	52	64	96	1.87
Turkey	1.14	a	1.15	a	22	a	26	1.17
United States	1.45	1.45	1.45	m	35	36	36	1.02
Country mean	1.37	1.39	1.42	25	37	44	53	1.42
NON-OECD COUNTRIES								
Argentina	1.35	1.41	1.41	21-24	2	2	3	1.71
Brazil	1.37	1.10	1.04	25	m	m	m	m
Chile	1.09	1.09	1.12	30	14	14	15	1.04
China	1.04	1.04	1.04	m	m	m	m	m
Egypt	2.11	2.11	2.11	m	8	8	8	1.00
India ¹	1.42	1.48	1.46	20	16	19	22	1.37
Indonesia	1.81	1.81	2.09	32	2	4	4	2.20
Jamaica	2.53	2.53	2.53	12	10	14	15	1.47
Jordan	1.30	1.30	1.30	43	13	13	15	1.17
Malaysia	1.67	1.59	1.59	22	13	24	24	1.79
Paraguay	1.15	1.15	1.15	a	12	17	15	1.25
Peru ²	1.00	1.00	1.00	at least 20	8	10	10	1.19
Philippines	1.09	1.09	1.09	22	10	10	12	1.20
Russian Federation	1.00	1.00	1.00	m	m	m	m	m
Thailand	2.46	2.46	2.46	37	19	22	22	1.17
Tunisia ³	1.10	1.09	1.08	30	25	40	48	1.92
Uruguay ⁴	1.19	1.19	1.21	24	9	14	15	1.61
Zimbabwe	1.40	1.40	1.40	21	51	53	53	1.04

1. Salaries in National Capital Territory of Delhi. Teachers' salaries vary from state to state.

2. Year of reference 1999.

3. Including additional bonuses.

4. Salaries for a position of 20 hours per week. Most teachers hold two positions.

 Source: OECD. See Annex 3 for sources and methodologies (www.oecd.org/els/education/eag2002).

Table D6.2.

Adjustments to base salary for teachers in public schools (2000)

Types of adjustments to base salary awarded to teachers in public schools, by authority responsible for making the decision regarding the adjustment

▲ Decision for additional bonus made by the head teacher/school principal ■ Decision for additional bonus made by the local or regional authority ● Decision for additional bonus made by the national authority

	Holding an initial educational qualification higher than the minimum qualification required to enter the teaching profession	Reaching high scores in the qualification examination	Holding an educational qualification in multiple subjects (e.g., history and mathematics)	Successful completion of professional development activities	Management responsibilities in addition to teaching duties (e.g., serving as a head of department or co-ordinator of teachers in a particular class/grade)	Holding a higher than minimum level of teacher certification or training obtained during professional life (e.g., master teacher; holding an advanced certificate rather than an ordinary certificate)	Outstanding performance in teaching (e.g., based on higher student achievement, independent assessment of teaching skills, etc.)	Teaching courses in a particular field (e.g., mathematics or science)
Australia*	■				▲ ■	■		
Austria								
Belgium (Fl.)*								
Belgium (Fr.)*								
Czech Republic*					▲		▲	
Denmark*	▲ ■ ●		▲ ■ ●	▲	▲	▲		
England*					▲	●	▲	▲
Finland	■	■	■	■	■	■	■	■
France*						●		
Germany*					■			
Greece*						●		
Hungary*	▲		▲	▲	▲	▲	▲	▲
Iceland*					▲			▲
Ireland*					▲	●		▲
Italy				▲	▲			
Japan*					■			
Korea						●		●
Mexico*	▲ ■		●	▲ ■		■ ●		●
Netherlands*								
New Zealand*			●		▲	●		▲ ●
Norway*						●		
Portugal*				●	▲	●	▲	●
Scotland*	■				■			
Spain				■	■	■		
Sweden*					▲	■		
Switzerland					■			
Turkey*					■		■	■
United States*	■			■	■	■	■	■
Teaching students with special educational needs (in regular schools)	Teaching more classes or hours than required by full-time contract (e.g., overtime compensation)	Special activities (e.g., sports and drama clubs, homework clubs, Summer school etc.)	Special tasks (e.g., training student teachers, guidance counselling)	Teaching in a disadvantaged, remote or high cost area (location allowance)	Family status (e.g., married, number of children)	Age (independent of years of teaching experience)	Other	
Australia*			▲ ■	■ ●			▲	
Austria								
Belgium (Fl.)*							●	
Belgium (Fr.)*							●	
Czech Republic*	▲		●			▲		
Denmark*		▲						
England*	▲	▲			▲			
Finland	■	■	■		■			
France*			▲	●		●		
Germany*		■		●		●	■ ●	
Greece*		▲		●		●		
Hungary*	▲	▲	▲	▲	▲		▲	
Iceland*	▲	▲	▲	▲	■		▲	
Ireland*					■	●		
Italy		▲	▲	▲	■	●		
Japan*	■	■	■		■		■	
Korea						●		
Mexico*						●	▲ ■	
Netherlands*								
New Zealand*			▲	▲	●		●	
Norway*					●		●	
Portugal*		▲	●	●		●		
Scotland*					■			
Spain					■			
Sweden*		▲	■	▲	■			
Switzerland	■	■	■	■	■		■	
Turkey*			●	●	●			
United States*	■	■		■				

* See Annex 3 for notes (www.oecd.org/els/education/eag2002).

Source: OECD.

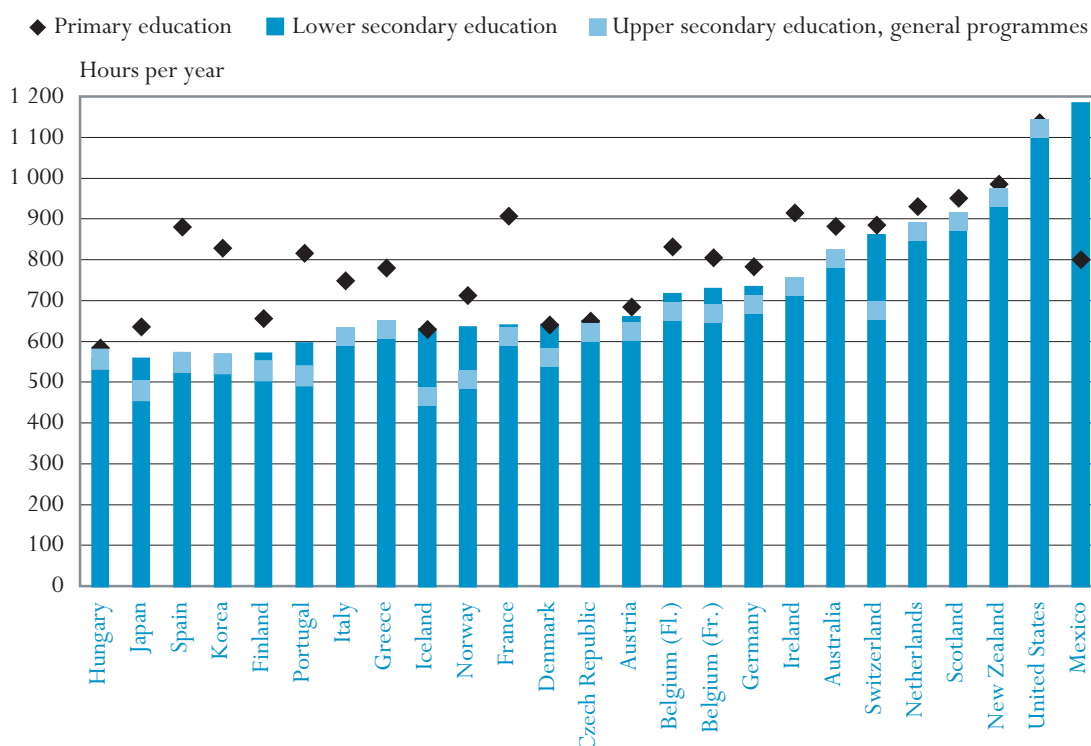
TEACHING TIME AND TEACHERS' WORKING TIME

- The number of teaching hours per year in public primary schools averages 792 hours but ranges from 583 to 1 139 hours.
- The average number of teaching hours in the lower secondary education is 720 hours but ranges from 555 to 1 182 hours.
- Regulations of teachers' working time vary across countries. In most countries, teachers are formally required to work a specific number of hours; in others teaching time in lessons per week is specified. In some countries, time is set aside for non-teaching activities at school, while in others, teachers are required to be at school for a certain number of hours.

Chart D7.1.

Number of teaching hours per year (2000)

Net contact time in hours per year in public institutions, by level of education



Countries are ranked in ascending order of the number of teaching hours in lower secondary education.

Source: OECD. Table D7.1. See Annex 3 for notes (www.oecd.org/els/education/eq2002).

D7

Policy context

In addition to class size and ratio of students to teaching staff (Indicator D2), students' hours of instruction (Indicator D1) and teachers' salaries (Indicator D6), the amount of time teachers spend teaching influences the financial resources which countries need to invest in education. Teaching hours and the extent of non-teaching duties are also important elements of teachers' working conditions and are related to the attractiveness of the teaching profession.

Evidence and explanations

Teaching time

A primary school teacher teaches an average of 792 hours per year but this varies from 650 hours or less in the Czech Republic, Denmark, Hungary, Iceland, Japan and Turkey to 950 hours or more in New Zealand, Scotland and the United States (Table D7.2).

At the lower secondary level of education, a teacher teaches on average 720 hours per year. The teaching load here ranges from around 555 hours in Finland, Hungary, Japan, Spain and Korea to over 900 hours in Mexico, New Zealand and the United States (Table D7.2).

An upper secondary teaching load is equal to or less than that in lower secondary education. A teacher of general subjects has an average statutory load of 648 hours per year across OECD countries. Teaching loads range from less than 500 hours in Iceland and Japan to over 900 hours in New Zealand and the United States (Table D7.2).

In France, Korea, Portugal and Spain, a primary teacher is required to teach almost more than 300 hours more than an upper secondary teacher (general programmes). By contrast, in Austria, Australia, the Czech Republic, Denmark, Finland, Germany, the Netherlands, New Zealand, Scotland and the United States the difference is less than 100 hours (Chart D7.1).

In interpreting the differences in teaching hours between countries, it needs to be taken into account that net contact time, as used for the purpose of this indicator, does not correspond to the number of lessons a teacher has during the week. Whereas contact time in itself is a substantial component of workload, the preparation for classes and necessary follow-up (including correcting students' work) relates more closely to the number of lessons per week. Other elements of teaching load (like the number of subjects taught, the number of students taught, and the number of years a teacher teaches the same students) should also be taken account when establishing the average teaching load of teachers within a country. These factors, however, can often only be assessed at school level.

With the exception of the Czech Republic, Hungary, Portugal and Spain (upper secondary education), teaching time in most OECD countries was about the

This indicator shows the number of hours per year that a full-time teacher is required to spend teaching according to formal policy in his/her country.

A public primary school teacher teaches an average of 792 hours per year, but the figure ranges from 583 hours to 1 139 hours. A lower secondary teacher teaches an average of 720 hours per year, but this figure ranges from 555 hours to 1 182 hours

In most countries, a primary school teacher teaches for more hours than a lower and upper secondary teacher, but the differentials vary widely between countries

With the exception of the Czech Republic,

Hungary, Portugal and Spain, teaching time did not change substantially between 1996 and 2000.

same in 1996 and 2000. It increased by about 6 per cent in primary education, and 17 per cent in lower and upper secondary education in Hungary. In the Czech Republic, teachers in secondary education were required to teach 7 per cent more in 2000 than in 1996. By contrast, in Portugal net contact time dropped by 8 and 10 per cent in lower and upper secondary education, respectively. In Spain, teaching time in upper secondary education also decreased by 13 per cent (Table D7.2).

Teachers' working time

Regulations of teachers' working time vary widely across countries.

The regulations of teachers' working time vary widely across countries. While some countries formally regulate contact time only, others establish working hours as well. In some countries, time is allocated for teaching and non-teaching activities within the formally established working time. Within the framework of statutory working time and teaching time, teachers' actual workload may vary widely.

In most countries, teachers are formally required to work a specified number of hours...

In most countries, teachers are formally required to work a specified number of hours per week to earn their full-time salary including teaching and non-teaching time. Within this framework, however, countries vary regarding what they specify in terms of allocating time to teaching and non-teaching activities. Typically, the number of hours for teaching is specified, but some countries also regulate at national level the time that a teacher has to be present in the school.

...in some countries, teachers' working time is specified only in the general regulations on civil servants' working time...

In Japan and Korea, teachers are required to work the same number of hours as civil servants. No further regulations are provided at the national level concerning teaching or non-teaching hours. However, in Korea, teachers are required to work during the school vacation on their own schedule on professional development (Table D7.1).

...in some, teaching time in lessons per week is also specified...

As part of the mandatory working time, teaching time in lessons per week is specified in Austria, Belgium, the Czech Republic, Denmark, France, Greece, Hungary, Iceland, Italy, Korea, Mexico, the Netherlands, Norway, Portugal, Scotland, Spain, Switzerland and Turkey (Table D7.1).

D7

Austria

The Education Act governing teachers stipulates only teaching hours (20 to 24 periods of 50 minutes per week). Provisions concerning teaching time are based on the assumption that a teacher's duties (including preparing lessons, test marking, correcting papers and examinations and administrative tasks) amount to a total of 40 hours a week.

In Belgium, the Czech Republic, Finland, France, Ireland, New Zealand, Portugal and Turkey, teachers are required to be at school only for scheduled teaching hours. However, teaching assignments and school related non-teaching activities may be specified at the school level.

...in some, time is set aside at the national level for non-teaching activities at school...

Hungary

The mandatory 40 hours working hours conforms to the work week of public employees and is a formal requirement for teachers. Most preparation takes place outside school. School-related activities (*e.g.*, staff meetings, meetings with parents, preparation for school festivities, etc.) are specified at the school level. Pre-primary teachers are required to teach 32 lessons per week (of 60 minutes each), primary teachers teach 21 lessons (of 45 minutes each), and secondary teachers teach 20 lessons (45 minutes each) to earn a full-time salary. Overtime is paid and is often required.

In Scotland and Spain, in addition to teaching hours, time is stipulated for specific non-teaching activities at school.

Teaching and non-teaching time in Spain

Primary teachers are required to work for 37.5 hours per week, including 22.5 hours of net contact time and 7.5 additional hours for school activities (breaks, meetings and pedagogical activities). The remaining 7.5 hours may be spent out of school to prepare classes, for professional development, etc. Secondary teachers are required to teach 16.5 hours per week, and are expected to be available at school for 30 hours per week.

Regulation of teachers' working time in Scotland

The working hours of teachers come under the overall direction of the Head teacher, and include 27.5 hours per week in school, of which the maximum class contact time is 25 hours in primary education, 23.5 hours in lower secondary education, and 22.5 hours in special schools. Except for teachers in special schools and units, the balance between the specified class contact time and the 27.5 hours are available to teachers for work relevant to individual teaching duties. The Head teacher can use this time for other purposes only under exceptional circumstances. The hours of

part-time teachers include class contact time, and a *pro-rata* element for non-class contact time. A teacher's working hours also include an additional maximum of up to 30 hours during the school year for parent meetings, stipulated as the total including preparatory work and provision of travelling time up to a maximum of six meetings within the school year.

...and in some countries, formal agreements regulate teaching and non-teaching duties. In some countries, including Denmark and Iceland, detailed formal agreements between teachers' unions and public authorities regulate the methods that schools are supposed to use in calculating hours for teaching and non-teaching duties.

Allocation of working time in Denmark

The formal demands of 37 working hours per week in primary and lower secondary education include, for every hour of teaching, one hour of preparation time and an average of 30 minutes of non-teaching time in the reference year. In upper secondary education (general programmes), a collective agreement between the county authorities and the teachers' union defines lesson preparation time as 75 per cent of the number of lessons * 1.33 hours, and the hours to be used for examinations as an average of 110 hours per annum. Remaining duties are defined at the local level. In upper secondary education (vocational programmes), the management of the school and the teachers' representative must agree on the principles for allocating working hours for preparation, etc. in accordance with the collective agreement between the teachers' union and the Ministry of Finance. Preparation time is limited to between 13 and 126 minutes per 60 minutes of teaching. Norms for correcting written work, examination work, etc., are regulated by the collective agreement or by local agreement within the school. As a minimum, each teacher is allowed 50 hours per year for pedagogical, theoretical and skills development.

Calculating the teaching workload in Iceland

A teacher's workload in primary and lower secondary education is divided into teaching (K), preparing lessons (U), and other work (Ö). If other work is increased for a particular teacher, s/he can either choose to teach less or to receive overtime pay; a part-time teacher is entitled to a higher percentage of a full-time job. In upper secondary education, the teacher's workload is divided into five categories: work at school under the supervision of the head teacher (130 hours), teaching and teaching-related work (1 177 hours), work during the six examination weeks (258 hours), preparation and follow-up at the beginning and end of the school year (32 hours), and professional development. In some countries, teachers' working time – including teaching time – is regulated at regional, local or school levels.

In Australia, England, Finland, Germany, New Zealand, Sweden and the United States, teachers' working time – including the allocation of teaching time – is defined at sub-national levels. In Sweden, for example, within the general framework of 40 hours per week required of public employees, schools negotiate with teachers on an individual basis regarding teaching and non-teaching duties. However, a formal agreement between the Swedish Association of Local Authorities and teachers' unions limits the number of working hours during the school year. Within these limits, teaching time is not regulated so as to allow for teaching non-compulsory subjects.

Working time regulations in Sweden

Working time is regulated in formal agreements between the Swedish Association of Local Authorities and teachers' unions. According to the Teacher Agreement 2000, working time is regulated at 1 360 hours per school year. Teachers themselves are responsible for how they spend the remaining working time. Teaching time in hours is not regulated so as to allow for teaching non-compulsory subjects.

Definitions and methodologies

Teaching time

The number of teaching hours is defined as net contact hours calculated on the basis of the annual number of weeks of instruction multiplied by the minimum/maximum number of periods that a teacher is supposed to spend teaching a class or a group, multiplied by the length of a period in minutes and divided by 60. This excludes break periods between lessons and days when schools are closed for public holidays and festivities. In primary education, however, short breaks that teachers spend with the class are typically included.

Data are from the 2001 OECD-INES Survey on Teachers and the Curriculum and refer to the school year 1999–2000.

Working time

Working time refers to the normal working hours of a full-time teacher. According to the formal policy in a given country, working time can refer:

- only to the time directly associated with teaching (and other curricular activities for students such as assignments and tests, but excluding annual examinations);
- or to time directly associated with teaching and to hours devoted to other activities related to teaching, such as lesson preparation, counselling students, correcting assignments and tests, professional development, meetings with parents, staff meetings and general school tasks.

Working time does not include paid overtime.

Working time in school

Working time in school refers to the working time teachers are supposed to be at school, including teaching time and non-teaching time.

Number of teaching weeks and days

The number of teaching weeks refers to the number of weeks of instruction excluding holiday weeks, and is calculated as the number of teaching weeks less the days that the school is closed for festivities.

Table D7.1.
The organisation of teachers' working time (2000)
Number of teaching weeks, teaching days, net teaching hours, and teacher working time over the school year

	Number of weeks of instruction		Number of days of instruction		Net teaching time in hours			Working time required at school in hours			Total statutory working time in hours			
	Primary education	Secondary education	Primary education	Secondary education	Primary education	Lower secondary education	Upper secondary education, general programmes	Primary education	Lower secondary education	Upper secondary education	Primary education	Lower secondary education	Upper secondary education	
OECD COUNTRIES	Australia	40	40	196	196	882	811	803	a	a	a	1 310 ²	1 310 ²	1 310 ²
	Austria	38	38	187	187	684	658	623	m	m	m	a	a	a
	Belgium (Fl.)	37	37	178	179	831	716	671	m ³	m ³	m ³	a	a	a
	Belgium (Fr.)	38	38	182	182	804	728	673	871 ³	734 ³	673 ³	a	a	a
	Czech Republic	40	40	197	197	650	650	621	650 ³	650 ³	621 ³	1 700	1 700	1 700
	Denmark	42	42	200	200	640	640	560	a	a	a	1 680 ¹	1 680 ¹	1 680 ¹
	England	38	38	190	190	a	a	a	a	a	a	1 265 ²	1 265 ²	1 265 ²
	Finland	38	38	190	190	656	485 - 656	428 - 627	964 ³	905 ³	901 ³	a	a	a
	France	35	35	m	m	907	639	611	907 ³	639 ³	611 ³	a	a	a
	Germany	39	39	188	188	783	732	690	a	a	a	1702-1760 ¹	1702-1760 ¹	1702-1760 ¹
	Greece	40	38	195	185	780	629	629	1 000 ³	798 ³	798 ³	1 500 ¹	1 425 ¹	1 425 ¹
	Hungary	37	37	185	185	777	555	555	a	a	a	1 664 ¹	1 664 ¹	1 664 ¹
	Iceland	38	38	170	170	629	629	464	a	a	a	1 800 ¹	1 800 ¹	1 800 ¹
	Ireland	37	33	183	167	915	735	735	a	735 ³	735 ³	1 036 ²	a	a
	Italy	34	34	m	m	748	612	612	m ³	m ³	m ³	a	a	a
	Japan	35	35	193	193	635	557	478	a	a	a	1 940 ⁵	1 940 ⁵	1 940 ⁵
	Korea	37	37	220	220	829	565	545	a	a	a	1 613 ⁵	1 613 ⁵	1 613 ⁵
	Mexico	42	42	200	200	800	1 182	m	a	a	m	900 ²	1 680 ¹	m
	Netherlands	40	40	195	195	930	867	867	a	a	a	1 659 ¹	1 659 ¹	1 659 ¹
	New Zealand	39	39	197	192	985	968	950	985 ³	968 ³	950 ³	a	a	a
	Norway	38	38	190	190	713	633	589	a	a	a	1 718 ¹	1 718 ¹	1 718 ¹
	Portugal	34	34	163	163	815	595	515	815 ³	595 ³	515 ³	1 596 ¹	1 596 ¹	1 596 ¹
	Scotland	38	38	190	190	950	893	893	1 075 ²	1 075 ²	1 075 ²	1 153 ¹	1 153 ¹	1 153 ¹
	Spain	37	36	176	171	880	564	548	1 110	1 080	1 050	1 418 ²	1 418 ²	1 418 ²
	Sweden	a	a	a	a	a	a	a	1 360 ²	1 360 ²	1 360 ²	1 767 ¹	1 767 ¹	1 767 ¹
	Switzerland	38	38	m	m	884	859	674	884 ³	859 ³	674 ³	m	m	m
	Turkey	38	a	180	180	639	639	504	639 ³	639 ³	504 ³	a	a	a
	United States ⁶	36	36	180	180	1 139	1 127	1 121	1 353 ⁴	1 371 ⁴	1 371 ⁴	1 353 ⁴	1 371 ⁴	1 371 ⁴
	Argentina	38	38	m	m	765	850	755	m	m	m	m	m	m
	Brazil	40	40	m	m	800	800	800	m	m	m	m	m	m
	Chile	40	40	m	m	860	860	860	m	m	m	m	m	m
	Egypt	36	36	m	m	748	748	748	m	m	m	m	m	m
	India	42	42	m	m	743	825	825	m	m	m	m	m	m
	Indonesia	44	44	m	m	1 260	738	738	m	m	m	m	m	m
	Jamaica	38	38	m	m	950	703	646	m	m	m	m	m	m
	Jordan	44	44	m	m	774	774	659	m	m	m	m	m	m
	Malaysia	41	41	m	m	758	774	774	m	m	m	m	m	m
	Paraguay	35	37	m	m	720	801	900	m	m	m	m	m	m
	Peru ⁷	36	36	m	m	783	626	626	m	m	m	m	m	m
	Philippines	40	40	m	m	1 176	1 176	980	m	m	m	m	m	m
	Russian Federation	45	45	m	m	860	774	774	m	m	m	m	m	m
	Thailand	40	40	m	m	760	652	652	m	m	m	m	m	m
	Tunisia	33	31	m	m	730	544	544	m	m	m	m	m	m
	Uruguay ⁸	38	38	m	m	732	489	489	m	m	m	m	m	m
	Zimbabwe	39	39	m	m	975	936	936	m	m	m	m	m	m

1. Full-time teachers work a specified number of hours per week to earn their full-time salary and working time is allocated for both teaching and non-teaching activities (such as lesson preparation, examinations, meetings and general school tasks) completed at school or outside school.
2. Full-time teachers are required to be at school for specified number of hours per week to earn their full-time salary, and working time is allocated for both teaching and non-teaching activities (such as lesson preparation, examinations, meetings and general school tasks), of which a specified amount of hours has to be spent at school.
3. Full-time teachers are only required to be at school for a specified number of hours. (*i.e.*, the teaching hours plus breaks between teaching hours). There is no requirement for how much time must be spent on non-teaching activities.
4. Teacher working time is set at the individual, local or school level. It includes teaching and non-teaching activities.
5. Statutory working time for public employees. In Korea, working time is calculated only for the school-year period.
6. The number of teaching weeks is estimated on the basis of the PISA average. Teachers' working time required in school is estimated from teachers' reports of the number of hours they are required to be at school.
7. Year of reference 1999.
8. Teaching time for a position of 20 hours per week. Most teachers hold two positions.

Source: OECD. See Annex 3 for notes, sources and methodologies (www.oecd.org/els/education/eag2002).

Table D7.2.
Number of teaching hours per year (1996, 2000)
 Net contact time in hours per year in public institutions, by level of education, and index of change from 1996 to 2000

	Primary education			Lower secondary education			Upper secondary education, general programmes		
	2000	1996	Index of change 1996-2000	2000	1996	Index of change 1996-2000	2000	1996	Index of change 1996-2000
	OECD COUNTRIES								
Australia	882	m	m	811	m	m	803	m	m
Austria	684	684	n	658	658	n	623	623	n
Belgium (Fl.)	831	841	-1%	716	724	-1%	671	679	-1%
Belgium (Fr.)	804	858	-6%	728	734	-1%	668	677	-1%
Czech Republic	650	635	2%	650	607	7%	621	580	7%
Denmark	640	640	n	640	640	n	560	560	n
Finland	656	m	m	570	m	m	527	m	m
France	907	900	1%	639	647	-1%	611	m	m
Germany	783	772	1%	732	715	2%	690	671	3%
Greece	780	780	n	629	629	n	629	629	n
Hungary	583	551	6%	555	473	17%	555	473	17%
Iceland	629	m	m	629	m	m	464	m	m
Ireland	915	915	n	735	735	n	735	735	n
Italy	748	748	n	612	612	n	612	612	n
Japan	635	m	m	557	m	m	478	m	m
Korea	829	m	m	565	m	m	545	m	m
Mexico	800	800	n	1 182	1 182	n	m	m	m
Netherlands	930	930	n	867	867	n	867	867	n
New Zealand	985	985	n	968	968	n	950	950	n
Norway	713	713	n	633	611	4%	505	505	n
Portugal	815	783	4%	595	644	-8%	515	574	-10%
Scotland	950	975	-3%	893	m	m	893	917	-3%
Spain	880	900	-2%	564	m	m	548	630	-13%
Sweden	a	624	m	a	576	m	a	528	m
Switzerland	884	871	1%	859	850	1%	674	669	1%
Turkey	639	m	m	a	a	m	504	m	m
United States	1 139	958	19%	1 127	964	17%	1 121	942	19%
<i>Country mean</i>	<i>792</i>	<i>802</i>	<i>n</i>	<i>720</i>	<i>728</i>	<i>n</i>	<i>648</i>	<i>674</i>	<i>n</i>

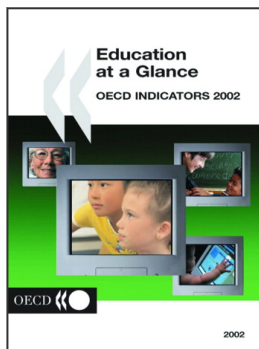
Source: OECD. See Annex 3 for notes, sources and methodologies (www.oecd.org/els/education/eag2002).

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