Chapter

D

THE LEARNING ENVIRONMENT AND ORGANISATION OF SCHOOLS

OVERVIEW

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INDICATOR D1: TOTAL INTENDED INSTRUCTION TIME FOR STUDENTS IN PRIMARY AND SECONDARY EDUCATION

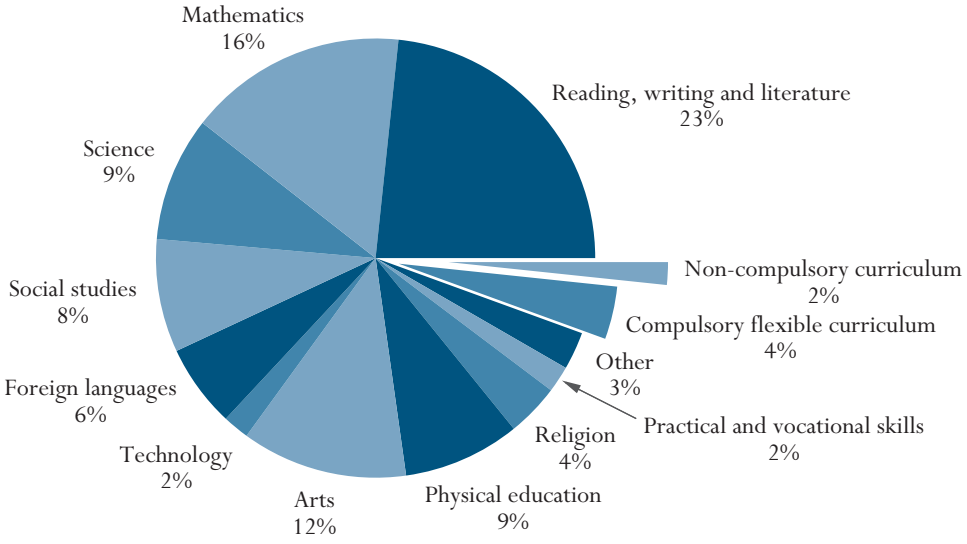
- Students between the ages of 9 and 11 receive, on average among OECD countries, 813 hours per year of compulsory instruction time and 840 hours per year of intended instruction time in the classroom, while students between the ages of 12 and 14 receive nearly 100 hours more per year. However, these figures vary significantly among countries.
- On average among 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 41 per cent for 12 to 14-year-olds.
- 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

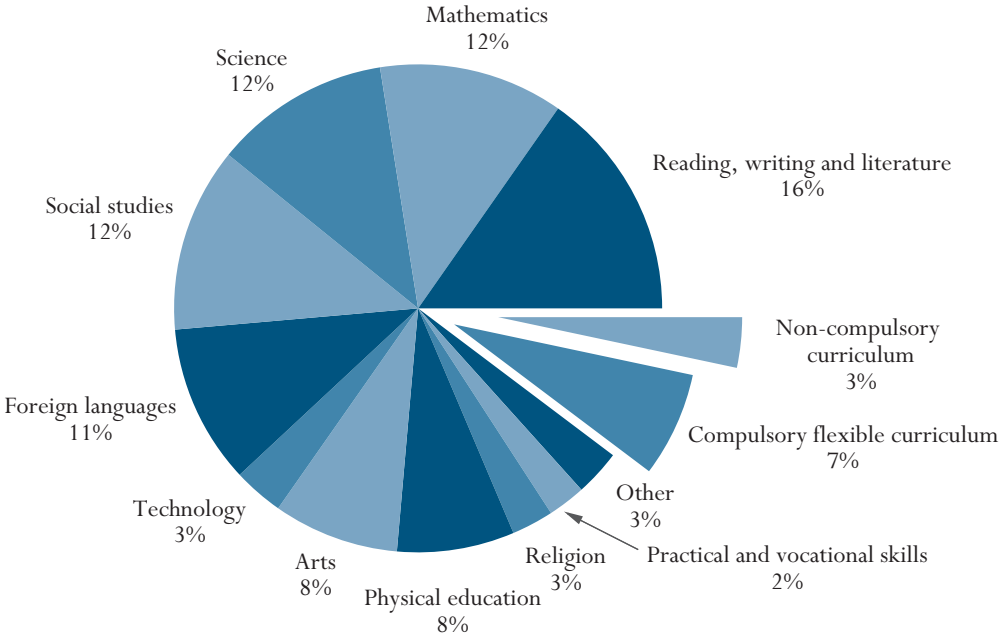
Intended instruction time in public institutions, by school subject (2001)

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 840 hours)



Intended instruction time for 12 to 14-year-olds (average total intended instruction time 939 hours)



Source: OECD. Tables D1.2a and D1.2b. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

Policy context

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

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.

Evidence and explanations

What this indicator shows

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

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 7 to 15 years of age. Although such data are difficult to compare among 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.

…but needs to be interpreted in the context of often considerable variation among regions and schools…

In some countries, intended instruction time varies considerably among 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.

…and in the context of other forms of learning time and of the quality of teaching that are not captured by this indicator.

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 C1). Intended instruction time also does not capture the quality of learning opportunities being provided or the level or quality of human and material resources involved. Other indicators in this section tackle the issue of the availability of educational resources (Indicator D3, D4 and D7) and of teachers relative to the student population (Indicator D2).

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, Portugal 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 the 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 Greece

In Greece the Pedagogical Institute draws up detailed curricula and timetables for primary and secondary education. All subjects are compulsory for all pupils and of equal importance.

…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 both the Flemish and French Communities of Belgium, the Czech Republic, Denmark, the Netherlands, New Zealand and Scotland, national policy documents describe the targets, and local authorities or schools specify the subjects, content and time allocated to them. National policy documents, in these countries often provide a frame for planning by specifying minimum requirements for subjects to be taught, time to be devoted to study areas, and/or desirable content for studies thereby giving guidance to schools for curriculum planning.

The secondary education curriculum in Scotland (Grades 7-10)

The curriculum in Scottish secondary schools in not laid down by law, but advice on the secondary school curriculum is given to all schools by Learning and Teaching Scotland (formerly the Scottish Consultative Council on the Curriculum) in the document: Curriculum Design for the Secondary Stages (last updated in 1999). In the first two years of secondary education all pupils undertake a common course with a wide range of subjects, from within the five curriculum areas of the 5-14 curriculum but with some subjects that are new to pupils. Schools vary in the number of subjects or courses they offer in the first two years, but the following subjects are common to all secondary schools: English, a modern foreign language, mathematics, science, geography, history, home economics, technical education, art, music, physical education, and religious and moral education. In the next two years of secondary education, curriculum guidance is given within the framework of eight 'modes of study and activity' into which all subjects fit: language and communication, mathematical studies and applications, scientific studies and applications, social and environmental studies, technological activities and applications, creative and aesthetic activities, physical education and, religious and moral education.

Compulsory curriculum regulations in Denmark

In Denmark, the Ministry of Education issues the regulations pertaining to the aims of teaching in each subject and topic, as well as curriculum guidelines for individual subjects and the distribution of lessons. Within this framework, schools and municipalities are permitted to work out their own curricula.

Development of curriculum policies in different countries suggests that countries seek a balance between national standards and local autonomy in curriculum decisions.

National curriculum documents play an important role in shaping school curricula irrespective of the legal status of the curriculum documents. Combined with graduation requirements and examinations they serve the purpose of harmonising the content of education within countries. Recent developments in curriculum policies show a tendency towards decentralisation of curriculum decisions in countries where centralised prescriptive syllabi were in use for many decades (*e.g.* in the German speaking European countries and Eastern Europe). At the same time, in countries with traditionally decentralised curriculum policies (like Australia, New Zealand, the United Kingdom and the United States), national standards of competence levels have been negotiated in the past 20 years. As a result of cross-fertilization, national curriculum documents have become more similar among countries, and an international 'core curriculum' appears to be emerging with similar study areas and more similar descriptions of desired competence levels.

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

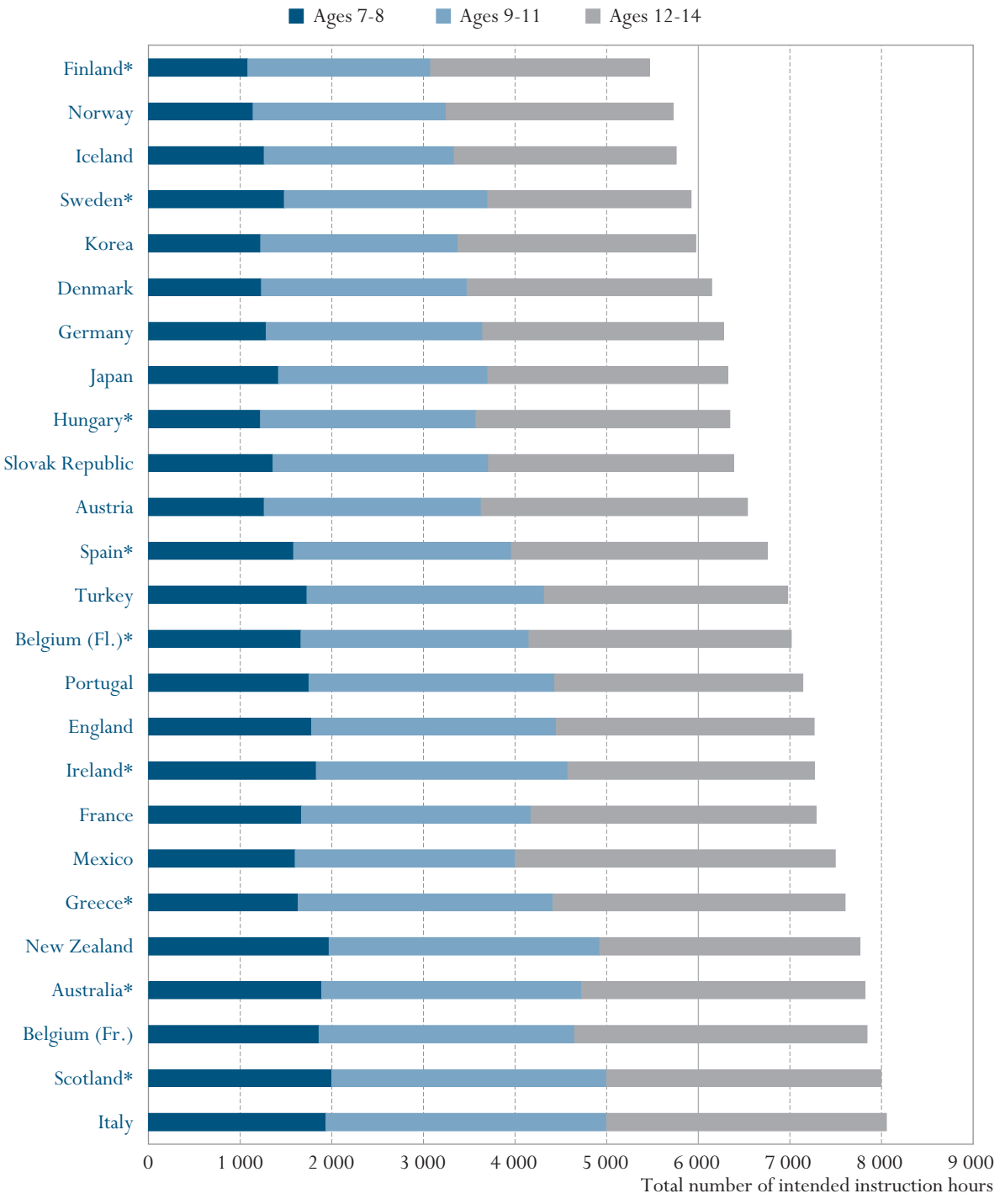
Total intended instruction time is an estimate of the number of hours during which students are taught both the compulsory and non-compulsory parts of the curriculum.

Students receive, on average, 6 896 hours of instruction between the ages of 7 and 14.

The total number of intended instruction hours between ages 7 and 14 averages 6 896 hours among OECD countries. However, formal requirements range between 5 472 hours in Finland and 8 058 hours in Italy. These hours comprise compulsory and non-compulsory hours that the school is obliged to offer to students. Whereas the total intended instruction time within this age range is a good indicator of students' theoretical workload, it cannot be interpreted as actual instruction students receive over the years they spend in initial education. Often in countries with greater student workload, the age band of compulsory education is less and students drop out of the school system earlier, whereas in other countries a more even distribution of study time over more years amounts in the end to a larger number of total instruction hours for all. Table D1.1 shows the age range at which over 90 per cent of the population is in education and Chart D1.2 shows the total number of intended instruction time students receive between ages 7 and 14.

Chart D1.2

Total number of intended instruction hours between ages 7 and 14, by age group



Countries are ranked in ascending order of total number of intended instruction hours.
* See Annex 3 for notes on specific countries.
Source: OECD. Table D1.1. See Annex 3 for notes on methodology *(www.oecd.org/edu/eag2003).*

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On average, the non-compulsory part of the curriculum comprises 2 per cent of the total intended 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 Turkey, 15 per cent in Hungary and 11 per cent in the French Community of Belgium. In lower secondary education, non-compulsory instruction time is a feature in Australia, the French Community of Belgium, Denmark, England, France, Hungary, Ireland, the Slovak Republic and Turkey, and ranges from 4 per cent in the Slovak Republic to 28 per cent in Hungary (Tables D1.2a and D1.2b and Chart D1.1).

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

Compulsory instruction time in classroom settings in the formal education system

Total compulsory instruction time is an estimate of the number of hours during which students are taught both the compulsory core and compulsory flexible parts of the curriculum.

For 7 to 8-year-olds and 9 to 11-year-olds, total intended instruction time equals total compulsory instruction time in most countries. For 12 to 14-year-olds, the average number of hours of total intended instruction time is equal to the total compulsory instruction time in Austria, Finland, Germany, Greece, Iceland, Italy, Japan, Korea, Mexico, Norway, Portugal, Scotland, the Netherlands and Sweden.

Within the formal education system, the annual amount of total compulsory instruction time in classroom settings averages 747 hours for 7 to 8-year-olds, 813 hours for 9 to 11-year-olds and 900 hours for 12 to 14-year-olds. For 15-year-old students, the average number of compulsory instruction hours per year is 908 hours for the typical programme in which most 15-year-olds are enrolled (Table D1.1).

For students aged 9 to 11 years, 49 per cent of the compulsory curriculum on average is devoted to the three basic subject areas: reading and writing (24 per cent), mathematics (16 per cent) and science (9 per cent). On average, 9 per cent of the compulsory curriculum is devoted to social studies and 6 per cent to modern foreign languages. The arts account for 12 per cent and physical education accounts for 9 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. At this level, classroom activities in the study areas are not necessarily organised as separate subject classes (Table D1.2a).

The teaching of reading and writing, mathematics and science form almost half the compulsory instruction time for all students aged 9 to 11 years …

For 12 to 14-year-old students in OECD countries, an average of 41 per cent of the compulsory curriculum, is devoted to three basic subject areas: reading and writing (16 per cent), mathematics (13 per cent) and science (12 per cent). In these age cohorts, a relatively larger part of the curriculum is devoted to social studies (13 per cent) and modern foreign languages (11 per cent), whereas

…and 41 per cent for students aged 12 to 14 years.

somewhat less time is devoted to the arts (9 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 half of the countries, and religion is included in over half of the OECD countries as part of the compulsory curriculum (Table D1.2b).

On average, 4 per cent of compulsory instruction time belongs to the flexible part of the curriculum in the grades where most students are 9 to 11 years of age while the corresponding proportion is 7 per cent for students aged 12 to 14.

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 4 per cent of compulsory instruction time in the grades where most students are 9 to 11 years of age, and 7 per cent for students 12 to 14 years of age. However, for 9 to 11- year-olds, Australia stands out as operating 61 per cent of the compulsory curriculum on a flexible basis. Scotland has the second highest degree of flexibility (20 per cent). For 12 to 14-year-olds, Australia and Scotland again have the highest degree of flexibility in the compulsory curriculum (23 and 27 per cent respectively), although for several other countries there is more than 10 per cent of flexibility in the compulsory curriculum (the French Community of Belgium, Finland, Iceland, Korea, the Netherlands, Portugal and Spain) (Tables D1.2a and D1.2b).

Definitions and methodologies

Data on instruction time are from the 2002 OECD-INES survey on Teachers and the Curriculum and refer to the school year 2000-2001.

Instruction time for 7 to 15-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 2000-2001. For countries with 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. The measurement of the time devoted to specific study areas (subjects) focuses on the minimum common core rather than on the average time spent on study areas, since the data sources (policy documents) do not allow more precise measurement. Total compulsory curriculum comprises the compulsory core curriculum as well as the compulsory flexible curriculum.
- ***The compulsory core curriculum*** refers to the set or groups of subjects (study areas) that are common to all students such as mathematics, science, social studies, language of instruction and, in some cases, a foreign language, and which can be considered core study areas. Even if all students must study all core study areas, choices may be made within a study area. For example, there may be a choice between an integrated science subject and separate science subjects like biology or physics, or between foreign languages.
- ***Compulsory flexible curriculum*** refers to the part of the compulsory curriculum where there is flexibility in time spent on a subject and/or a

choice can be made between study areas. For example, a school may be able to choose between offering religious education or more science, or art, but to offer one of these is considered compulsory within the compulsory time framework.

- ***The non-compulsory part of the curriculum*** refers to the average time to which students are entitled above the compulsory hours of instruction. These subjects often vary from school to school or from region to region, and may take the form of "non-compulsory elective" subjects.
- ***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.

For 15-year-olds, typical instruction time refers to the programme in which most 15-year-olds are enrolled. This can be a programme in lower or upper secondary education, and in most countries it refers to a general programme. If the system channels students into different programme types at this age, an estimation of the average instruction time may have been necessary for the most important mainstream programmes weighted by the proportion of students in the grade level where most 15-year-olds are enrolled. Where vocational programmes are also calculated, in typical instruction time, only the school-based part of the programme should be included in the calculations.

The instruction time for the least demanding programme refers to programmes stipulated for students who are least likely to continue studying beyond mandatory school age or beyond lower secondary education. Such programmes may or may not exist in a country depending on streaming and selection policies. In many countries students are offered the same amount of instruction time in all or most programmes but there is flexibility in the choice of study areas or subjects. Often such choices have to be made quite early if programmes are long and differ substantially.

For the classification of subject areas and specific notes on countries, see *www.oecd.org/edu/eag2003*.

Table D1.1

Compulsory and non-compulsory instruction time in public institutions (2001)

Average number of hours per year of total compulsory and non-compulsory instruction time in the curriculum for 7 to 8, 9 to 11, 12 to 14 and 15-year-olds

		Age range at which over 90% of the population are enrolled	Average number of hours per year of total compulsory instruction time					Average number of hours per year of total intended instruction time				
			Ages 7-8	Ages 9-11	Ages 12-14	Age 15 (typical programme)	Age 15 (minimum required programme)	Ages 7-8	Ages 9-11	Ages 12-14	Age 15 (typical programme)	Age 15 (minimum required programme)
OECD COUNTRIES	Australia*	5 - 16	920	928	978	964	944	945	946	1 033	1 029	1 021
	Austria	5 - 16	678	833	997	1 095	1 048	678	833	997	1 095	1 048
	Belgium (Fl.)*	3 - 17	a	a	a	a	a	831	831	955	955	448
	Belgium (Fr.)	3 - 17	840	840	1 005	m	m	930	930	1 065	m	m
	Czech Republic*	5 - 17	648	720	806	886	338	m	m	m	886	m
	Denmark	4 - 15	615	750	800	720	720	615	750	890	900	900
	England	4 - 15	854	843	821	893	m	890	890	940	940	m
	Finland*	6 - 17	542	665	798	855	a	542	665	798	855	a
	France	3 - 17	835	835	946	1 027	m	835	835	1 038	1 131	m
	Germany	6 - 17	642	788	878	900	m	642	788	878	900	m
	Greece*	6 - 16	816	928	1 064	1 186	1 003	816	928	1 064	1 429	1 246
	Hungary*	5 - 16	555	680	722	833	m	611	784	925	1 207	m
	Iceland	4 - 16	630	692	809	817	a	630	692	809	817	a
	Ireland*	5 - 16	915	915	839	802	713	915	915	899	891	891
	Italy	3 - 15	969	1 020	1 020	m	m	969	1 020	1 020	m	m
	Japan	4 - 17	709	761	875	m	a	709	761	875	m	a
	Korea	6 - 17	612	718	867	963	a	612	718	867	963	a
	Mexico	6 - 12	800	800	1167	m	m	800	800	1 167	m	m
	Netherlands*	4 - 16	m	1 000	1067	m	a	m	1 000	1 067	m	a
	New Zealand	4 - 15	m	m	m	m	m	985	985	948	930	m
	Norway	6 - 17	570	703	827	855	a	570	703	827	855	a
	Portugal	5 - 15	875	894	904	827	a	875	894	904	827	a
	Scotland*	4 - 15	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000	1 000
	Slovak Republic	6 - 16	645	750	860	870	a	679	784	894	904	a
	Spain*	4 - 16	792	792	929	963	963	792	792	932	963	963
	Sweden*	6 - 18	741	741	741	741	a	741	741	741	741	a
	Switzerland	6 - 16	m	m	m	m	m	m	m	m	m	m
	Turkey	7 - 12	720	720	791	959	a	864	864	887	959	a
	United States	5 - 15	m	m	m	m	m	m	m	m	m	m
	Country mean		***747***	***813***	***900***	***908***	***841***	***779***	***840***	***939***	***962***	***940***
NON-OECD COUNTRIES	Argentina[1]	5 - 14	m	m	m	m	m	m	729	928	m	m
	Brazil	7 - 15	m	m	m	m	m	m	800	800	m	m
	Chile	6 - 14	m	m	m	m	m	m	1 140	1 080	m	m
	Egypt	6 - 12	m	m	m	m	m	m	1 035	675	m	m
	India	m	m	m	m	m	m	m	1 051	1 176	m	m
	Indonesia	6 - 13	m	m	m	m	m	m	1 120	1 274	m	m
	Jamaica	4 - 14	m	m	m	m	m	m	950	950	m	m
	Malaysia	6 - 13	m	m	m	m	m	m	964	1230	m	m
	Paraguay	7 - 11	m	m	m	m	m	m	854	1 148	m	m
	Peru[1]	6 - 14	m	m	m	m	m	m	783	914	m	m
	Philippines	7 - 13	m	m	m	m	m	m	1 067	1 467	m	m
	Russian Federation	7 - 15	m	m	m	m	m	m	814	989	m	m
	Thailand	4 - 11	m	m	m	m	m	m	1 160	1 167	m	m
	Tunisia	6 - 10	m	m	m	m	m	m	960	880	m	m
	Uruguay	6 - 14	m	m	m	m	m	m	455	913	m	m
	Zimbabwe	7 - 13	m	m	m	m	m	m	871	1 102	m	m

1. Year of reference 2000.

* See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Source: OECD.

Table D1.2a

Intended instruction time per subject as a percentage of total compulsory instruction time for 9 to 11-year-olds (2001)

Percentage of intended instruction time devoted to various subject areas within the total compulsory curriculum

		Compulsory core curriculum														
		Reading, writing and literature	Mathematics	Science	Social studies	Modern foreign languages	Technology	Arts	Physical education	Religion	Practical and vocational skills	Other	TOTAL compulsory core curriculum	Compulsory flexible curriculum	TOTAL compulsory curriculum	Non-compulsory curriculum
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
OECD COUNTRIES	Australia[1]	12	8	3	4	2	2	3	4	1	n	n	39	61	100	2
	Austria	23	15	10	2	7	n	20	12	7	x(12)	2	100	n	100	n
	Belgium (Fl.)	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
	Belgium (Fr.)[1]	x(11)	x(11)	x(11)	x(11)	5	x(11)	x(11)	7	7	x(11)	81	100	m	100	11
	Czech Republic[2]	24	19	16	4	12	n	15	8	n	3	n	100	n	100	m
	Denmark	25	16	8	4	7	n	21	11	4	n	4	100	n	100	n
	England	29	23	11	8	n	10	8	7	4	n	n	100	n	100	6
	Finland	21	17	15	x(3)	9	n	13	11	6	9	n	100	n	100	n
	France	28	20	5	10	9	3	8	15	n	n	n	100	n	100	n
	Germany	21	17	6	6	8	1	15	11	7	n	5	97	3	100	n
	Greece	29	14	11	11	10	n	8	7	7	n	2	100	n	100	n
	Hungary	27	17	5	7	7	n	15	12	n	7	3	100	n	100	15
	Iceland	20	13	6	9	2	n	17	10	3	3	n	84	16	100	n
	Ireland	30	12	12	4	n	n	12	4	10	n	17	100	n	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	15	12	12	5	n	13	9	n	2	3	89	11	100	n
	Mexico	30	25	15	20	n	n	5	5	n	n	n	100	n	100	n
	Netherlands[3]	30	19	x(4)	15	2	2	10	7	4	n	12	100	n	100	n
	New Zealand	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Norway	22	15	7	8	6	n	16	7	9	n	9	100	n	100	n
	Portugal[4]	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
	Slovak Republic	31	20	8	8	5	n	12	11	1	4	n	100	n	100	5
	Spain	21	17	9	9	12	n	12	11	x(13)	n	n	92	8	100	n
	Sweden	22	14	12	13	12	x(12)	7	8	x(12)	7	n	94	6	100	n
	Switzerland	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Turkey	19	13	10	10	9	n	7	6	7	10	1	91	9	100	20
	United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	Country mean[1]	*24*	*16*	*9*	*9*	*6*	*2*	*12*	*9*	*4*	*2*	*3*	*96*	*4*	*100*	*2*
NON-OECD COUNTRIES	Argentina[5]	19	19	15	15	7	4	7	7	a	a	n	93	7	100	m
	Chile	m	m	m	m	m	m	m	m	m	m	m	75	25	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	12	a	a	a	96	4	100	m
	Indonesia	22	22	13	11	a	a	5	5	5	13	5	100	a	100	m
	Jamaica	24	21	11	11	a	a	8	8	8	a	9	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	xr	7	10	7	3	xr	10	93	7	100	m
	Peru[5]	m	m	m	m	m	m	m	m	m	m	m	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	m	m	m	m	m	m	m	23	39	86	14	100	m
	Tunisia	27	13	5	7	n	2	3	3	4	n	36	100	n	100	m
	Uruguay	28	29	13	19	a	a	9	3	a	a	a	100	a	100	m
	Zimbabwe	19	13	8	8	17	8	4	4	8	8	n	100	n	100	m

1. Australia and Belgium (Fr.) are not included in the country means.
2. For 9 to 10-year-olds, social studies is included in science.
3. Includes 9 and 11-year-olds only.
4. Includes 10 to 11-year-olds only.
5. Year of reference 2000.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

Table D1.2b

Intended instruction time per subject as a percentage of total compulsory instruction time for 12 to 14-year-olds (2001)

Percentage of intended instruction time devoted to various subject areas within the total compulsory curriculum

	Compulsory core curriculum														
	Reading, writing and literature	Mathematics	Science	Social studies	Modern foreign languages	Technology	Arts	Physical education	Religion	Practical and vocational skills	Other	TOTAL compulsory core curriculum	Compulsory flexible curriculum	TOTAL compulsory curriculum	Non-compulsory curriculum
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
OECD COUNTRIES															
Australia	12	12	10	9	5	8	8	8	1	2	3	77	23	100	6
Austria	12	15	14	12	10	n	18	11	6	n	n	100	n	100	n
Belgium (Fl.)	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Belgium (Fr.)[1]	15	13	6	12	12	3	3	9	6	n	6	85	15	100	6
Czech Republic	14	14	21	14	11	n	11	7	n	7	n	100	n	100	n
Denmark	23	15	14	13	11	n	10	8	4	n	4	100	n	100	11
England	14	14	14	14	11	10	9	9	5	n	n	100	n	100	15
Finland[2]	12	12	13	8	13	n	7	8	4	10	n	86	14	100	n
France	17	15	12	13	12	6	7	11	n	n	n	93	7	100	10
Germany	14	13	11	12	16	4	10	9	5	1	2	97	3	100	n
Greece	12	11	10	10	15	5	6	8	6	1	16	100	n	100	n
Hungary	13	13	13	15	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[3]	29	13	11	16	7	x(15)	4	5	9	x(15)	6	100	n	100	7
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	15	12	11	11	11	5	7	9	n	3	6	88	12	100	n
Mexico	14	14	17	26	9	n	6	6	n	9	n	100	n	100	n
Netherlands	10	10	8	11	14	5	7	9	n	3	n	78	22	100	n
New Zealand	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Norway	16	13	9	11	10	n	8	10	7	n	16	100	n	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
Slovak Republic	15	16	16	17	10	n	7	7	3	3	n	97	3	100	4
Spain	15	11	11	10	11	8	12	7	x(13)	x(13)	3	87	13	100	n
Sweden	22	14	12	13	12	x(12)	7	8	x(12)	7	n	94	6	100	n
Switzerland	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Turkey[1]	15	14	16	10	15	n	4	4	5	6	3	91	9	100	12
United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Country mean	***16***	***13***	***12***	***13***	***11***	***3***	***9***	***8***	***3***	***3***	***3***	***93***	***7***	***100***	***4***
NON-OECD COUNTRIES															
Argentina[4]	13	13	13	15	8	8	8	8	a	a	5	90	10	100	m
Chile	m	m	m	m	m	m	m	m	m	m	m	92	8	100	m
Egypt	24	13	11	8	13	5	5	5	5	5	4	100	a	100	m
India	11	15	15	13	13	a	4	13	a	a	a	83	17	100	m
Indonesia	16	16	14	13	6	a	5	5	5	15	5	100	a	100	m
Jamaica	16	13	13	13	5	16	5	5	5	3	4	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[4]	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	17	14	5	15	5	5	7	10	5	n	17	100	n	100	m
Uruguay	13	13	19	18	8	a	5	5	a	a	a	81	19	100	m
Zimbabwe	13	11	11	8	13	11	10	5	7	11	n	100	n	100	m

1. Includes 12 to 13-year-olds only.
2. For 12-year-olds, social studies is included in science.
3. For 13 to 14-year-olds, arts is included in non-compulsory curriculum.
4. Year of reference 2000.

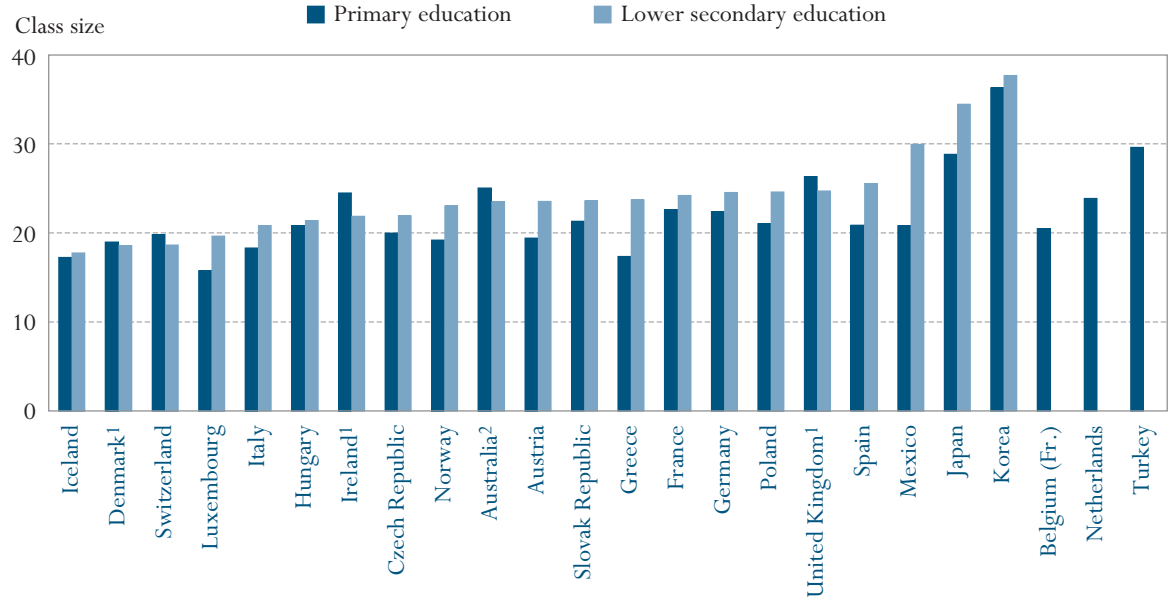
Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

INDICATOR D2: CLASS SIZE AND RATIO OF STUDENTS TO TEACHING STAFF

- The average class size in primary education is 22, but varies among countries from 36 students per class in Korea 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.
- Teaching and non-teaching staff employed in primary and secondary schools ranges from less than 80 persons per 1 000 students enrolled in Canada, Japan, Korea and Mexico to 119 persons or more per 1 000 students in France, Hungary, Iceland and Italy.

Chart D2.1

Average class size in public and private institutions, by level of education (2001)



Countries are ranked in ascending order of average class size in lower secondary education.
1. Public institutions only.
2. Year of reference 2000.
Source: OECD. Table D2.1. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

D2

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.

...and the proportion of teaching and non-teaching staff employed in education.

The number of teaching and non-teaching staff employed in education per 1 000 students is an indicator of the proportion of a country's human resources that is devoted to educating the population. The number of persons employed as either teachers or educational support personnel, and the level of compensation of educational staff (Indicator D5), are both important factors affecting the financial resources that countries commit to education.

Evidence and explanations

Average class size in primary and lower secondary education

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

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

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 Austria, Greece, Japan, Mexico and Spain, the increase in average class size exceeds four students, while Australia, Denmark, Ireland, Switzerland and the 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.

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. Public institutions at primary level have at least three students more per class than private institutions in the Czech Republic, Norway, Poland, Switzerland and Turkey. 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 with comparable data (Table D2.1).

Public institutions at the primary level have at least three students more per class than private institutions in the Czech Republic, Norway, Poland, Switzerland and Turkey.

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.

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

In primary education, the ratio of students to teaching staff, expressed in full-time equivalents, ranges from around 30 students per teacher in Korea and Turkey to 10 in Denmark. The country mean in primary education is 17 students per teacher. There is slightly more variation among countries in the ratio of students to teaching staff at the secondary level, ranging from more than 20 students per full-time equivalent teacher in Korea and Mexico to below 11 in Austria, Belgium, Greece, Italy, Luxembourg, Norway and Portugal. On average among countries, the ratio of students to teaching staff at the secondary level of education is 14, which is close to the ratios in the Czech Republic (14), Finland (14), Germany (15), Japan (15), Poland (15), the Slovak Republic (14), Sweden (15) and the United Kingdom (15) (Table D2.2).

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

As the difference in the mean ratios 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 Denmark, Hungary, Mexico, 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.

Between primary and secondary education, there are fewer students per teacher as the level of education rises.

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 13 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 among

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).

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

The ratio of students to teaching staff in public and private tertiary institutions ranges from 54 students per teacher in Korea to 12 or below in Germany, Iceland, Japan, Norway, 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 12 out of the 17 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 in the generally more occupationally specific tertiary-type B programmes than in tertiary-type A and advanced research programmes (Chart D2.2). Germany, Hungary, Korea, the Slovak Republic and Turkey are the only countries with a higher ratio in tertiary-type B programmes.

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

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 eight students per teacher in Denmark, Iceland and New Zealand to 22 students or more per teacher in Germany, Korea, Mexico and the United Kingdom. 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).

Teaching staff and non-teaching staff employed in education

Average class sizes, total instruction time and teachers' working time contribute to country variation.

The variation among countries in the relative size of the teaching force cannot be explained solely by differences in the size of the school-age population, but is also affected by the average class size, the total instruction time of students (Indicator D1), teachers' average working time (Indicator D6), and the division of teachers' time between teaching and other duties.

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The relative proportions of teachers and other educational personnel differ widely from one country to another.

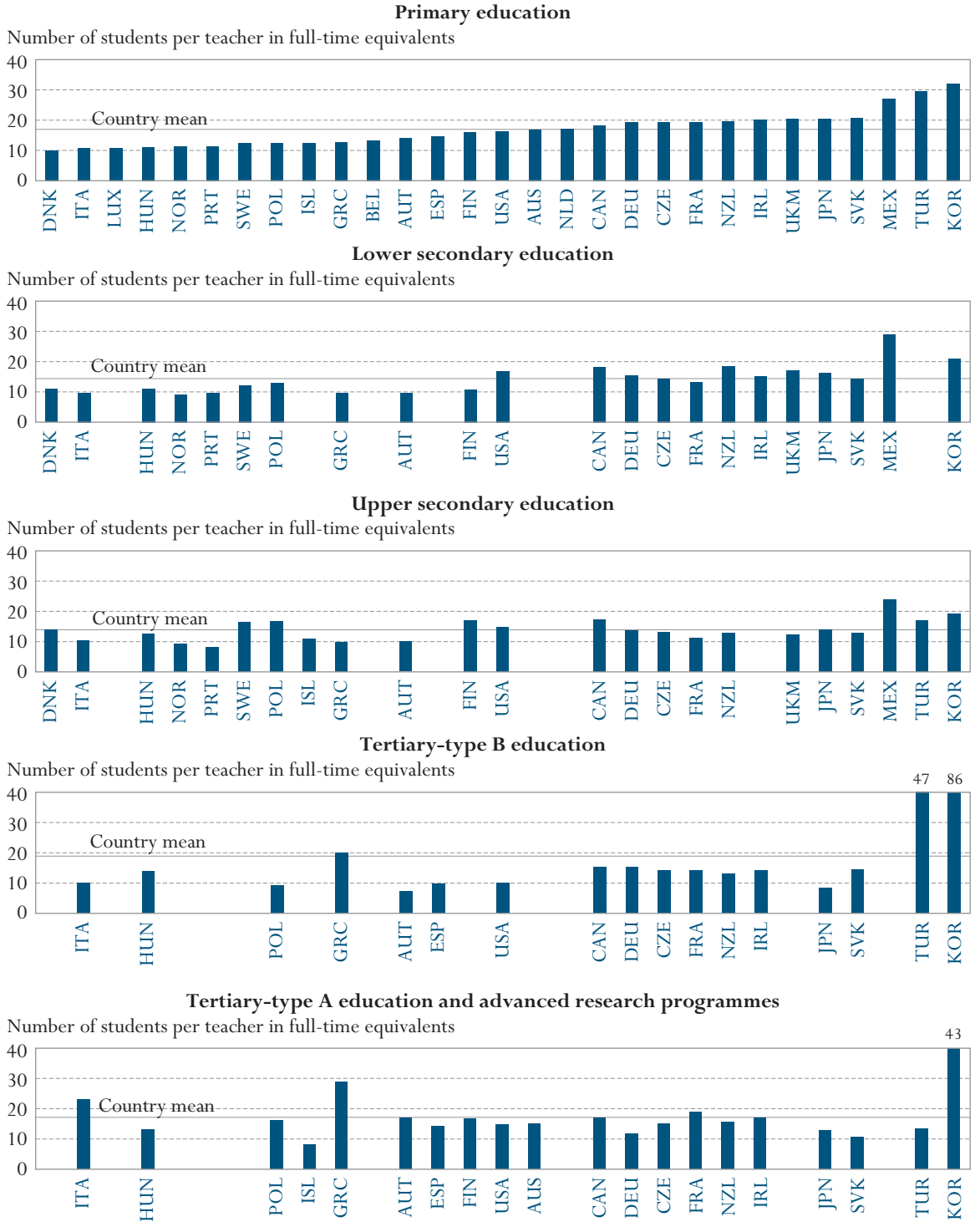
There are significant differences among OECD countries in the distribution of educational staff between teaching and other categories, reflecting differences among countries in the organisation and management of schooling. Teaching and non-teaching staff employed in primary and secondary schools ranges from less than 80 persons per 1 000 students enrolled in Canada, Japan, Korea and Mexico to 119 persons or more per 1 000 students in France, Hungary, Iceland and Italy (Chart D2.3).

Non-teaching staff represent on average 30 per cent of the total teaching and non-teaching staff in primary and secondary schools.

Among the 13 OECD countries for which data are available for each category of personnel employed in education, the staff not classified as instructional personnel represent on average 30 per cent of the total teaching and non-teaching staff in primary and secondary schools. In seven of these countries, these staff represent between 30 and 40 per cent of total teaching and non-teaching staff. This proportion exceeds 40 per cent in the Czech Republic and France. Compared to the number of students enrolled in primary and

Chart D2.2

Ratio of students to teaching staff in public and private institutions, by level of education (2001)



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/edu/eag2003)*.

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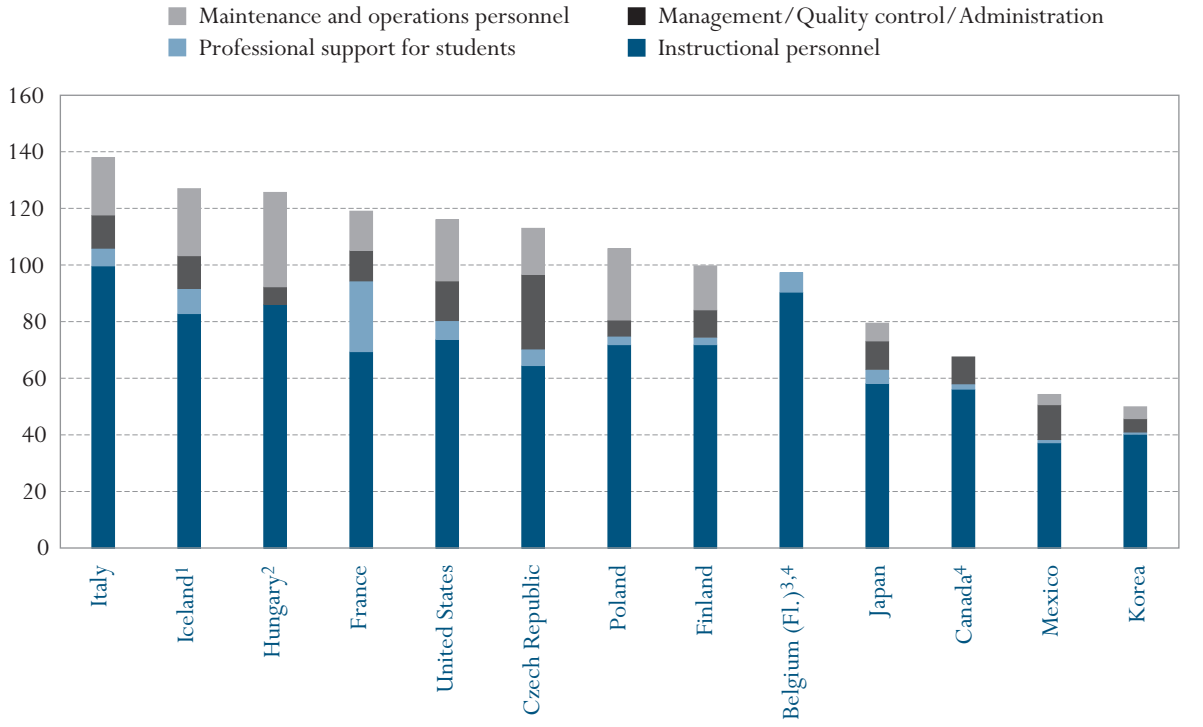
secondary schools, non-teaching staff employed in education represents more than 40 persons per 1 000 students in the Czech Republic, France, Iceland and the United States (Table and Chart D2.3).

These differences reflect the numbers of staff that countries employ in non-teaching capacities, *e.g.*, principals without teaching responsibilities, guidance counsellors, school nurses, librarians, researchers without teaching responsibilities, bus drivers, janitors and maintenance workers, etc. In Hungary, Iceland, Italy, Poland and the United States, maintenance and operations personnel working in primary and secondary schools represent more than 20 persons per 1 000 students enrolled in these schools. Administrative personnel represent between 9 and 10 persons per 1 000 students enrolled in primary and secondary schools in Italy, Mexico and the United States and 19 persons per 1 000 students in the Czech Republic, whereas the staff employed in school and higher level management exceed 6 persons per 1 000 students in the Czech Republic,

Chart D2.3

Teaching staff and non-teaching staff (2001)

Teaching staff and non-teaching staff in primary and secondary schools per 1 000 students, calculations based on full-time equivalents



Countries are ranked in descending order of the proportion of instructional personnel per 1 000 students.
1. Data on higher level management and administrative personnel are missing.
2. Data on professionnal support for students are missing.
3. Data on management/quality control/administration personnel are missing.
4. Data on maintenance and operations personnel are missing.
Source: OECD. Table D2.3. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

France, Iceland and the Slovak Republic, and 10 persons in Norway (Chart D2.3). Finally, the staff employed to provide professional support for students are relatively numerous in France (25 persons per 1 000 students enrolled in primary and secondary schools) and to a lesser extent in Iceland and the United States (9 and 7 persons per 1 000 students enrolled respectively in primary and secondary schools).

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 among 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 2000-2001, and are based on the UOE data collection on education statistics that is administered annually by the OECD.

Instructional personnel comprise:

- ***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.
- ***Teachers' aides and teaching/research assistants*** include non-professional personnel or students who support teachers in providing instruction to students. This type of personnel is not included in tables D2.1 and D2.2.

Non-instructional personnel comprises four categories:

- ***Professional support for students*** includes professional staff who provide services to students that support their learning. In many cases, these staff originally qualified as teachers but then moved into other professional positions within the education system. This category also includes all personnel employed in education systems who provide health and social support services to students, such as guidance counsellors, librarians, doctors, dentists, nurses, psychiatrists and psychologists and other staff with similar responsibilities.
- ***School and higher level management*** includes professional personnel who are responsible for school management and administration and personnel whose primary responsibility is the quality control and management of higher levels of the education system. This category covers principals, assistant principals, headmasters, assistant headmasters, superintendents of schools, associate and assistant superintendents, commissioners of education and other management staff with similar responsibilities.
- ***School and higher level administrative personnel*** includes all personnel who support the administration and management of schools and of higher levels of the education system. The category includes: receptionists, secretaries, typists and word processing staff, book-keepers and clerks,

analysts, computer programmers, network administrators, and others with similar functions and responsibilities.

- ***Maintenance and operations personnel*** includes personnel who support the maintenance and operation of schools, the transportation of students to and from school, school security and catering. This category includes the following types of personnel: masons, carpenters, electricians, maintenance repairers, painters and paperhangers, plasterers, plumbers and vehicle mechanics. It also includes bus drivers and other vehicle operators, construction workers, gardeners and ground staff, bus monitors and crossing guards, cooks, custodians, food servers and others with similar functions.

Table D2.1

Average class size, by type of institution and level of education (2001)

Calculations based on number of students and number of classes

		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[1]	24.9	25.9	a	25.0	23.6	22.2	a	23.5
	Austria	19.4	20.9	x(2)	19.4	23.5	24.2	x(6)	23.6
	Belgium	m	m	m	m	m	m	m	m
	Belgium (Fr.)	20.1	21.1	m	20.5	21.4	m	m	m
	Canada	m	m	m	m	m	m	m	m
	Czech Republic	20.1	11.3	a	20.0	22.0	19.0	a	22.0
	Denmark	19.0	m	m	19.0	18.6	m	m	18.6
	Finland	m	m	a	m	m	m	a	m
	France	22.3	23.9	n	22.6	24.1	25.0	12.8	24.2
	Germany	22.4	24.0	x(2)	22.4	24.5	26.0	x(6)	24.6
	Greece	17.2	a	20.6	17.4	23.6	a	26.9	23.7
	Hungary	20.9	19.7	a	20.8	21.2	25.4	a	21.4
	Iceland	17.3	16.5	n	17.3	17.8	15.0	n	17.8
	Ireland	24.5	m	m	24.5	21.9	m	m	21.9
	Italy	18.2	a	20.4	18.3	20.8	a	21.4	20.8
	Japan	28.8	a	34.5	28.8	34.3	a	37.3	34.5
	Korea	36.3	a	35.9	36.3	37.9	37.2	a	37.7
	Luxembourg	15.5	21.8	20.3	15.8	19.4	20.7	20.3	19.7
	Mexico	20.6	a	24.2	20.9	30.1	a	28.8	30.0
	Netherlands	m	m	m	23.9	m	m	m	m
	New Zealand	m	m	m	m	m	m	m	m
	Norway	19.3	15.6	x(2)	19.2	23.2	19.7	x(6)	23.1
	Poland	21.2	12.4	a	21.1	24.8	13.7	a	24.6
	Portugal	m	m	m	m	m	m	m	m
	Slovak Republic	21.3	21.0	n	21.3	23.6	24.2	n	23.6
	Spain	19.5	24.8	21.6	20.9	24.5	28.6	22.6	25.6
	Sweden	m	m	m	m	m	m	m	m
	Switzerland	19.9	14.1	15.4	19.8	18.8	17.7	16.1	18.7
	Turkey	29.9	a	20.5	29.6	a	a	a	a
	United Kingdom	26.4	a	m	m	24.7	m	m	m
	United States	m	m	m	m	m	m	m	m
	Country mean	***22.0***	***19.5***	***23.7***	***22.0***	***23.8***	***22.8***	***23.3***	***24.0***
NON-OECD COUNTRIES	Brazil	26.7	a	18.8	25.8	34.5	a	27.4	33.6
	Chile	33.3	36.6	23.6	33.3	32.3	35.8	24.3	32.5
	Egypt	41.7	35.7	36.0	41.1	44.6	42.8	32.8	43.9
	India	40.1	x(1)	x(1)	40.1	38.5	x(5)	x(5)	38.5
	Indonesia	25.7	23.1	m	25.2	40.5	35.5	m	38.5
	Israel	25.6	a	a	25.6	31.1	a	a	31.1
	Jamaica	33.8	a	m	34.2	32.4	a	m	32.4
	Paraguay	18.1	21.7	17.4	18.4	29.5	28.4	20.2	27.7
	Philippines	42.2	a	32.9	41.4	48.5	a	44.9	47.6
	Thailand	23.2	37.5	a	24.5	34.9	25.4	a	34.1
	Tunisia	29.0	a	25.9	28.9	33.7	a	19.2	33.2
	Uruguay	18.9	a	m	18.9	29.9	a	26.4	29.4

1. Year of reference 2000.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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Table D2.2
Ratio of students to teaching staff in public and private institutions (2001)
by level of education, calculations based on full-time equivalents

	Pre-primary education	Primary education	Lower secondary education	Upper secondary education	All secondary education	Post secondary non-tertiary education	Tertiary-type B	Tertiary-type A & advanced research programmes	All tertiary education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OECD COUNTRIES									
Australia[1]	m	17.0	m	m	m	m	m	15.0	m
Austria	18.1	14.3	9.8	9.9	9.8	9.9	7.3	16.9	15.8
Belgium	16.7	13.4	x(5)	x(5)	9.8	x(5)	x(9)	x(9)	18.1
Canada	11.5	18.3	18.4	17.2	17.8	x(7)	15.2	17.0	16.2
Czech Republic	12.7	19.4	14.5	13.1	13.8	10.0	14.1	15.0	14.9
Denmark	6.9	10.0	11.1	13.9	12.4	m	m	m	m
Finland	13.0	16.1	10.9	17.0	14.0	x(4)	x(4)	16.8	16.8
France	19.2	19.5	13.5	11.2	12.3	a	14.2	18.9	18.1
Germany	24.6	19.4	15.7	13.7	15.2	15.0	15.4	11.9	12.3
Greece	14.5	12.7	9.8	9.7	9.7	m	19.8	28.9	25.2
Hungary	11.4	11.3	11.2	12.5	11.8	9.1	14.0	13.2	13.3
Iceland	5.2	12.6	x(2)	10.9	m	x(5,9)	m	8.3	8.0
Ireland	14.5	20.3	15.2	x(3)	x(3)	x(3)	14.2	17.1	16.0
Italy	12.8	10.8	9.9	10.4	10.2	m	10.0	23.1	22.4
Japan	18.5	20.6	16.6	14.0	15.1	x(4,9)	8.5	12.8	11.3
Korea	22.2	32.1	21.0	19.3	20.1	a	86.1	42.8	53.9
Luxembourg[2]	17.4	11.0	x(5)	x(5)	9.1	m	m	m	m
Mexico	21.9	27.0	29.2	23.8	27.3	a	x(9)	x(9)	15.2
Netherlands	x(2)	17.2	x(5)	x(5)	17.1	x(5)	x(9)	x(9)	12.6
New Zealand	7.6	19.6	18.7	12.8	15.7	12.5	13.0	15.7	15.0
Norway	m	11.6	9.3	9.2	9.3	x(4)	x(9)	x(9)	11.5
Poland	12.8	12.5	13.1	16.8	15.4	16.4	9.3	16.3	16.2
Portugal	16.9	11.6	9.9	8.0	8.9	m	x(9)	x(9)	m
Slovak Republic	10.0	20.7	14.5	12.9	13.8	14.1	14.5	10.7	10.8
Spain	16.0	14.7	x(5)	x(5)	11.0	x(5)	9.8	14.2	13.4
Sweden	10.3	12.4	12.4	16.6	14.6	m	x(9)	x(9)	9.3
Switzerland[2]	m	m	m	m	m	m	m	m	m
Turkey	15.6	29.8	a	17.2	17.2	a	46.7	13.6	16.1
United Kingdom[1]	22.1	20.5	17.3	12.3	14.5	m	x(9)	x(9)	17.6
United States	14.9	16.3	17.0	14.8	15.9	a	10.1	14.9	13.7
Country mean	***14.9***	***17.0***	***14.5***	***13.8***	***13.9***	***12.4***	***19.0***	***17.2***	***16.5***
NON-OECD COUNTRIES									
Argentina[2, 3]	19.9	22.7	13.2	9.0	11.2	a	12.1	8.0	9.3
Brazil[4]	18.7	24.8	20.7	19.0	20.1	a	x(9)	x(9)	15.2
Chile[4]	24.9	33.4	33.0	28.4	30.1	a	m	m	m
China[4]	32.8	19.9	18.6	20.7	19.1	8.5	32.4	12.7	16.9
Egypt	22.1	22.3	21.2	13.2	17.0	m	m	m	m
India[2, 4]	34.3	40.0	36.1	30.4	34.1	40.0	29.0	21.9	21.9
Indonesia	23.2	25.6	19.2	17.0	18.4	a	x(9)	x(9)	17.5
Israel	m	20.1	12.9	12.7	12.8	m	m	m	m
Jamaica	23.7	33.6	19.4	17.3	19.3	10.6	17.1	11.4	14.6
Malaysia[4]	26.7	18.8	x(5)	x(5)	18.4	12.0	15.1	17.5	16.9
Paraguay[4]	x(2)	18.8	x(5)	x(5)	21.5	a	22.1	m	m
Philippines[4]	30.1	35.2	43.4	22.4	36.4	45.0	x(9)	x(9)	25.9
Russian Federation	7.0	17.3	m	m	m	10.2	14.6	15.3	15.0
Thailand	30.3	20.4	20.6	33.2	25.4	a	24.9	27.9	27.1
Tunisia[2]	m	22.7	13.3	199.1	21.0	8.8	x(9)	x(9)	18.2
Uruguay[4]	28.3	20.8	11.8	21.1	14.6	a	x(9)	x(9)	8.7
Zimbabwe	m	38.1	x(5)	x(5)	31.5	17.6	0.0	0.0	10.8

1. Includes only general programmes in lower and upper secondary education.
2. Public institutions only.
3. Year of reference 1999.
4. Year of reference 2000.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

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Table D2.3

Teaching staff and non-teaching staff employed in public and private institutions (2001)

Teaching staff and non-teaching staff in primary and secondary schools per 1 000 students, calculation based on full-time equivalents

	Instructional personnel			Management/Quality Control/ Administration			
	Classroom teachers, academic staff and other teachers	Teacher aides and teaching/research assistants	Professional support for students	School and higher level management	School and higher level administrative personnel	Maintenance and operations personnel	TOTAL teaching and non-teaching staff
OECD COUNTRIES							
Australia	m	m	m	m	m	m	m
Austria	89.9	m	m	m	m	m	m
Belgium	89.6	m	m	m	m	m	m
Belgium (Fl.)	90.4	a	6.9	m	m	m	97.3
Canada	55.5	0.5	2.0	4.9	4.7	m	67.7
Czech Republic	64.2	0.1	5.9	6.9	19.4	16.4	113.0
Denmark	89.4	m	m	m	m	m	m
Finland	67.4	4.3	2.6	2.3	7.5	15.8	99.9
France	69.3	m	25.0	6.9	3.9	13.8	119.0
Germany	61.4	m	m	m	m	m	m
Greece	91.5	m	m	m	m	m	m
Hungary	86.0	m	m	m	6.2	33.6	125.8
Iceland[1]	82.8	n	8.9	7.4	4.2	23.7	127.0
Ireland	59.5	m	m	2.0	m	m	m
Italy	96.2	3.5	6.3	1.8	9.9	20.4	138.0
Japan	58.1	m	5.0	5.3	4.8	6.4	79.5
Korea	40.1	a	0.8	2.5	2.2	4.4	50.0
Luxembourg	87.6	m	m	m	m	m	m
Mexico	36.9	0.3	1.1	3.4	8.8	3.9	54.4
Netherlands	58.3	m	m	m	m	m	m
New Zealand	57.9	m	m	m	m	m	m
Norway	97.1	m	m	10.9	m	m	m
Poland	71.7	a	3.2	5.5	m	25.4	105.8
Portugal	99.2	m	m	m	m	m	m
Slovak Republic	64.8	m	m	6.3	m	m	m
Spain	80.5	m	m	m	m	m	m
Sweden	74.2	m	m	4.6	m	m	m
Switzerland	m	m	m	m	m	m	m
Turkey	38.2	m	m	m	m	m	m
United Kingdom	52.3	m	m	m	m	m	m
United States	62.1	11.5	6.6	5.1	8.9	21.9	116.2
Country mean	***71.4***	***3.4***	***6.2***	***5.1***	***7.3***	***16.9***	***99.5***

1. Data on higher level management and administrative personnel are missing.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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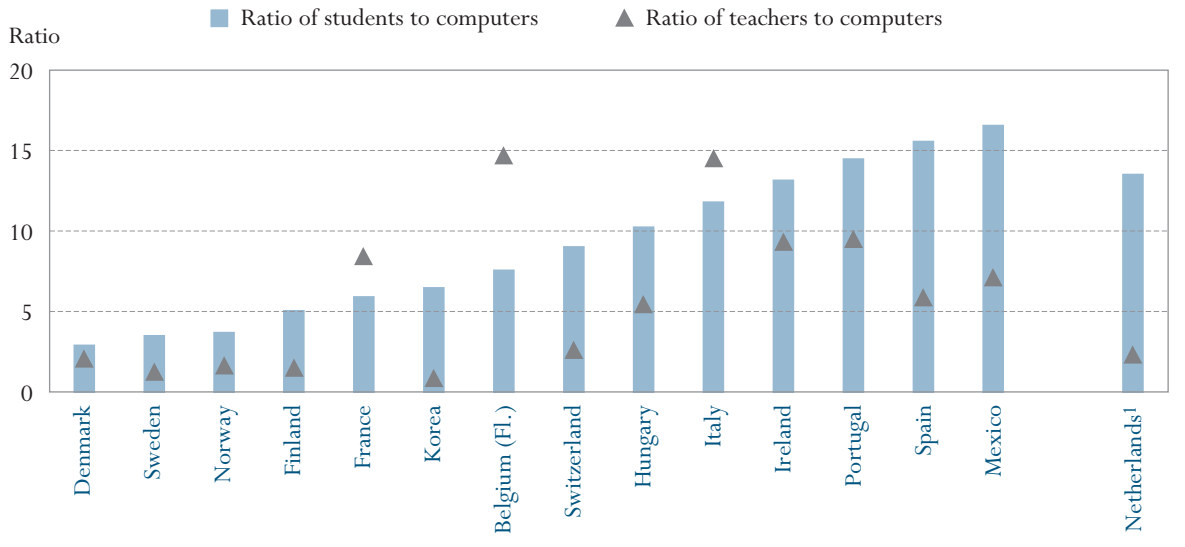
INDICATOR D3: TEACHERS' AND STUDENTS' USE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN UPPER SECONDARY EDUCATION

- Among the 14 countries with comparable data represented in this indicator, a typical student in upper secondary education attends schools where there is one computer for every 9 students. This ratio varies widely among countries; from three students per computer in Denmark and Sweden to more than 15 students per computer in Mexico and Spain.
- On average, 63 per cent of students attend schools where principals reported that teachers' lack of knowledge and skills was an obstacle to successful ICT implementation: More than three-quarters of students attend schools where the principal reported this in France and Norway.
- On average, one-third of teachers participated in ICT-related professional development in the school year 2000/2001, compared to one-half of teachers who participated in non-ICT related professional development in the same period.
- From a list of 22 obstacles to the use of ICT in teaching - including obstacles related to computer hardware and infrastructure, computer software, teachers and school and classroom organisation – insufficient number of computers for students to use tended to be reported by the principals of upper secondary students as the *most serious obstacle* to the use of ICT in teaching. A shortage of maintenance and technical support, as well as teachers' lack of knowledge/skills in using computers for instructional purposes were other frequently reported obstacles.

Chart D3.1

Ratio of students to computers and ratio of teachers to computers in upper secondary education (2001)



Countries are ranked in ascending order of the ratio of students to computers.
1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. Tables D3.1 and D3.3. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

Policy context

OECD economies depend increasingly on technological knowledge and skills in the labour force. Thus, schools have an important role to play in providing students with the necessary skills to succeed in today's competitive technology-based labour market. But the successful integration of information and communications technologies in schooling requires more than investment in hardware and software for schools. Information and communication technology must be incorporated into national policies and school curricula as a tool to achieve educational objectives. Teachers must receive appropriate training to understand how to effectively assimilate computer technology in the teaching and learning process and in their administrative duties. The organisation of instruction time and use of teaching and learning strategies must be sufficiently flexible to allow for the most effective use of ICT in lesson time. Finally, the successful use of information technology in schools demands adequate technical support and a global perspective that encourages information sharing among schools and other educational institutions and organisations.

OECD's International Survey of Upper Secondary Schools (ISUSS) asked school principals about the use of information technology in their schools.

In 2001, OECD conducted the International Survey of Upper Secondary Schools (ISUSS), in which several aspects of the use of information technology by teachers and students in upper secondary education were explored. School principals were asked about the number of computers in their schools; the use of technology for educational purposes and more specifically in students' assignments; the use of computers by teachers; professional development of teachers in computer technology; the nature of ICT-related co-operation among schools and other institutions; and the perceived teacher, software, hardware and organisation-related obstacles to attaining goals involving information technology. (For a description of the survey see Annex 3 on *www.oecd.org/edu/eag2003*.)

Evidence and explanations

Provision of information and communication technology in schools

Availability of computers for students in upper secondary education

The average number of students per computer is often used as a proxy for the extent to which technologies are accessible to students. In ISUSS, principals in upper secondary schools were asked to specify the total number of computers available for all students in their school. A ratio of students to computers was then calculated by dividing the total number of computers available to students in the school by the total number of students enrolled in the school. On average in OECD countries participating in the survey, a typical student in upper secondary education attends schools where there is one computer for every nine students. This ratio varies widely between countries; from three students per computer in Denmark and Sweden to more than 15 students per computer in Mexico and Spain.

A typical student in upper secondary education attends a school where there is one computer for every 9 students, although this ratio varies widely among countries.

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It is important to note when interpreting these data that the availability of hardware does not guarantee its use by students and teachers, nor does it indicate how easily the technology can be accessed when needed, either in the classroom or other locations. Nor does the ratio guarantee that the quality of hardware

Although availability does not guarantee the effective use of computers,…

(e.g., compatibility, memory, speed, attached peripheral devices and software) is appropriate for classroom use. Finally, average ratios may hide variation between schools due to such factors as the geographical or socio-economic location of the school and the type of educational institution (Table D3.1).

…network technologies have considerably improved accessibility of electronic information over the past 5 years.

While in many countries the use of computers in schools is by no means a recent phenomenon, the World Wide Web and e-mail have only been introduced in most schools over the last five years. In the International Survey of Upper Secondary Schools, school principals were asked in which year technologies such as word processing and spreadsheet applications, the World Wide Web and e-mail were first used in the school for educational purposes. By 1985, over 19 per cent of upper secondary students in the Flemish Community of Belgium, Denmark, Finland and Switzerland attended schools where word processing and spreadsheet applications were used for educational purposes. By 2000, all students in upper secondary education in Finland, France, Hungary, Ireland, and Norway attended schools where this software was in use. Between 1995 and 2000, use of word processing and spreadsheet packages increased by 20 percentage points or more in Hungary, Italy, Mexico and Spain; and by almost 50 percentage points in Korea. By contrast, in 1995 an average of 24 per cent of students attended schools which were using the Internet and only 13 per cent of students attended schools which had an e-mail system available for teachers and students. However, by 2000 on average, 4 out of 5 upper secondary students attended schools where the Internet and intranet were in use (Table D3.1 and Chart D3.2).

Software and hardware-related obstacles to the use of information and communication technology in teaching

On average for all countries, lack of computers for students' use was perceived by school principals as the most serious obstacle to the use of ICT in teaching in their schools.

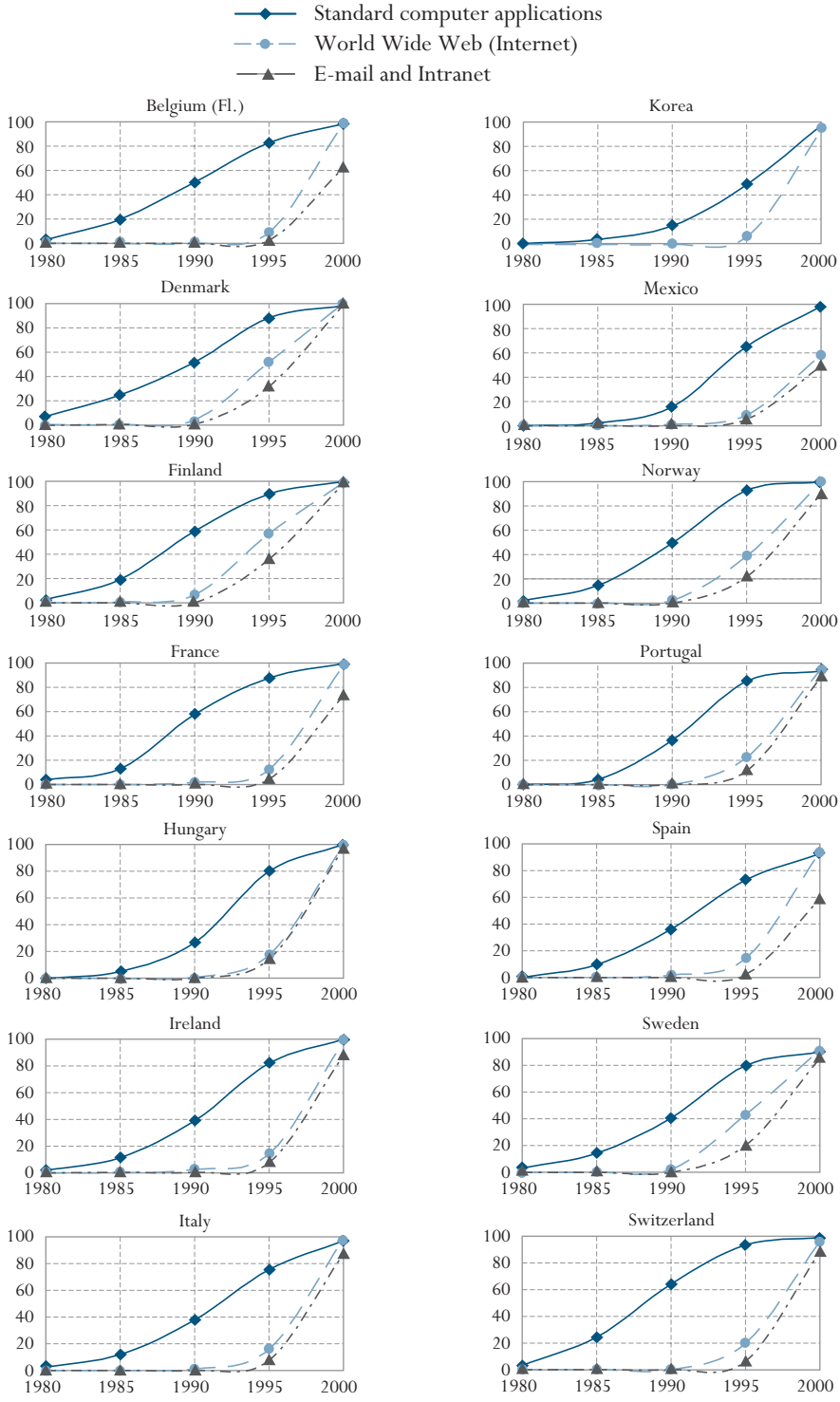
School principals were also asked to report the *most serious* obstacle to the use of ICT in teaching from a list of 22 potential obstacles concerning computer hardware and infrastructure, computer software, teachers and organisation. On average, of all the obstacles listed, insufficient numbers of computers for students' use was perceived by school principals as the *most serious* obstacle to the use of ICT in teaching. The principals of more than 20 per cent of upper secondary students in Mexico, Portugal and Spain reported this as the *most serious* obstacle. Mexico has the highest ratio of students to computers, while Denmark and Sweden have the lowest ratio, so these results must be interpreted within the context of the ICT policies and expectations in each school and country. Outdated computers were also reported to be the *most serious* obstacle to the use of ICT by many principals, particularly in Hungary, Mexico, Spain and Sweden, where the principals of 10 per cent of students reported this. Shortage of maintenance and technical support was perceived as *the most serious obstacle* to the use of ICT in teaching by the principals of more than 25 per cent of students in the Flemish Community of Belgium and France but less than five per cent in Hungary, Italy, Mexico and Norway (Table D3.2).

Other hardware and infrastructure-related obstacles, such as the lack of Internet connection, lack of space to store computers and weak infrastructure

Chart D3.2

Introduction of information and communication technology (ICT) in schools (1980-2000)

Percentage of upper secondary students attending schools where computer applications, the Internet and E-mail were introduced by 1980, 1985, 1990, 1995 and 2000



Note: The Netherlands did not meet international sampling requirements and is therefore excluded from this chart.
Source: OECD ISUSS database, 2003. Table D3.1. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

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(*i.e.*, electricity, telecommunications), were not perceived by school principals as serious threats to using ICT in the classroom (Table D3.2).

While quality and quantity of hardware were reported by many school principals as posing *the most serious* threat to the integration of ICT into teaching and learning, few school principals reported software-related issues as *the most serious* obstacle to using computers in the classroom. However, 10 per cent of students in Korea attend schools where the principal reported insufficient number of copies of software for instructional purposes as *the most serious* obstacle; and 12 per cent where the principal indicated that the lack of variety of software was a problem (Table D3.2).

Teachers and information and communications technologies

Availability of computers for teachers in upper secondary education

In three-quarters of countries, teachers have better access to computers than students.

Computers are an important tool for both teachers and school administrators, who use computers to complete everyday tasks such as updating student records, writing letters to parents and committees, completing electronic student assessment, preparing lessons and updating school and class Web sites. Thus, information and communications technologies can improve the quality and effectiveness of teachers' work, and can also be used to achieve effective learning outcomes. In order to achieve these objectives, schools need to invest in hardware, software and training resources to equip teachers to effectively use ICT in their daily work. Despite these efforts, some teachers may find it difficult to adapt these new technologies to their working and teaching methods.

In Denmark, Finland, Korea, Norway and Sweden, there are two teachers or less for every computer and more than 49 per cent of teachers use computer applications and the Internet for educational purposes.

In ISUSS, school principals in upper secondary schools were asked the total number of computers available only for teachers' use in their school. A ratio of teachers to computers was then calculated by dividing the total number of computers available only to teachers in the school by the total number of full-time equivalent teachers in the school. Chart D3.1 shows that in three-quarters of countries, teachers have better access to computers than students. In Denmark, Finland, Korea, Norway and Sweden, two teachers or less share a computer, although these countries also have small ratios of students to computers. School principals were also asked to report the percentage of teachers in upper secondary education who use computer applications, the World Wide Web and e-mail for educational purposes at least once a month. In the same five countries, school principals reported that more than 49 per cent of teachers use computer applications and the Internet for educational purposes. This indicates that teachers in these countries are using the ICT resources at their disposal (Table D3.3). In contrast, in Ireland and Mexico, less than one-third of teachers use computer applications, one-quarter or less use the Internet, and 13 per cent or less use e-mail for educational purposes at least once a month. In these countries, more than 10 per cent of students attend schools where school principals also reported that insufficient numbers of computers for teachers' use was the *most serious* obstacle to the use of ICT in teaching (Table D3.2).

Teachers' professional development in ICT

Although one-third of teachers participated in ICT-related professional development in the school year 2000/2001…

Making teachers comfortable with using ICT and encouraging them to integrate ICT into their lesson plans is a key objective of providing professional development to teachers. Well-planned, ongoing professional development that is linked to the school's curriculum goals is essential if teachers are to use technology appropriately to promote learning for all students in the classroom. In ISUSS, school principals were asked the percentage of teachers in upper secondary education who participated in ICT-related professional development in the school year 2000/2001. On average, one-third of teachers participated in ICT-related professional development, compared to one-half of teachers who were reported to have participated in non-ICT related professional development. In Denmark, Finland and Norway, more than 40 per cent of teachers participated in ICT-related professional development, while participation of teachers in non-ICT related professional development was more than 56 per cent in these countries (Table D4.3).

School principals were also asked to report whether the lack of training opportunities for teachers was an obstacle to reaching the school's information technology-related goals. On average, 40 per cent of students in upper secondary education attended schools where school principals reported that insufficient training opportunities for teachers were an obstacle to attaining ICT-related goals. In Ireland, Norway and Spain, this figure was more than 55 per cent. Although insufficient opportunities for professional development was reported to hinder the use of ICT in teaching, few school principals reported that this was the *most serious* obstacle to the use of ICT in teaching (Table D3.2 and D3.3).

…63 per cent of students attended schools where principals reported that teachers' lack of knowledge and skills was an obstacle to successful ICT implementation,…

School principals also reported on other teacher-related obstacles to ICT implementation. On average, 63 per cent of students attended schools where principals reported that teachers' lack of knowledge and skills was an obstacle to successful ICT implementation; three-quarters of students did in France and Norway (Chart D3.3 and Table D3.3). Teachers' lack of knowledge and skills in using computers for instructional purposes was reported as the *most serious* obstacle to using ICT in teaching by the principals of an average of 10 per cent of upper secondary students (Table D3.2).

…and 37 per cent attended schools where principals thought teachers were not willing to use computers.

Only 37 per cent of students attended schools where principals reported that teachers' lack of willingness to use a computer was an obstacle to reaching the schools' ICT-related goals. These results indicate that while schools have made provision for professional development of teachers in ICT and many teachers are willing and able to use these resources, more support is required to ensure that teachers are fully equipped to use modern technology in their professional activities (Table D3.3 and Chart 3.3).

Integrating computers into classroom teaching

Information and communication technology can be used to facilitate a broad range of teaching and learning methodologies. They can be used in both independent and group learning situations, allow students to work at their own individual pace, develop students' research and analytical skills, and provide

additional opportunities for learning by simulation. Teachers can also integrate computer-related activities into students' homework.

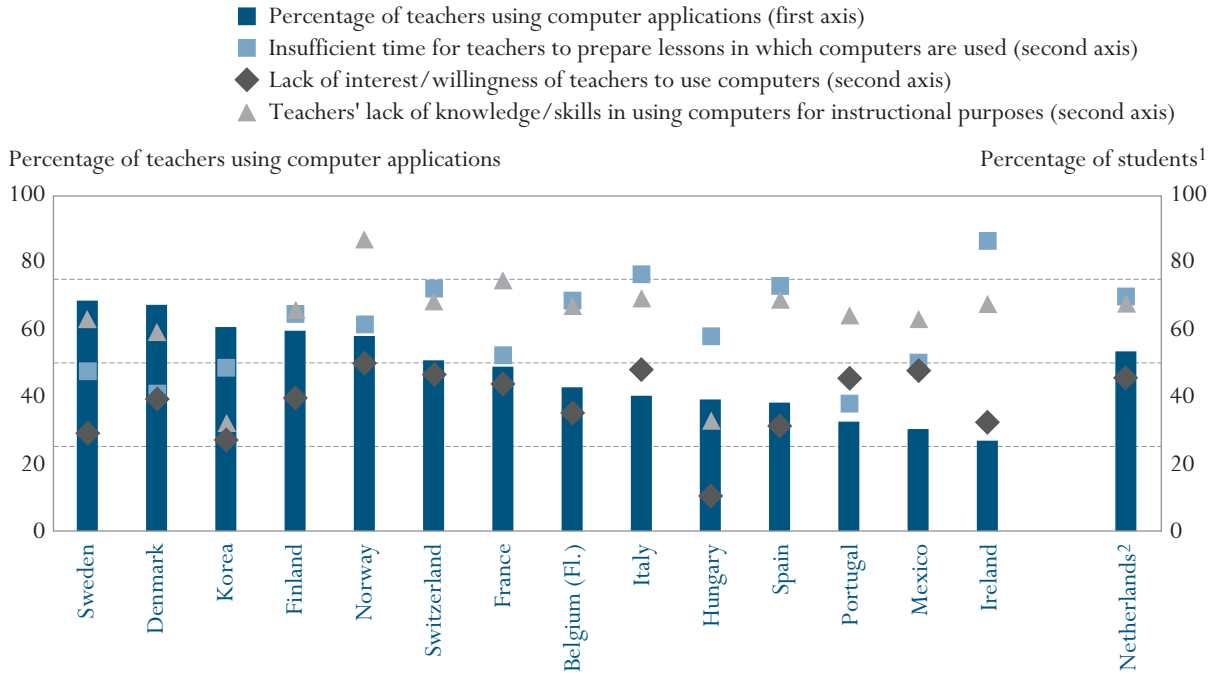
In many schools, computers are mainly used for educational purposes by obtaining information from the Internet…

In ISUSS, school principals were asked the extent to which computers are used for various educational purposes. On average among countries, more than two-thirds of students attend schools where computers are used "a lot" to obtain information from the Internet, but only one third attend schools where computers are used to promote independent learning and only one student in five or less attends schools where computers are used to provide additional instruction or practicing opportunities, or to enhance synergy between different study areas. Notably, however, in the Nordic countries, where higher percentages of teachers participate in professional development than elsewhere (both in ICT related and in other professional development activities), computers are used more regularly for purposes other than just gathering information from the Internet: The main purposes reported are to develop skills of independent learning (39, 42 and 58 per cent in Denmark, Norway and Sweden respectively), and to provide additional instruction and practice (52 and 49 per cent in Norway and Sweden respectively).

Chart D3.3

Teacher-related obstacles to reaching ICT goals in upper secondary education (2001)

Percentage of upper secondary students whose principals reported certain teacher-related obstacles to reaching the school's ICT-related goals



Countries are ranked in descending order of the percentage of teachers using computer applications as reported by the principal.
1. Percentage of students attending schools with various teacher-related obstacles to ICT development.
2. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. Tables D3.2 and D3.3. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

On average, between 52 and 61 per cent of students attend schools where computers are used "a little" to support independent learning, to promote learning by simulation, to provide additional instructional opportunities and to combine school subjects. The frequency of these responses calls attention to the fact that in spite of large investments in computer technology in schools, less progress has been achieved to integrate this into instruction and education. The popularity of Internet use in schools indicates that computers are most easily used as 'mass media'. Compared to more labour intensive uses, surfing on the Internet is interesting and self rewarding. There is limited evidence on the extent to which this contributes to knowledge acquisition. No doubt, some students can find a way to learn faster with the Internet and they should be given the opportunity to do so. In Mexico, 41 per cent of students attend schools where principals report that computers are used a lot to allow students to learn/work at their own pace during lessons. However, time and effort has to be spent on more intensive uses of computers if they are to be worth the investment (Table D3.4).

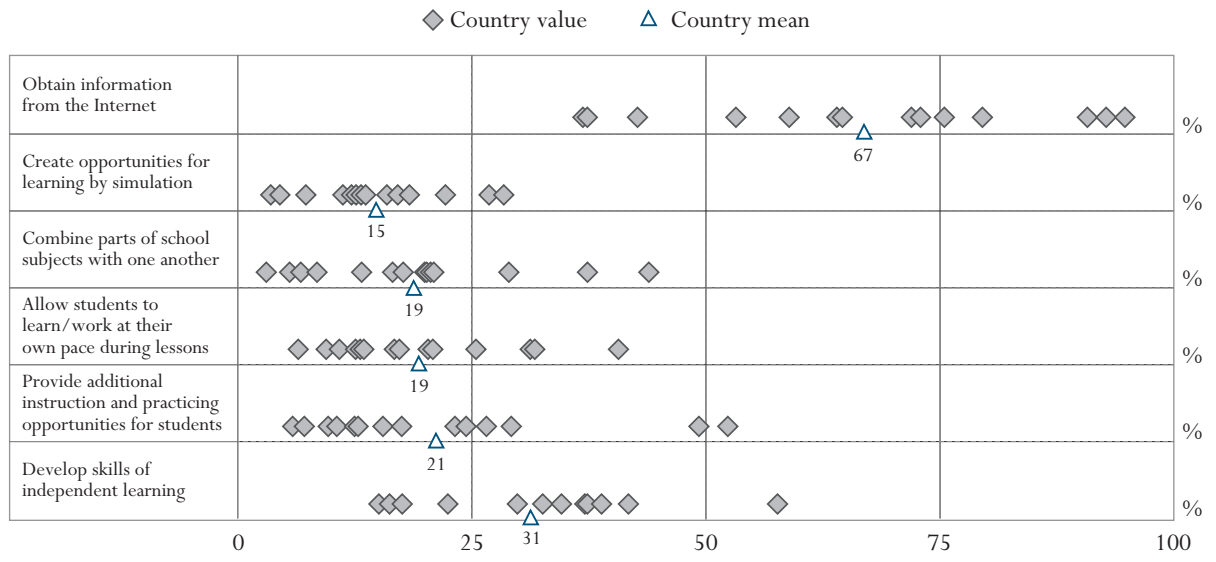
…but school principals reported that not enough time is allowed for teachers to prepare lessons in which computers are used and to integrate computers in classroom instruction.

Inflexible organisation of classrooms and instruction time can be an obstacle to the effective implementation of ICT-related goals in schools. Of the 22 obstacles to the use of information and communication technology in teaching listed in Table D3.2, more than 10 per cent of students attend schools in Finland, Hungary, and Switzerland where school principals reported that insufficient time for teachers to prepare lessons in which computers are used was the *most serious* obstacle to the use of information and communication technology in

Chart D3.4

Use of computers to reach different educational goals in upper secondary education (2001)

Distribution of means for upper secondary students attending schools where principals reported that computers are used a lot to reach various educational goals, by country



Source: OECD ISUSS database, 2003. Table D3.4. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

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teaching. The principals of more than 10 per cent of students in Italy and Sweden reported that difficulties integrating computers into classroom instruction was the *most serious* obstacle. Few school principals reported scheduling problems in computer and Internet time between classes as the *most serious* obstacle (Table D3.2).

Increasingly, students are using computers to help them to complete their schoolwork. Results in ISUSS indicate that students are regularly using computers as a word processing and as a research tool to complete their school assignments. School principals were asked if certain computer-related activities comprised a regular part of students' assignments in upper secondary education. In all countries, more than 85 per cent of students attend schools where operating a computer (saving files, printing, etc.) and writing documents with a word processor form a regular part of their assignments. On average, more than three-quarters of students attend schools where using spreadsheet programmes and sending, searching for and using electronic forms of communication are regularly used in students' assignments. Other activities such as making illustrations with graphics programmes, writing programmes, communicating via e-mail with teachers and other students, and using educational software are used less frequently (Table D3.5). It should be noted, however, that 'regular part of students' assignments' was defined quite liberally by setting 'at least once a month' as a criterion. It is very likely, that a criterion of 'at least once a week' would have yielded different results.

Co-operation in the development of information and communication technology

Co-operation among various stakeholders in technological development in schools is vital to ensure efficiency and cost effectiveness.

The provision of technical support from both inside and outside the school is vital to ensure the successful functioning of computer hardware and software systems in schools. Technical problems must be addressed as soon as they arise to avoid disruption of lessons; new hardware and software must be purchased, installed and maintained on a regular basis; and advice on instructional materials, information exchange, teacher training courses and software and hardware must be sought from specialists and institutions inside or outside the school.

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Many schools are more likely to share knowledge and information on ICT with other educational institutions, rather than with private companies or public organisations.

Results from ISUSS show that in most countries, schools are more likely to share knowledge and information on ICT development with other educational institutions, rather than seek the advice of private companies or other stakeholders. In ISUSS, school principals were asked whether schools co-operate with educational institutions, private companies or other organisations like school authorities, ministries, municipal libraries, etc. in matters of purchasing, exchanging software, hardware and electronic learning material, professional development and the development of learning materials, maintenance or delivery of instruction related to computer technology. In most countries, school principals reported most co-operation with other educational institutions on issues such as ICT-related joint education experience through ICT (*e.g.*, communication and exchange of information, joint research projects) and professional development. More than 50 per cent of students

in Denmark, Finland, Korea and Norway attend schools where principals reported co-operation with other educational institutions through sharing educational experience; and more than 70 per cent of students attended schools in Denmark and Sweden where principals reported co-operation with other educational institutions on ICT-related professional development of teachers. In most countries, particularly Hungary, schools are more likely to co-operate with private companies in more specialised matters of development of software, computer networks, learning environments and learning materials (Table D3.6).

The major obstacles to developing the use of information and communication technology in upper secondary schools

School principals were asked to report the three most serious obstacles to reaching the school's goals related to information and communication technology development. Earlier in this indicator, percentages of students were reported who attend schools where one of a list of 22 potential obstacles were reported as the most serious obstacle to development of the school's ICT-related goals (Table D3.2). To calculate the seriousness of each obstacle in a country, a weight of 3, 2, and 1 was assigned to the obstacles mentioned as the most serious, the second most serious and the third most serious obstacle. Chart D3.5 summarises the obstacles weighted by seriousness in each country.

Insufficient student access to computers still appears to be the most serious obstacle to the integration of ICT…

The overall picture among countries shows that only nine out of 22 problems appear in the international list of most serious problems. Insufficient number of student computers has the highest score of being a problem even in the countries where computers are used in the most versatile way (or just because it is so).

…followed by teachers' lack of knowledge and skills in using computers in instruction.

The second most serious problem seems to be teachers' lack of knowledge and skills in using computers in instruction. The policy implications of this finding are not simple and straightforward. Should countries develop teachers' ICT skills and their skills in using ICT in the classroom? Or is it more important to deploy school computers in the system 'en masse'? Should countries rely upon the Internet for educational software since that is what is most used? Or should they develop co-operation in educational software development to provide material for schools at an acceptable price? What kind of professional development and what blend of development activities and investments into computers and computer-related educational resources would ensure the most cost-effective ways of improving the e-learning environment?

The data on hindering factors (Table D3.2 and Chart D3.5), on the timeline of introducing ICT (Table D3.1) and the variety of use of computers in different countries (Table D3.4) indicate that the integration of new technology and a new technological environment in schools requires both a generally higher level of expenditure on quickly outdating equipment, educational material and skills of using them and innovative approaches to organising teaching and learning in schools.

Chart D3.5

Most serious obstacles to using ICT in teaching in upper secondary education (2001)

Country level 'problem score' of perceived obstacles to reaching computer-related goals based on responses of principals

■ The most serious obstacle
◆ The second most serious obstacle
▲ The third most serious obstacle

	Ratio of students to computers	Ratio of teachers to computers	Hardware and software-related obstacles: Insufficient number of computers for teachers	Insufficient number of computers for students	Outdated (older than 3 years) computers	Not enough variety of software	Shortage of maintenance and technical support	Teacher-related obstacles: Insufficient time for teachers to prepare lessons	Difficulties to integrate computers into classroom instruction	Lack of interest/ willingness of teachers to use computers	Teachers' lack of knowledge/ skills in using computers in instruction
Belgium (Fl.)	7.5	14.7					■		▲		◆
Denmark	2.8	2.1	▲	■							◆
Finland	5.0	1.6		▲				◆			■
France	5.8	8.5		▲			■				◆
Hungary	10.2	5.5	▲		◆			■			
Ireland	13.1	9.4		■			◆				▲
Italy	11.7	14.6		◆					■	▲	
Korea	6.4	0.8			■	◆	▲				
Mexico	16.5	7.2	▲	■	◆						
Norway	3.7	1.7	◆	▲							■
Portugal	14.4	9.6	▲	■							◆
Spain	15.5	5.9		■	▲				◆		
Sweden	3.4	1.3		■	▲						◆
Switzerland	9.0	3.2		▲				■			◆
Netherlands[1]	13.5	2.3						◆		■	▲

1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

D3

Data on use of ICT in schools derive from the OECD's International Survey of Upper Secondary Schools (ISUSS) in 2001.

Definitions and methodologies

Data in this indicator are drawn from the OECD's International Survey of Upper Secondary Schools (ISUSS), a study of mainstream upper secondary education implemented in 4 400 schools of 15 countries in the school year 2001/2002. For more detail see Annex 3 at *www.oecd.org/edu/eag2003*.

Computer includes computers capable of supporting other multimedia equipment such as a CDROM or a sound card and which are used for educational purposes in the school. Computers used only for recreation purposes are excluded.

Information and communication technology (ICT) represents the set of activities and technologies that involve the electronic display, processing and storage of information and communication technology. Global industry, international media and academics increasingly now use ICT to describe this set.

ICT is characterized by unprecedented global flows in information, products, people, capital and ideas.

Educational purpose means the use of computers in planning, organising and evaluating student learning, and the use of computers as a teaching and learning tool by, for example, retrieving demonstration material from the Internet, editing information, preparing documentation material, preparing tasks and tests, correcting student work, etc.

Most serious obstacle to reaching a school's goals related to information and communication technology is the obstacle that principals ranked as first from the three most serious obstacles they were asked about in the ISUSS questionnaire.

Data for Chart D3.5 were calculated from the mean 'difficulty' score of the various obstacles in each country. In the questionnaire, principals were asked to name the three most serious problems they see as obstacles to reaching goals of development of information and communication technology in their school. These responses were weighted by the order of difficulty, *i.e.* they were assigned a value of 3, 2, and 1 to the obstacles named as the most serious obstacles, the second more serious obstacle and the third most serious obstacle, respectively. These school level difficulty scores for each item were aggregated on the country level weighted by the enrolment of upper secondary students. The obstacles having the largest, second largest and third largest aggregate value in the country are shown in Table D3.5.

Table D3.1

Introduction of basic computer applications in upper secondary education (1980-2000)

Cumulative percentages of upper secondary students attending schools where the following information technologies were introduced, by year and total number of upper secondary students enrolled in the school divided by the total number of computers available for all students in the school

	Percentage of upper secondary students attending schools where standard word processing and spreadsheet applications were introduced by...					Percentage of upper secondary students attending schools where the Internet was introduced by...					Percentage of upper secondary students attending schools where an e-mail system accessible for teachers and students was introduced by...					Ratio of students to computers
	1980	1985	1990	1995	2000	1980	1985	1990	1995	2000	1980	1985	1990	1995	2000	
OECD COUNTRIES																
Belgium (Fl.)	3	20	50	83	98	n	n	n	9	99	n	n	n	3	62	8
Denmark	7	25	52	88	98	1	1	4	52	100	n	1	1	32	99	3
Finland	2	19	59	90	100	n	1	6	57	99	n	n	n	36	98	5
France	4	13	58	88	100	n	n	2	12	98	n	n	n	4	73	6
Hungary	n	5	26	80	100	n	n	1	18	100	n	n	n	14	97	10
Ireland	2	11	39	82	100	n	n	2	14	98	n	1	1	8	88	13
Italy	3	12	38	75	97	n	n	1	16	99	n	n	n	8	87	12
Korea	1	4	15	49	97	n	n	n	7	94	n	n	n	6	91	6
Mexico	n	2	15	65	98	n	n	1	9	58	n	n	n	5	49	17
Norway	2	15	49	93	100	n	n	2	39	100	n	n	n	22	90	4
Portugal	n	4	37	85	94	n	n	n	22	95	n	n	n	11	89	14
Spain	n	10	36	73	93	n	n	2	14	94	n	n	n	2	59	16
Sweden	3	14	40	80	90	n	n	2	43	91	n	n	n	20	85	3
Switzerland	3	25	64	93	99	n	n	n	20	96	n	n	n	6	88	9
Country mean	*2*	*13*	*41*	*80*	*97*	*n*	*n*	*2*	*24*	*94*	*n*	*n*	*n*	*13*	*83*	*9*
Netherlands [1]	2	12	40	65	100	n	n	n	15	95	n	n	n	n	60	13

1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D3.2

Most serious obstacle to using ICT in teaching in upper secondary education (2001)

Percentage of upper secondary students attending schools where the principal reported that the most serious obstacle to the use of ICT in teaching is one of the following

	Hardware and infrastructure-related obstacles						Software-related obstacles			Teacher-related obstacles							Organisation/planning-related obstacles (school-related obstacles)					Other
	Insufficient number of computers for teachers' use	Insufficient number of computers for students' use	Outdated (older than 3 years) computers	Internet connection is not available	Not enough space to locate computers appropriately	Weak infrastructure (telecommunications, electricity)	Not enough copies of software for instructional purposes	Not enough variety (types) of software	Poor quality of available software	Insufficient time for teachers to prepare lessons in which computers are used	Difficult to integrate computers into classroom instruction	Difficult to use with low achieving students	No time in teachers' schedule to explore opportunities for using the Internet	Lack of interest/willingness of teachers to use computers	Teachers' lack of knowledge/skills in using computers for instructional purposes	Not enough training opportunities for teachers	Problems in scheduling enough computer time for different classes	No time in the school schedule for using the Internet	Insufficient plans and/or resources to prevent theft and vandalism of computers	Not enough staff to supervise students using computers	Shortage of maintenance and technical support	Lack of support from the governing body or community
OECD COUNTRIES																						
Belgium (Fl.)	8	9	8	n	4	2	2	1	1	4	9	n	1	8	6	n	3	n	n	2	28	4
Denmark	13	18	3	3	5	n	1	7	1	4	3	n	1	3	18	1	5	1	1	3	10	n
Finland	8	10	6	n	6	n	n	2	2	11	4	n	1	12	14	4	5	n	n	3	8	3
France	7	11	4	n	3	4	2	n	n	2	5	n	2	8	10	1	2	1	n	5	30	1
Hungary	13	9	14	n	4	7	6	2	n	14	8	1	2	1	3	1	3	n	n	2	2	6
Ireland	11	19	7	n	4	1	n	n	n	4	6	n	4	4	9	4	6	3	n	1	16	n
Italy	12	14	7	n	8	2	2	1	1	7	11	n	3	14	8	1	n	3	n	2	3	1
Korea	1	10	m	n	3	n	10	12	1	7	6	1	1	5	3	2	2	1	3	1	9	n
Mexico	13	38	11	2	5	2	2	3	n	1	5	1	2	5	4	n	1	n	1	1	n	4
Norway	17	16	5	1	4	3	n	1	1	2	8	n	3	7	15	4	4	n	n	2	4	2
Portugal	14	24	5	1	3	4	3	4	n	2	7	n	1	6	14	n	1	1	n	5	5	n
Spain	8	28	10	1	4	4	1	1	n	5	9	1	2	4	10	1	1	2	n	1	5	n
Sweden	8	18	11	n	5	1	5	n	1	5	11	n	1	4	12	n	7	1	n	3	9	1
Switzerland	6	13	1	1	2	1	1	n	n	18	5	1	5	7	10	3	8	1	n	2	13	1
Country mean	*10*	*17*	*8*	*1*	*4*	*2*	*2*	*3*	*1*	*6*	*7*	*n*	*2*	*6*	*10*	*2*	*3*	*1*	*n*	*2*	*10*	*2*
Netherlands [1]	5	11	3	n	1	4	2	3	1	20	4	n	1	10	17	1	2	n	1	3	10	2

1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D3.3

Teachers' access to information and communication technology in upper secondary education, as reported by school principals (2001)

Ratio of full-time equivalent teachers to computers available only to teachers, percentage of teachers using computer applications, the Internet and e-mail for educational purposes at least once per month, percentage of upper secondary students whose principals reported teacher-related obstacles to reaching the school's ICT-related goals, and percentage of teachers who participated in ICT-related professional development activities in the school year 2000/2001, as reported by school principals

		Availability of computers to teachers	Use of computers by teachers for educational purposes at least once per month [1]			Percentage of upper secondary students whose principals reported the following teacher-related obstacles to reaching the school's information technology-related goals:							Percentage of teachers who participated in ICT-related professional development activities [1]
		Ratio of teachers to computers [1]	Percentage of teachers using computer applications	Percentage of teachers using the Internet	Percentage of teachers using e-mail system	Insufficient time for teachers to prepare lessons in which computers are used	Difficult to integrate computers into classroom instruction	Difficult to use with low achieving students	No time in teachers' schedule to explore opportunities for using the Internet	Lack of interest/willingness of teachers to use computers	Teachers' lack of knowledge/skills in using computers for instructional purposes	Not enough training opportunities for teachers	
OECD COUNTRIES	Belgium (Fl.)	15	42	33	14	69	76	22	41	35	67	25	30
	Denmark	2	67	63	33	41	48	26	29	39	59	38	52
	Finland	2	59	56	33	65	74	27	35	39	66	31	43
	France	9	49	34	13	52	62	26	40	44	75	44	20
	Hungary	5	39	32	15	58	61	23	36	10	33	14	19
	Ireland	9	26	24	12	87	93	20	83	32	67	63	28
	Italy	15	40	28	12	76	80	28	71	48	69	47	23
	Korea	1	60	77	41	49	25	14	9	27	32	25	35
	Mexico	7	30	21	13	50	62	47	65	48	63	42	31
	Norway	2	58	49	16	61	87	9	29	50	87	55	44
	Portugal	10	32	29	14	38	66	43	47	45	64	36	26
	Spain	6	38	30	11	73	81	44	69	31	69	56	29
	Sweden	1	68	62	43	48	70	14	29	29	63	41	37
	Switzerland	3	51	44	29	72	57	32	61	46	68	39	28
	Country mean	*6*	*47*	*42*	*21*	*60*	*67*	*27*	*46*	*37*	*63*	*40*	*32*
	Netherlands [2]	2	53	50	20	74	70	15	38	46	68	19	45

1. Weighted by upper secondary enrolments.
2. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D3

Table D3.4

Use of computers to reach different educational goals in upper secondary education (2001)

Percentage of upper secondary students attending schools where principals reported the use of computers to reach various educational goals

	Develop skills of independent learning			Provide additional instruction and practicing opportunities for students			Allow students to learn/work at their own pace during lessons			Combine parts of school subjects with one another			Create opportunities for learning by simulation			Obtain information from the Internet		
	Not at all	A little	A lot	Not at all	A little	A lot	Not at all	A little	A lot	Not at all	A little	A lot	Not at all	A little	A lot	Not at all	A little	A lot
OECD COUNTRIES																		
Belgium (Fl.)	11	71	18	16	69	15	23	64	13	36	59	6	51	42	7	3	33	64
Denmark	4	57	39	7	70	23	3	66	32	3	53	44	6	72	22	n	7	93
Finland	1	76	22	12	76	13	19	71	9	27	66	7	49	47	4	1	24	75
France	4	61	35	35	59	6	33	55	13	22	57	21	32	52	16	2	34	65
Hungary	16	66	18	80	13	7	41	42	17	28	52	21	29	44	27	4	23	73
Ireland	11	74	15	19	57	24	44	50	6	42	55	3	61	35	4	4	54	43
Italy	5	58	37	14	57	29	31	52	17	12	51	37	23	49	28	7	40	53
Korea	5	58	37	64	25	11	11	58	31	16	68	17	22	61	17	2	18	80
Mexico	13	50	37	27	46	26	17	42	41	21	50	29	51	37	11	39	23	37
Norway	1	57	42	2	45	52	4	76	20	11	69	20	23	64	14	1	5	95
Portugal	8	62	30	18	65	18	25	54	21	23	64	13	28	54	18	8	33	59
Spain	25	59	16	48	43	10	51	38	11	54	38	8	49	38	13	12	51	37
Sweden	3	40	58	2	49	49	9	66	25	8	72	20	17	70	13	3	6	91
Switzerland	7	61	33	18	70	12	18	68	13	12	70	18	30	57	12	5	23	72
Country mean	*8*	*61*	*31*	*26*	*53*	*21*	*23*	*57*	*19*	*22*	*59*	*19*	*34*	*52*	*15*	*6*	*27*	*67*
Netherlands [1]	14	53	33	12	76	12	22	58	19	44	47	9	20	53	26	1	16	83

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D3.5

Computer-related activities in upper secondary education (2001)

Percentage of upper secondary students attending schools where various computer-related activities form a regular part of students' assignments at least once a month

	Operating a computer (saving files, printing, etc.)	Writing documents with a word processor	Making illustrations with graphical programmes	Calculating with spreadsheets programmes	Writing programmes	Communicating via e-mail with teachers and other students	Sending, searching for and using electronic forms of information	Using educational software (*e.g.*, taking tests, exercises)
OECD COUNTRIES								
Belgium (Fl.)	99	95	42	75	27	38	85	60
Denmark	99	99	68	88	14	74	96	70
Finland	97	96	64	61	19	79	96	63
France	94	91	58	88	13	44	86	71
Hungary	97	96	70	86	44	53	92	85
Ireland	87	87	66	62	13	34	67	49
Italy	90	89	56	78	47	39	68	81
Korea	90	92	46	68	14	86	91	74
Mexico	93	93	84	84	60	44	49	74
Norway	99	99	66	82	21	67	88	66
Portugal	94	94	82	81	38	48	75	76
Spain	86	87	60	60	18	23	61	46
Sweden	96	97	61	73	30	87	91	67
Switzerland	93	91	57	70	14	52	82	60
Country mean	*94*	*93*	*63*	*75*	*27*	*55*	*80*	*67*
Netherlands [1]	99	99	39	63	9	48	82	87

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D3.6

Schools' co-operation with other organisations in ICT in upper secondary education (2001)

Percentage of upper secondary students attending schools where principals reported co-operation with various types of organisations

	Other educational institutions in…						Private companies in …						Other organisations in…					
	Donation, exchange and/or joint purchase of ICT-related items	Joint educational experience through ICT (*e.g.*, communication and exchange of information, joint research projects)	Professional development with regard to ICT	Development of software, computer networks, learning environments, learning materials	Joint computer network and/or joint system/network maintenance	Delivery of instruction (*e.g.*, on-line courses)	Donation, exchange and/or joint purchase of ICT-related items	Joint educational experience through ICT (*e.g.*, communication and exchange of information, joint research projects)	Professional development with regard to ICT	Development of software, computer networks, learning environments, learning materials	Joint computer network and/or joint system/network maintenance	Delivery of instruction (*e.g.*, on-line courses)	Donation, exchange and/or joint purchase of ICT-related items	Joint educational experience through ICT (*e.g.*, communication and exchange of information, joint research projects)	Professional development with regard to ICT	Development of software, computer networks, learning environments, learning materials	Joint computer network and/or joint system/network maintenance	Delivery of instruction (*e.g.*, on-line courses)
OECD COUNTRIES																		
Belgium (Fl.)	26	39	31	26	22	12	13	5	8	9	12	1	21	13	23	13	7	9
Denmark	43	71	71	55	42	36	15	1	7	14	8	6	16	14	24	14	27	12
Finland	43	60	48	54	58	37	8	5	13	9	4	3	15	10	16	18	21	5
France	32	48	59	36	50	17	9	4	4	7	5	1	10	3	7	4	5	2
Hungary	23	42	43	25	11	10	21	7	15	24	6	3	24	19	33	37	12	8
Ireland	8	25	43	17	6	8	16	3	5	7	9	2	4	5	14	8	4	3
Italy	16	49	22	32	12	31	8	9	11	6	4	4	5	9	11	8	6	18
Korea	58	54	48	53	42	43	9	6	4	5	29	6	6	9	12	13	11	11
Mexico	18	23	21	17	14	19	6	3	3	3	7	2	7	3	5	3	2	4
Norway	37	56	59	43	54	31	12	3	8	10	4	9	14	15	20	15	24	8
Portugal	18	44	27	22	7	9	12	4	14	14	17	0	16	14	11	15	5	1
Spain	26	36	43	28	21	23	9	4	6	7	10	4	9	6	8	6	2	5
Sweden	24	48	72	32	33	28	10	5	5	12	7	7	14	10	19	11	31	5
Switzerland	28	38	48	33	29	15	10	3	6	11	10	2	9	5	14	14	12	3
Country mean	*29*	*45*	*45*	*34*	*29*	*23*	*11*	*4*	*8*	*10*	*9*	*4*	*12*	*10*	*16*	*13*	*12*	*7*
Netherlands [1]	40	63	62	50	34	23	13	6	6	14	1	1	6	9	12	13	5	1

1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D3

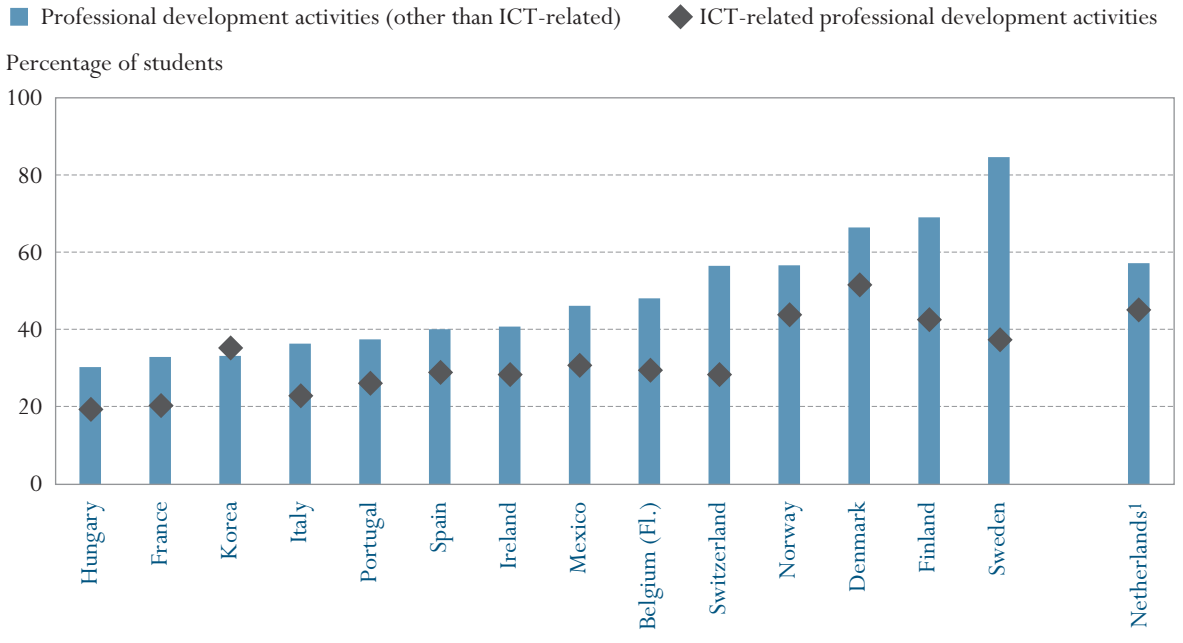
INDICATOR D4: TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT OF TEACHERS

- All OECD countries now require a tertiary-type A or tertiary-type B qualification (ISCED 5A or 5B) in order to enter the teaching profession at the primary level and beyond.
- The duration of pre-service training for primary teachers varies from three years in Austria, the Flemish and French Communities of Belgium, Iceland, Ireland, New Zealand and Spain to five years or more in Finland, France and Germany.
- For lower secondary education, the duration of pre-service training is higher than for primary education in slightly more than half of the countries.

Chart D4.1

Level of teacher participation in professional development activities (2000/2001)

Percentage of teachers in upper secondary education who have participated in professional development activities



Countries are ranked in ascending order of the percentage of upper secondary students whose principals reported that at least one teacher participated in ICT-related (or non-ICT-related) professional development activities during the school year 2000/2001.
Note: Data are weighted by upper secondary student enrolments.
1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. Table D4.3.

Policy context

This indicator shows the current subject matter and qualifications for teachers in public education.

Increasing expectations of schools and teachers, with in addition the current development of knowledge-based societies and economies, require a highly skilled teacher workforce. Ensuring a sufficient number of skilled teachers to educate all children is therefore an important policy concern for all OECD countries.

Although a wide range of external factors influence teaching effectiveness, both initial and continuing professional development of individual teachers are linked to their ability to provide quality instruction. Opportunities for professional development can help existing classroom teachers to maintain or improve their teaching skills.

This indicator focuses on the qualification requirements for new teachers for pre-primary, primary, lower secondary and upper secondary education (general programmes) in the public sector. It examines the type of educational qualifications (*e.g.* ISCED 3, 5B, 5A), the number of full-time equivalent years of pre-service teacher training, and alternative study paths to become a teacher. Where available, the percentage of the current stock of teachers with the required qualification level is also provided.

Evidence and explanations

Pre-service teacher training

All OECD countries now require a tertiary qualification for entry to the teaching profession at the primary level and beyond.

For primary education and beyond, a tertiary qualification is required for entry to the teaching profession in all OECD countries for which data are available. In Austria and Belgium (both Flemish and French Communities), a tertiary-type B qualification is sufficient for entry to the profession in primary education, while in Japan, Korea and Portugal both tertiary-type A and tertiary-type B qualification are possible. In lower secondary education, a tertiary-type B qualification is sufficient in Belgium (and Austria for one programme), while both tertiary type-A and tertiary-type B qualification are accepted in Japan. In the other OECD countries a tertiary-type A qualification is required in lower secondary education. At the upper secondary level (general programmes) almost all OECD countries require a tertiary-type A qualification. The only exception at this level is the Flemish Community of Belgium where both tertiary-type A and B qualifications are possible to enter the teaching profession (Tables D4.1a, D4.1b, D4.1c and D4.1d).

Initial teacher training in the Flemish Community of Belgium

In the Flemish Community of Belgium, initial teacher training is provided at institutes of higher education for pre-primary, primary and lower secondary school teachers teaching specific subjects to children in the first stage and second stage of secondary education (group 1). Initial teacher training for upper secondary school teachers teaching subjects to pupils aged 14-21 in the second, third and fourth stage of secondary education (group 2) is provided at universities and for some disciplines partly at an institute of higher education. Qualified upper secondary school teachers – group 2 – always have a university or Master's degree.

Pre-service teacher training in Austria

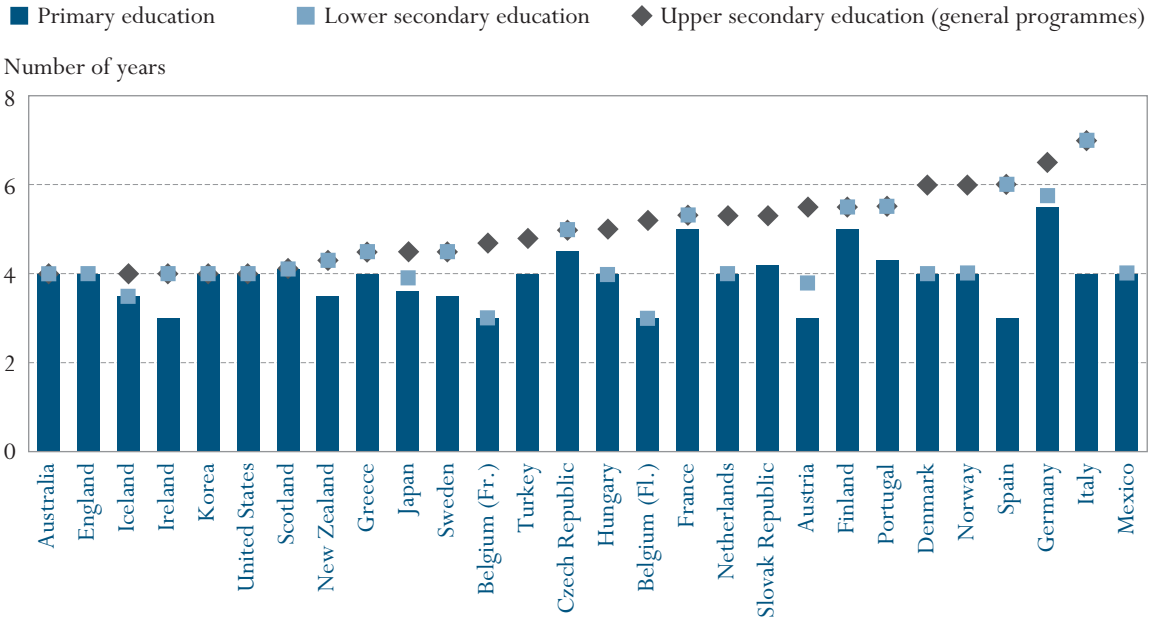
In Austria general compulsory education teachers at the pre-primary, primary and general secondary level (Hauptschule) are trained at teacher training institute colleges (Pädagogische Akademien). Teachers for primary school and the pre-school level have to qualify in all subjects taught at these schools, teachers for general secondary schools qualify for two subjects. Teachers for the academic secondary schools (Allgemeinbildende höhere Schulen) and the medium and higher level secondary and vocational school (Berufsbildende Mittlere und Höhere Schulen) are trained at universities.

Teacher education in Finland

In Finland, university faculties of education and equivalent units called teacher education units provide the pre-service training of all new teachers in public education. This includes the training of kindergarten teachers, class teachers, which mainly provide instruction for grades 1–6 and, subject teachers, who teach one or several subjects in grade 7-9 in basic education and/or in general upper secondary education.

Chart D4.2

Number of years of post-secondary education required to become a teacher (2001)



Countries are ranked in ascending order of the number of years of post-secondary education required to become a teacher in upper secondary education.
Source: OECD. Tables D4.1b-d. See Annex 3 for notes on methodology *(www.oecd.org/edu/eag2003).*

Teaching as an all graduate profession in Ireland

Since 1975, all teachers in Ireland are required to be graduates. The great majority of pre-primary and primary teachers qualify via a Bachelor of Education degree, obtained on the concurrent mode in which both content and teaching methodology are covered. Trainees for secondary teaching, after graduation with a primary degree, follow a one-year course in a university, leading to a Higher Diploma in Teaching.

On average, pre-service training for teachers in secondary education tends to be longer than in primary education.

For primary teachers the average length of pre-service training varies between three years in Austria, Belgium, Iceland, Ireland, New Zealand and Spain to five years or more in Finland, France and Germany (Table D4.1). For lower secondary teachers, the average duration of pre-service training is longer than that in primary education in slightly more than half of the countries, whereas it is the same for all other countries. Moreover, the average duration of teacher training ranges from below four years in the Flemish Community of Belgium and Iceland to six years or more in Spain and Italy. At the upper secondary level of education (general programmes), it varies from three years in Belgium to six years or more in Germany and Italy.

The organisational structure of teacher training varies among and within OECD countries.

Teacher training programmes typically consist of subject specific studies, pedagogical studies and assisted teaching practice, which can be pursued consecutively or concurrently. In the concurrent model the pedagogical and practical training is provided at the same time as the subject matter, while in the consecutive structure the pedagogical and practical training follows the subject matter course. Under this model students usually first obtain a higher education degree (tertiary-type A or B) in one or more subjects before entering pedagogical and practical training.

In primary education, the concurrent model of pre-service training is predominant …

In primary education, the concurrent model of pre-service training is adopted in the majority of OECD countries. In France and Germany, pre-service training is organised according to the consecutive model; in Australia, England, Iceland, Ireland, New Zealand, Portugal, Scotland and the Slovak Republic pedagogical studies can be taken either concurrently with or following completion of subject-matter studies (often following a tertiary-type A degree in a particular subject).

… while in lower secondary education, pre-service training is equally organised concurrently and consecutively …

In lower secondary education, in Belgium, Denmark, Greece, Hungary, Ireland, Italy, Japan, Korea, Mexico, the Netherlands, Turkey and the United States pre-service training is organised according the concurrent model. In Australia, Austria, the Czech Republic, England, Finland, Iceland, New Zealand, Norway, Portugal, Scotland, the Slovak Republic and Sweden pre-service training can be followed either concurrently or consecutively. In France, Germany and Spain, pre-service training is organised according to the consecutive model.

Teacher education in Sweden

In Sweden, a new, integrated teaching degree was established on 1 July 2001, replacing eight of the previous 11 teaching degrees. The new structure means that all future teachers will have a common basic competence, combined with a chosen specialisation in particular subjects/subject areas and/or age groups. The new teaching degree comprises a programme of a minimum of 120 credits (equal to three years of full-time studies) and a maximum of 220 credits, depending on the chosen area and education level.

The teacher-training programme will consist of three well-integrated education areas:

- a general education area, common for all students, covering key topics such as learning, special pedagogy, socialisation and fundamental values, as well as interdisciplinary subject studies (at least 60 credits)
- an education area covering the subject(s) the future teacher intends to teach (at least 40 credits)
- an education area with a specialisation, complementing earlier acquired knowledge (at least 20 credits)

Some phases of the education involve practical activities. At least 10 credits (*i.e.* study weeks) in the general education area and at least 10 credits per orientation should be located at a school.

Within the teacher-training programme there is an alternative route, where the student takes at least 60 credits of subject studies for teaching in a core or programme specific subject and then takes 60 credits in the general education area (see above).

Teacher education in Finland

Both kindergarten teachers and class teachers are educated at the teacher education departments of faculties of education at the universities.

Students in kindergarten teacher education complete the Bachelor of Education degree consisting of 120 credits. The majority of kindergarten teachers work in day-care centres as teachers and educators of children under school age.

Students in class teacher education take a Master's degree (160 credits) at a faculty of education, with education as their main subject. Class teachers may provide instruction in all subjects in forms 1–6 in basic education.

Subject teachers who teach forms 7-9 in basic education as well as general upper secondary education have a Master's degree (160-180 credits). Most subject teachers take a degree in their respective faculties, with the subject of instruction as their major. The department of teacher education is responsible for organising their studies in education. These studies are completed at the same time and in interaction with each other. The 35-credit pedagogical studies are specific for the subject matter.

In upper secondary education (general programmes), the organisation of pre-service training varies more widely among countries. In Austria, Denmark, France, Germany, Iceland, the Netherlands, Norway and Spain pre-service training is organised according to the consecutive model, while in the Flemish Community of Belgium, Greece, Hungary, Ireland, Italy, Japan, Korea, Turkey and the United States, students typically follow the concurrent model. In all other countries, both pre-service training models are in use.

… and in upper secondary education the model used varies widely among countries.

The consecutive model in Germany

In Germany, pre-service training for all levels of education is long. Depending on the ISCED level the first phase takes 7 to 9 semesters study of subjects, didactics and educational science. In the second phase prospective teachers are required to spend between 18 and 24 months in a practical and professional training period (Vorbereitungsdienst).

Three parallel models in Korea

Teachers for primary education are trained at regional teacher training colleges. The primary teacher training course is a four-year course organised according to the concurrent model with an emphasis on foundation skills, general courses in education and the methodology of primary education and skills development.

Teachers for secondary education are trained at universities.

Students can choose between two programmes of study both of the same length (four years) leading to the same level of qualification. They can take the teacher training course organised by the faculty of teacher training. This course follows the concurrent model, *i.e.* students take the subject courses, subject methodology courses and courses in educational science as part of an integrated curriculum.

Students also have the option to follow another concurrent model: while taking a degree course in their area of specialisation, they can also take foundation courses for teacher training to meet teacher qualification requirements. The difference between the two types of programmes is mainly in emphasis: while the former type offers more education and education policy-related courses, the latter type offers more in-depth courses in the specialisation area.

Both programmes can be completed in four years and give a qualification that entitles the holder to teach at the secondary level.

Primary teacher diplomas and secondary teacher diplomas entitle the holder to teach only at the relevant level. To become a primary teacher, a person with a secondary teacher diploma has to complete a second degree course in primary education.

The concurrent and consecutive model of pre-service training in the Netherlands

In the Netherlands initial training for pre-primary, primary and lower secondary education (grade two) teachers is organised according to the concurrent model. In this model, teaching practice is an important component of the pre-service training.

Prospective teachers for upper secondary education (grade one teachers) must have either a first university degree or a grade two qualification in the subject to be studied. For the first option the training consists of university study (four years), followed by postgraduate university teaching training courses (one year). For the second option the training is based on the combination of a grade two teacher training programme followed by a grade one teacher training programme.

Three models of teacher education in Scotland

In Scotland, three models of teacher education exist:

1. The consecutive model: prospective teachers who already hold a university degree and wish to teach in either a primary or a secondary school can follow a one-year course for a Post-Graduate Certificate in Education (PGCE) at a teacher education institution.

2. The concurrent model: to become a primary teacher or a secondary teacher of technology, physical education or music it is possible to take a 4-year course leading to a Bachelor of Education at a teacher education institution. In this route teaching practice is provided throughout the training.

3. The combined model: to become a secondary teacher in certain subjects it is possible to take a combined degree, including subject study, study of education and school experience. In this model most of the teaching practice takes place in the final six months.

In some countries, teachers with a qualification for teaching may also need a licence to access a permanent post in public education.

The licensing status is a measure of teacher qualifications that combines aspects of knowledge about subject matter and about teaching and learning. Obtaining a licence might also depend on passing a (competitive) teacher examination and/or having a short teaching experience. In the latter, licensing typically involves a probation period of at least one school year. The examinations may include in-depth interviews, observation of the candidate's teaching, or a portfolio with records of achievement and work experience.

In France, Germany, Greece, Italy, Japan, Korea, Spain, and depending on the State in Mexico, a competitive examination is necessary to obtain a licence for teaching in public institutions. Mandatory work experience for licensing is required in England, Ireland, Italy, New Zealand, Portugal, Scotland, Spain, Turkey and the United States and can last between one and three years.

Competitive examinations in France

Since 1992, new pre-elementary, elementary and secondary teachers are required to be holders of at least a first degree or equivalent diploma. Students who want to prepare for either the competition for primary school teachers or one of the competitive recruitment examinations for secondary teaching are required to take a one-year teacher training course at an *Institut Universitaire de Formation de Maître* (IUFM).

Examination for public school teachers in Japan

Public school teachers are public officials and are appointed by the prefectural board of education in which the schools are located. Teachers are employed through the teacher appointment examination administered by each prefectural board of education. Procedure and content of the examination differ according to the boards of education, but the examination is generally composed of written tests of teaching subjects and general education subjects, an interview test, and a practical examination.

Mandatory work experience in Spain

The probation period in Spain is part of the requisites to become a civil servant teacher in public education. It takes place immediately after teachers have passed the competitive examinations. It lasts for one school year when the new teacher has to teach in a school taking charge of real groups of pupils and has to prove his/her professional aptitude in practice

Probationary period in the United States

Individuals who successfully complete a 4-year programme of teacher education will generally obtain either a state or local teaching license. However, they usually have a probationary period of up to about three years before they obtain a permanent, tenured position.

Professional development of teachers

Pre-service teacher training is only the first step to become a teaching professional. School practice and further professional development are equally important elements in teacher education. Maintenance of teaching skills, development of new skills, updating knowledge in the subject matter and in teaching methodology as well as in the theory of learning and teaching are all essential elements of professional development.

Given that there are rapid changes in the knowledge base as well as in the knowledge technologies in institutional education, a regular update of professional knowledge and skills for teachers is more important than ever. Education policy makers are increasingly aware of the need for more efficient professional development policies. However, information about professional development for teachers is very limited: it is difficult to know how these activities should be planned, supported and required to support the growing demand for quality in all educational aspects.

With the International Survey of Upper Secondary Schools (ISUSS), OECD attempted for the first time to examine the intensity and variety of professional development activities among countries (for a brief description of the study see Annex 3 at *www.oecd.org/edu/eag2003.)* The following questions were addressed to school principals: how does the school support professional development of teachers; what is the percentage of teachers who participate in professional development activities, and what are the more common types of activities for professional development (Tables D4.2 and D4.3).

A budget for teachers' professional development is provided to all or most schools in the Flemish Community of Belgium, Denmark, Finland, Hungary, Italy, Norway, Sweden and Switzerland …

On average, about 60 per cent of the students attend schools where a separate budget is available for professional development. However, there are some systematic differences between countries: in France, Korea, Portugal and Spain, professional development of teachers is budgeted and organised by professional authorities. By contrast, all schools in the Flemish Community Belgium, Denmark, Hungary and Sweden, and most schools in Finland, Italy, Norway, and Switzerland are provided a budget allocated for professional development. In most countries, the majority of schools provide time for teachers for professional development (Table D4.2). In Portugal, teachers are entitled to a certain number of days of professional development activities.

…and over 90 per cent of students attend schools where the school principal reported that the school organises staff development activities (including research) in Denmark, Norway and Sweden.

Professional development in its wider sense includes research and co-operation of teachers in curriculum development and evaluation projects. Such activities are often organised by the schools themselves. Over 90 per cent of students attend schools where school principals reported such activities in Denmark, Norway and Sweden. By contrast, this type of activity seems less common in France and Korea, where the school principals of about half of upper secondary students or less reported that staff development activities are organised in their schools.

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Professional development activities are characteristic of the school as a learning community.

The modern concept of professional development covers a wide range of professional activities. Some theorists suggest that professional development should be seen as a growth process that involves the acquisition of new knowledge, accumulation of experience, and the art of combining these into creative solutions. In this context, they argue, professional development activities should be seen as an inherent part of school culture.

In ISUSS principals were asked about types of teachers' professional development activities.

In ISUSS, principals were asked about types of professional development activities in which teachers (at least one teacher) had participated during the school year 2000/2001. In the questionnaire the list of types of activities includes the more traditional in-service training and mentoring activities as

well as activities related to exchange of experience, collaborative research and networking activities. Although the actual intensity of the different types of activities could not be assessed within the framework of a school survey, the responses concerning the preferred type and the variety of professional development activities differ significantly among countries.

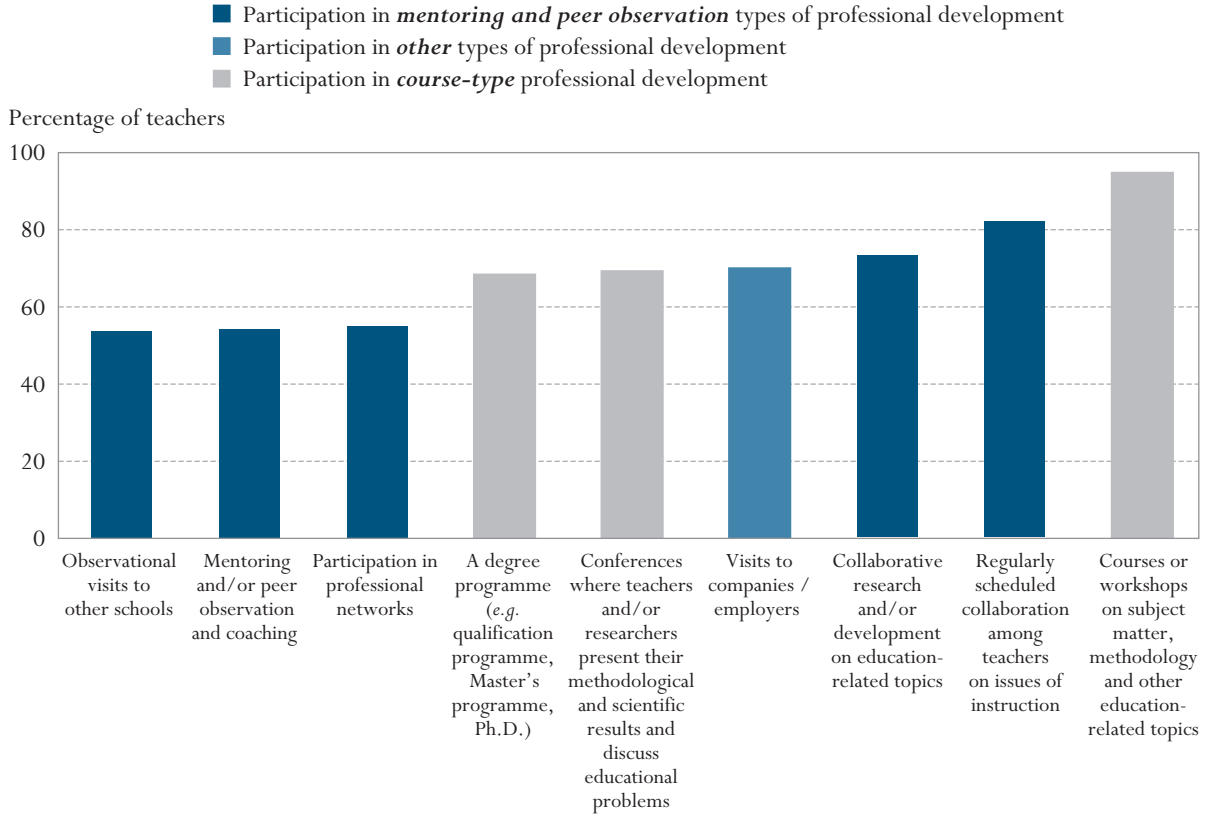
Courses and workshops appear to be the most frequent types of professional development activities…

In-service teacher training is the mostly used mode of professional development and includes, in general, (short) courses or workshops on subject matter, methodology and other education-related topics. In-service teacher training is usually organised by professional bodies attached to education authorities and, recently, by more and more teacher associations, trade unions and private consulting bodies as well. In 10 out of the 14 countries that participated in ISUSS, more than 90 per cent of students attended schools where the principal reported teacher participation in course-type professional development activities (Chart D4.3 and Table D4.3).

Chart D4.3

Common types of professional development activities (2001)

Country mean percentage of upper secondary students attending schools where principals reported that at least one teacher participated in various professional development activities



Subjects are ranked in ascending order of the country mean percentage of upper secondary students attending schools where principals reported that at least one teacher had participated in a professional development activity during the school year 2000/2001.
Source: OECD ISUSS database, 2003. Table D4.3.

…and some teachers participate in degree courses as part of their career strategy.

From the individual teacher's point of view, participation in degree programmes can also be considered as in-service training. Participation in courses resulting in a higher or a specific qualification is usually voluntary, and initiated by teachers themselves as part of their career strategies. Sometimes, participation in a degree programme is recommended or required of teachers: such cases may occur when teachers are temporarily allowed to teach with a qualification lower than normally required because of permanent teacher shortages. The principals of more than 90 per cent of upper secondary students in Hungary, Korea and Sweden, (as opposed to only 28 per cent in Italy) reported that at least one of the teachers had participated in a degree programme during the school year 2000/2001 (Chart D4.4 and Table D4.3).

Observational visits to other schools are a frequent practice in Denmark, Finland, Korea, Norway, Portugal and Sweden. Formal peer observation or mentoring is more often used in Denmark, France, Italy, Korea, Mexico and Switzerland.

There are great differences between countries in the frequency of observational visits to other schools. This type of peer reviewing and exchange of experience has an important role in maintaining and improving professional standards among schools. On average among countries, about 50 per cent of students attend schools where some form of peer reviewing or peer observation of classes is practiced. Observational visits to other schools appear to be most frequent in Korea, Portugal and Sweden, where over 80 per cent of students attend schools where the principal reported that at least one teacher participated in such activities. By contrast one quarter or less of students in France and Ireland attend schools where the principal reported the same. More formal peer observation including mentoring and coaching is arranged, recognised and supported in the schools of 80 per cent or more of upper secondary students in Korea and Switzerland (Chart D4.4 and Table D4.3).

There is regularly scheduled collaboration among teachers on issues of instruction in the overwhelming majority of schools in most of the 14 countries with comparable data.

There is regularly scheduled collaboration among teachers on issues of instruction in the majority of schools in almost all countries with available data. On average, four out of five students attend schools where the principal reported scheduled collaboration among teachers. Often, the context of collaboration is a school research or development project (*e.g.,* curriculum development, introduction of a quality management system, action research, etc.). The principals of less than half of upper secondary students reported that at least one teacher had participated in collaborative research and innovation efforts in Ireland.

Networking of teachers beyond the walls of the school appears to be a less frequent practice in most of the countries with available data. However, the principals of 60 per cent or more of students in Denmark, Finland, Korea, Norway and Sweden reported that teachers had participated in teacher networks outside the school.

In countries for which professional development activities comprise a wide range of different possibilities, participation rates

To what extent do teachers participate in the various types of professional development activities? A large section of professional development activities is related to information and communication technology. According to the assessment from school principals, one third of all upper secondary teachers participated in ICT-related professional activities in the school year 2000/2001 and around one half participated in professional development activities

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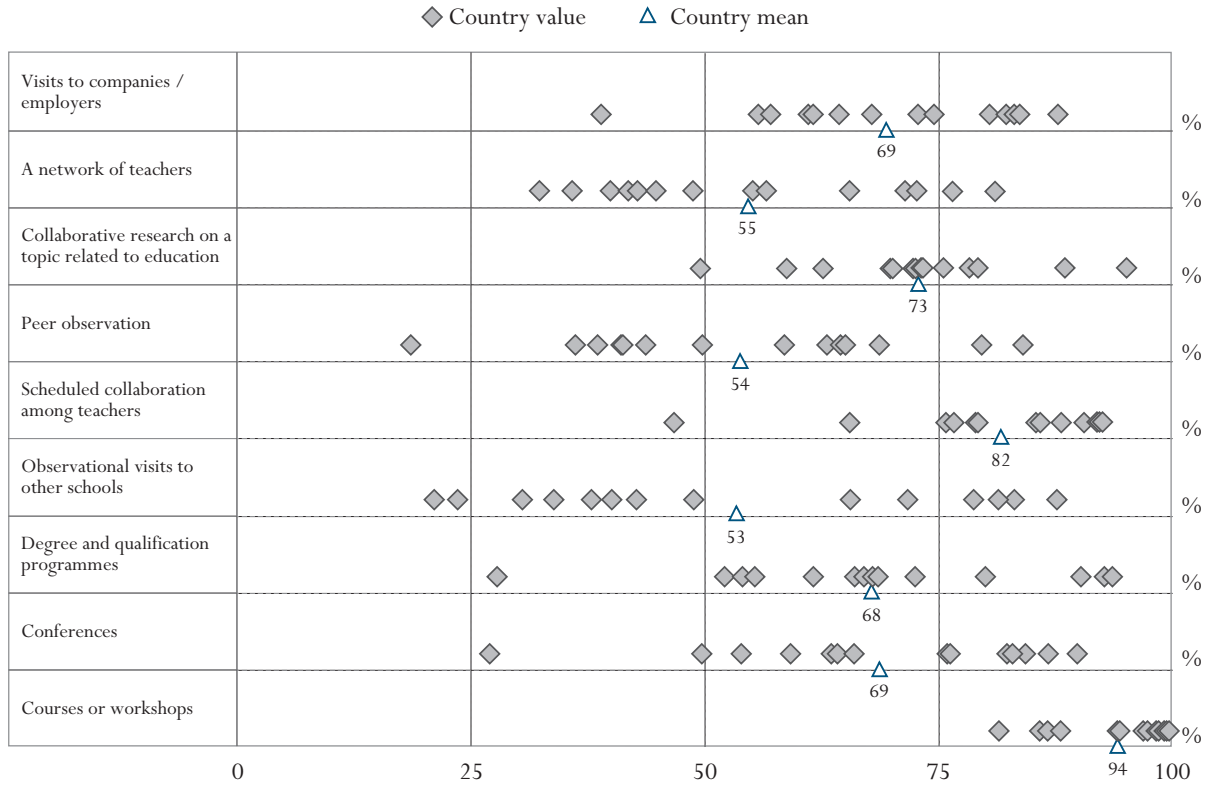
related to other topics. Participation rates are the highest in Denmark, Finland, Norway, and Sweden; in these countries, more than 35 per cent of teachers participated in ICT-related professional development and between 55 and 85 per cent participated in other professional development activities. By contrast, in France, Hungary, Ireland, Italy, Portugal and Spain, participation rates range from 20 to 30 per cent for ICT-related activities and from 30 to 40 per cent for other professional activities. It should be noted that the actual level of participation may be higher than school principals report. Teachers may attend courses without the knowledge of school management, which indeed is the case in France and Spain, where professional development activities are organised by educational authorities via direct contact with teachers (Chart D4.1 and Table D4.3).

are high, especially in Denmark, Finland, Norway and Sweden.

Chart D4.4

Teachers' participation in professional development activities (2001)

Percentage of upper secondary students attending schools where the principal reported that at least one teacher participated in professional development activities (including ICT-related activities) during the school year 2000/2001, by type of activity



Source: OECD ISUSS database, 2003. Table D4.3.

Definitions and methodologies

Data on pre-service training are from the 2002 OECD-INES survey on Teachers and the Curriculum and refer to the school year 2000-2001.

The duration of pre-service training for new teachers refers to the typical number of full-time equivalent years of teacher training required to become a fully qualified teacher according to the formal policy of the country. In systems where the teacher has to work before being fully qualified, these years of practice do not have to be included. Deviations from this definition are reported in Annex 3.

Probation period refers to the employment status of starting teachers who get tenure on condition of satisfactory performance during a certain period defined by law or regulations. This mandatory work experience is required to be a licensed teacher in some countries.

Competitive examination refers to teacher examinations organised by local, regional or national authorities in order to select teachers for the public education system.

Parts of pre-service studies

Pre-service teacher training typically consists of three parts:

- ***subject specific studies*** covering general studies and theoretical and in-depth studies of the subject(s) to be taught;
- ***pedagogical studies*** covering the theoretical foundations of education and teaching as well as studies of subject matter methodology and other education specific studies (*e.g.* education of special needs students, educational measurement, educational planning, etc.).
- ***assisted teaching practice*** covering the teaching practice under the supervision of a teacher trainer which is required to obtain a teacher diploma. It does not include, however, post-qualification teaching practice required to become a licensed teacher (*e.g.* to be able to take a permanent post in public education). An important distinction may be that student teachers have typically partial responsibility or part-time jobs (*e.g.* their teacher supervisor is responsible for the class). Typically student teachers are not salaried teachers even if they receive some allowance for the (usually part-time) work they are doing at school. By contrast, teachers in their probation year(s) are typically salaried, fully qualified and have jobs of full responsibility.

The structure of pre-service teacher training

In most OECD countries, pre-service teacher training is organised according to two models:

- the ***concurrent model*** in which theoretical and practical training in education pedagogy is provided at the same time as study of the subject matter
- the ***consecutive model*** in which theoretical and practical training follows the subject matter course. Under this model students usually first obtain a higher education degree (tertiary-type A or B) in one or more subjects before they train in the theory and practice of education.

Professional development of teachers

Professional development in this indicator refers to any activity that develops an individual's skills, knowledge, expertise and other characteristics as a teacher. These include personal study and reflection, collaborative development of new approaches, as well as formal courses.

Data are drawn from OECD's International Survey of Upper Secondary Schools implemented in the 2001/2002 school year in 15 countries. For a brief description of the survey see Annex 3 at *www.oecd.org/edu/eag2003*.

Data on the professional development of teachers are from OECD's International Survey of Upper Secondary Schools (ISUSS).

Table D4.1a

Pre-service teacher training requirements in pre-primary education (2001)

System-level information on types of teacher training programmes and percentage of teachers with different types of qualifications

	Cumulative years of education required for entry into the training programme	Duration of training programme in years	Consecutive (—) or concurrent (| |)	Mandatory work experience as licensing requirement in years	Competitive examination to enter the public education system	Year of introduction	Percentage of current teacher stock with this type of qualification	ISCED type of final qualification	Valid for programme level/type
OECD COUNTRIES									
Australia	12-13	4	| |	a	No	1994-1998	65%	5A	0
Austria	8	5	| |	a	No	a	80%	3A	0
	12	3	| |	a	No	1999	73%	5B	0 ,1,2,3 voc
Belgium (Fl.)	12	3	| |	a	No	1997-1998	98%	5B	0
Belgium (Fr.)	12	3	| |	a	No	a	a	5B	0
Czech Republic	9	4	| |	a	No	m	m	3A	0
	13	3	| |	a	No	1998	m	5A	0
	13	5	| |	a	No	m	m	5A	0
	13	3	| |	a	No	1995	m	5B	0
Denmark	12	3.5	| |	a	No	a	a	5A	0
England	13	3-4	| |	1	No	1969	m	5A	0,1,2,3
	13	4	—	1	No	1973	m	5A	0,1,2,3
Finland	12	3	| |	a	No	2000	a	5A	0
	12	5	| |	a	No	1998	a	5A	0
France	12	5	—	a	Yes	1992	a	5A	0,1
Germany	10	2-3	| |	a	Yes	m	m	5B	0
Greece	12	4	| |	a	Yes	2000	m	5A	0
Hungary	12	3	| |	a	No	a	80%	5A	0
Iceland	14	3	| |	m	No	a	m	5A	0
Ireland	12	3	| |	1	No	1975	m	5A	0,1
	12	4	—	a	No	m	m	5A	0,1
Italy	13	4	| |	1	Yes	1996	a	5A	0
Japan	12	2	| |	a	Yes	1949	75%	5A,5B	0
	12	4	| |	a	Yes	1949	19%	5A	0
	12	6	| |	a	Yes	1988	n	5A	0
Korea	12	2	| |	a	Yes	a	m	5B	0
	12	4	| |	a	Yes	a	m	5A	0
Mexico	12	4	| |	a	Yes/No	1999	m	5A	0
Netherlands	11	4	| |	a	No	1986	a	5A	0,1
New Zealand	12	3	| |	2	No	1988	m	5B	0
	13	4	| |	2	No	1996	m	5A	0,1
Norway	m	m	m	m	m	m	m	m	m
Portugal	12	3	| |	a	No	1997	m	5B	0,1 (1st c)
Scotland	12	3.75-4.75	—	≥ 1	No	m	m	5A	0,1,2,3
	12	4	| |	≥ 1	No	m	m	5A	0,1,2,3
Slovak Republic	8-9	4	| |	a	No	m	98%	3A	0
	12	5	| |	a	No	1996	1%	5A	0
	12	4	| |	a	No	1996	1%	5A	0
Spain	12	3	| |	1	Yes	1991	95%	5A	0,1
Sweden	12	3.5	| |	a	No	2001	a	5A	0,1
Switzerland	m	m	m	m	m	m	m	m	m
Turkey	11-13	4	| |	1	No	1992	a	5A	0
United States	12	4	| |	≤ 3	No	a	90%	5A	0,1

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D4.1b

Pre-service teacher training requirements in primary education (2001)

System-level information on types of teacher training programmes and percentage of teachers with different types of qualifications

	Cumulative years of education required for entry into the training programme	Duration of training programme in years	Consecutive (—) or concurrent (| |)	Mandatory work experience as licensing requirement in years	Competitive examination to enter the public education system	Year of introduction	Percentage of current teacher stock with this type of qualification	ISCED type of final qualification	Valid for programme level/type
OECD COUNTRIES									
Australia	12-13	4	| |	a	No	1994-1998	53%	5A	1
	13	4	—	a	No	1994-1995	8%	5A	1
Austria	12	3	| |	a	No	1999	73%; 91%	5B	0 ,1,2,3 voc
Belgium (Fl.)	12	3	| |	a	No	1997-1998	86%	5B	1
Belgium (Fr.)	12	3	| |	a	No	a	a	5B	1
Czech Republic	13	4	| |	a	No	m	m	5A	1
Denmark	12	4	| |	a	No	a	a	5A	1,2
England	13	3-4	| |	1	No	1969	m	5A	0,1,2,3
	13	4	—	1	No	1973	m	5A	0,1,2,3
Finland	12	5	| |	a	No	1995	a	5A	1
France	12	5	—	a	Yes	1992	a	5A	0,1
Germany	12-13	5.5	—	a	Yes	m	m	5A	1
	12-13	5.5-6.5	—	a	Yes	m	m	5A	1,2
Greece	12	4	| |	a	Yes	2000	m	5A	1
Hungary	12	4	| |	a	No	a	80%	5A	1, 2 (Gr 5-6)
Iceland	14	3	| |	m	No	a	m	5A	1,2
	14	4	—	m	No	a	m	5A	1,2
Ireland	12	3	| |	1	No	1975	m	5A	0,1
	12	4.5	—	a	No	m	m	5A	0,1
Italy	13	4	| |	1	Yes	1996	a	5A	1
Japan	12	2	| |	a	Yes	1949	18%	5A,5B	1
	12	4	| |	a	Yes	1949	78%	5A	1
	12	6	| |	a	Yes	1988	1%	5A	1
Korea	12	4	| |	a	Yes	a	m	5B	1
	12	4	| |	a	Yes	a	m	5A	1
Mexico	12	4	| |	a	Yes/No	1997	m	5A	1
Netherlands	11	4	| |	a	No	1986	a	5A	0,1
New Zealand	13	3	| |	2	No	1997	m	5A	0,1
	13	4	—	2	No	1996	m	5A	1,2
Norway	13	4	| |	a	No	1998	79%	5A	1,2
Portugal	12	3	| |	a	No	1997	m	5B	0,1 (1st c)
	12	4	| |	1	No	1997	m	5B	1 (2nd c)
	12	6	—	1	No	1988	m	5A	1 (2nd c)
Scotland	12	3.75-4.75	—	≥ 1	No	m	m	5A	0,1,2,3
	12	4	| |	≥ 1	No	m	m	5A	0,1,2,3
Slovak Republic	12-13	4	| |	a	No	m	93%	5A	1
	12-13	7	—	a	No	m	7%	5A	1
Spain	12	3	| |	1	Yes	1991	90%	5A	0,1
Sweden	12	3.5	| |	a	No	2001	a	5A	0,1
Switzerland	m	m	m	m	m	m	m	m	m
Turkey	11-13	4	| |	1	No	1992	m	5A	1 (6-10 yrs)
	11-13	4	| |	1	No	1982	m	5A	1 (9-13 yrs)
United States	12	4	| |	≤ 3	No	a	90%	5A	1

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D4.1c

Pre-service teacher training requirements in lower secondary education (2001)

System-level information on types of teacher training programmes and percentage of teachers with different types of qualifications

OECD COUNTRIES

	Cumulative years of education required for entry into the training programme	Duration of training programme in years	Consecutive (—) or concurrent (||)	Mandatory work experience as licensing requirement in years	Competitive examination to enter the public education system	Year of introduction	Percentage of current teacher stock with this type of qualification	ISCED type of final qualification	Valid for programme level/type
Australia	12-13	4	||	a	No	1976-1998	>41%	5A	2
	12	4	||	a	No	1998	5%	5A	2,3
	13-15	4	—	a	No	Varies	>17%	5A	2
Austria	12	3	||	a	No	1999	91%	5B	0 ,1,2,3 voc
	12	5.5	—	a	No	a	100%	5A	2,3
Belgium (Fl.)	12	3	||	a	No	1997-1998	47%	5B	2
	a	2-4	||	a	No	1988-1989	20%	5B	2,3
Belgium (Fr.)	12	3	||	a	No	a	a	5B	2
Czech Republic	13	5	||	a	No	m	m	5A	2
	13	7	—	a	No	m	m	5A	2
Denmark	12	4	||	a	No	a	a	5A	1,2
England	13	3-4	||	1	No	1969	m	5A	0,1,2,3
	13	4	—	1	No	1973	m	5A	0,1,2,3
Finland	12	5	||	a	No	1980	a	5A	2
	12	6	—	a	No	1980	a	5A	2
France	12	5	—	a	Yes	1991	a	5A	2,3
	12	5	—	a	Yes	1991	a	5A	2,3
	12	6	—	a	Yes	1988	a	5A	2,3
Germany	12-13	5.5-6.5	—	a	Yes	m	m	5A	1,2
	12-13	6.5	—	a	Yes	m	m	5A	2,3
Greece	12	4	||	a	Yes	2000	m	5A	2,3
	12	5	||	a	Yes	2000	m	5A	2,3
Hungary	12	4	||	a	No	a	80%	5A	2
Iceland	14	3	||	m	No	a	m	5A	1,2
	14	4	—	m	No	a	m	5A	1,2
Ireland	12	4	||	1	No	1922	m	5A	2,3
Italy	13	6-8	||	1	Yes	1996	a	5A	2
Japan	12	2	||	a	Yes	1949	7%	5A,5B	2
	12	4	||	a	Yes	1949	91%	5A	2
	12	6	||	a	Yes	1988	2%	5A	2
Korea	12	4	||	a	Yes	a	m	5A	2,3
	12	4	||	a	Yes	a	m	5A	2,3
	16	2-2.5	||	a	Yes	a	m	5A	2,3
Mexico	12	4	||	a	Yes/No	a	m	5A	2
	12	6	||	a	Yes/No	a	m	5A	2
Netherlands	11	4	||	a	No	1986	a	5A	2
New Zealand	13	4	—	2	No	1996	m	5A	1,2,3
	13	5	||	2	No	1998	m	5A	2,3
	13	4	||	2	No	1975	m	5A	2,3
Norway	13	4	||	a	No	1998	61%	5A	1,2
	13	4	—	a	No	1998	25%	5A	2,3
Portugal	12	5	||	a	No	m	m	5A	2,3
	12	6	—	a	No	1988	m	5A	2,3
Scotland	12	3.75-4.75	—	≥ 1	No	m	m	5A	0,1,2,3
	12	4	||	≥ 1	No	m	m	5A	0,1,2,3
	12	3.5-4.5	||	≥ 1	No	m	m	5A	1,2,3
Slovak Republic	12-13	5	||	a	No	m	91%	5A	2,3
	12-13	7	—	a	No	m	9%	5A	2,3
Spain	12	6	—	1	Yes	1991	80%	5A	2,3
	12	4	—	1	Yes	1991	20%	5A	2
Sweden	12	4.5	||	a	No	2001	a	5A	2,3
	12	4.5	—	a	No	2001	a	5A	2,3
Switzerland	m	m	m	m	m	m	m	m	m
Turkey	a	a	a	a	a	a	a	a	a
	11-13	4	||	1	No	1982	m	5A	1
United States	12	4	||	≤ 3	No	a	90%	5A	2,3

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D4.1d

Pre-service teacher training requirements in upper secondary education, general programmes (2001)

System-level information on types of teacher training programmes and percentage of teachers with different types of qualifications

	Cumulative years of education required for entry into the training programme	Duration of training programme in years	Consecutive (—) or concurrent (||)	Mandatory work experience as licensing requirement in years	Competitive examination to enter the public education system	Year of introduction	Percentage of current teacher stock with this type of qualification	ISCED type of final qualification	Valid for programme level/type
Australia	12-13	4	||	a	No	1976-1998	49%	5A	3
	12-13	4	—	a	No	1976-1994	19%	5A	3
	12	4	||	a	No	1998	5%	5A	2,3
Austria	12	5.5	—	a	No	a	100%	5A	2,3
Belgium (Fl.)	12	4.6-5.8	||	a	No	1997-1998	n	5A	3
	12	4.6-5.8	||	a	No	1997-1998	29%	5A	3
	a	2-4	||	a	No	1988-1989	20%	5B	2,3
Belgium (Fr.)	12	4.24	– or ||	a	No	a	m	5A	3
	12	5.24	– or ||	a	No	a	m	5A	3
Czech Republic	13	5	||	a	No	m	m	5A	3
	13	7	—	a	No	m	m	5A	3
Denmark	12	4	—	a	No	a	a	5A	3
England	13	3-4	||	1	No	1969	m	5A	0,1,2,3
	13	4	—	1	No	1973	m	5A	0,1,2,3
Finland	12	5	||	a	No	1984	a	5A	3
	12	6	—	a	No	1984	a	5A	3
France	12	5	—	a	Yes	1991	a	5A	2,3
	12	5	—	a	Yes	1991	a	5A	2,3
	12	6	—	a	Yes	1988	a	5A	2,3
Germany	12-13	6.5	—	a	Yes	m	m	5A	3
Greece	12	4	||	a	Yes	2000	m	5A	2,3
	12	5	||	a	Yes	2000	m	5A	2,3
Hungary	12	5	||	a	No	a	80%	5A	3
Iceland	14	4	—	m	No	a	m	5A	3
Ireland	12	4	||	1	No	1922	m	5A	2,3
Italy	13	6-8	||	1	Yes	1996	a	5A	3
Japan	12	4	||	a	Yes	1949	72%	5A	3
	12	6	||	a	Yes	1988	28%	5A	3
Korea	12	4	||	a	Yes	a	m	5A	2,3
	12	4	||	a	Yes	a	m	5A	2,3
	16	2-2.5	||	a	Yes	a	m	5A	2,3
Mexico	m	m	m	m	m	m	m	m	m
Netherlands	11	5.5	—	a	No	1986	m	5A	3
	11	5	—	a	No	1987	m	5A	3
New Zealand	13	4	—	2	No	1996	m	5A	1,2,3
	13	5	||	2	No	1998	m	5A	2,3
	13	4	||	2	No	1975	m	5A	2,3
Norway	13	4	—	a	No	1998	m	5A	2,3
	13	6	—	a	No	1998	m	5A	3
Portugal	12	5	||	a	No	m	m	5A	2,3
	12	6	—	a	No	1988	m	5A	2,3
Scotland	12	3.75-4.75	—	≥ 1	No	m	m	5A	0,1,2,3
	12	4	||	≥ 1	No	m	m	5A	0,1,2,3
	12	3.5-4.5	||	≥ 1	No	m	m	5A	1,2,3
Slovak Republic	12-13	5	||	a	No	m	87%	5A	2,3
	12-13	7	—	a	No	m	13%	5A	2,3
Spain	12	6	—	1	Yes	1991	a	5A	2,3
Sweden	12	4.5	||	a	No	2001	a	5A	2,3
	12	4.5	—	a	No	2001	a	5A	2,3
Switzerland	m	m	m	m	m	m	m	m	m
Turkey	11-13	4	||	1	No	1992	m	5A	3 (14-16 yrs)
	11-13	5	||	1	No	1998	m	5A	3 (14-16 yrs)
	11-13	5.5	||	1	No	1998	m	5A	3 (14-16 yrs)
United States	12	4	||	≤ 3	No	a	90%	5A	2,3

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

OECD COUNTRIES

D4

Table D4.2

Schools supporting professional development (2001)

Percentage of upper secondary students whose school principals reported that the school supports professional development of teachers, by type of support provided

		The school has a separate budget for the professional development of teachers	The school provides time for teachers for professional development	The school organises staff development activities (*e.g.*, research)	The school collects and circulates information on professional development courses in the school district
OECD COUNTRIES	Belgium (Fl.)[1]	98	90	88	98
	Denmark	96	100	97	92
	Finland	79	96	73	95
	France	19	69	59	89
	Hungary	84	89	81	98
	Ireland	45	90	74	83
	Italy	81	83	90	84
	Korea	29	59	40	90
	Mexico	37	80	87	94
	Norway	80	95	94	91
	Portugal	8	34	75	96
	Spain	17	33	72	99
	Sweden	98	85	94	97
	Switzerland	86	91	87	90
	Country mean	***61***	***78***	***79***	***93***
	Netherlands[2]	92	90	94	99

Note: Weighted by upper secondary enrolments.

1. Every school in Belgium (Fl.) receives a budget for the professional development of teachers from the Education Department.
2. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D4

Table D4.3

Teachers' participation in professional development activities in upper secondary education (2001)

Percentage of teachers in upper secondary education who participated in professional development activities.
Pecentage of upper secondary students attending schools where principals reported that at least one teacher participated in professional developement activities (including ICT-related activities) during the school year 2000/2001, by type of activity

	Percentage of upper secondary teachers who participated in professional development activities in the school year 2000/2001		Participation in course-type professional development			Participation in mentoring and peer observation types of professional development					Participation in other types of professional development
	ICT-related professional development activities	Other professional development activities	Courses or workshops on subject matter, methodology and other education-related topics	Conferences where teachers and/or researchers present their methodological and scientific results and discuss educational problems	A degree programme (*e.g.*, qualification programme, Master's programme, Ph.D.)	Observational visits to other schools	Regularly scheduled collaboration among teachers on issues of instruction	Mentoring and/or peer observation and coaching as part of a formal arrangement recognised or supported by the school or educational authorities	Collaborative research and/or development on a topic related to education	A network of teachers (*e.g.*, one organised by an outside agency or over the Internet)	Visits to companies/employers
OECD COUNTRIES											
Belgium (Fl.)	29.6	47.6	98.8	64.3	67.1	30.6	85.6	43.7	73.4	42.9	72.9
Denmark	51.7	66.1	100.0	86.9	72.6	78.8	92.9	68.8	95.3	76.7	74.6
Finland	42.7	68.7	99.6	76.5	61.7	71.9	65.6	38.6	88.7	71.5	87.9
France	20.2	32.5	86.0	27.1	52.3	23.6	79.4	64.7	72.3	44.8	61.7
Hungary	19.5	29.9	94.3	84.5	93.7	42.8	90.7	58.6	58.8	40.0	57.2
Ireland	28.4	40.4	94.5	66.0	68.1	21.1	46.8	18.6	49.6	55.3	55.8
Italy	22.9	35.9	88.2	63.6	27.9	38.0	92.5	65.1	79.5	56.6	61.2
Korea	35.3	32.8	98.5	83.1	92.9	87.8	88.3	84.2	69.9	72.8	39.0
Mexico	30.8	45.7	97.6	59.4	68.7	40.2	86.0	63.2	72.6	35.8	64.4
Norway	43.9	56.2	99.4	82.5	66.1	65.8	92.2	41.2	78.5	65.6	82.4
Portugal	26.1	36.9	81.7	54.0	80.2	81.5	76.0	49.9	62.7	41.9	83.8
Spain	28.8	39.7	86.8	49.9	55.4	33.9	79.2	36.3	75.7	32.4	68.0
Sweden	37.4	84.3	97.0	90.0	90.4	83.3	76.8	41.4	73.6	81.2	83.3
Switzerland	28.3	56.1	97.5	76.1	54.1	48.9	92.8	79.8	70.0	48.9	80.6
Country mean	***31.8***	***48.1***	***94.3***	***68.8***	***67.9***	***53.4***	***81.8***	***53.9***	***72.9***	***54.7***	***69.5***
Netherlands[1]	45.2	56.8	98.3	73.3	43.9	22.2	85.1	44.7	76.8	42.8	61.3

Note: Weighted by upper secondary enrolments.
1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D4

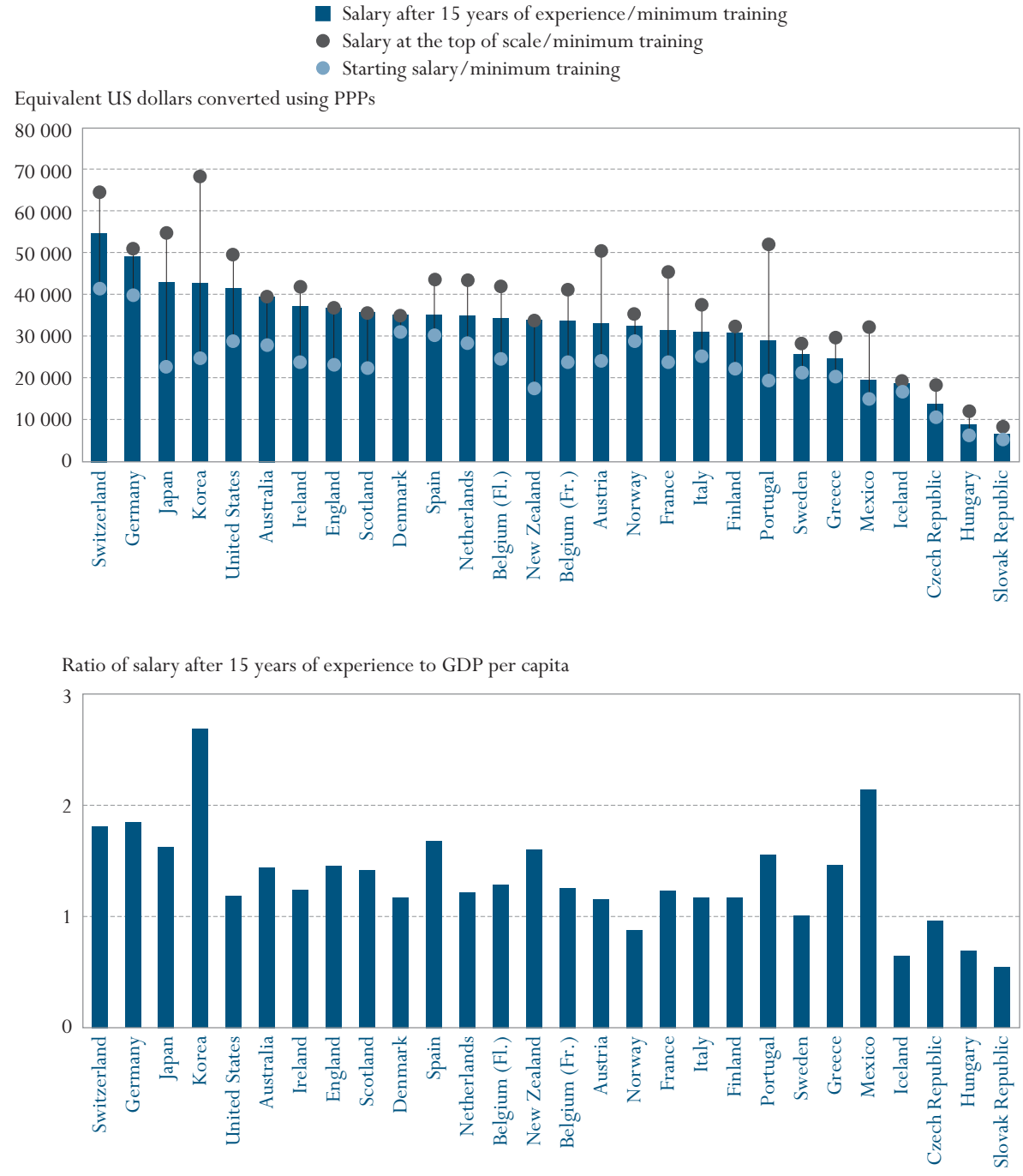
INDICATOR D5: SALARIES OF TEACHERS IN PUBLIC PRIMARY AND SECONDARY SCHOOLS

- The mid-career salaries of lower secondary teachers range from less than US$ 10 000 in Hungary and the Slovak Republic to US$ 40 000 and more in Germany, Japan, Korea, Switzerland and the United States.
- An upper secondary teacher's salary per teaching hour is, on average, 40 per cent higher than that of a primary teacher, but the difference varies from 10 per cent or less in Australia, New Zealand, Scotland, the Slovak Republic, Turkey and the United States to around 60 per cent or more in the Flemish Community of Belgium, France, Hungary, Iceland, Korea, the Netherlands and Spain.
- In lower secondary education, 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.
- 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.

Chart D5.1

Teachers' salaries in lower secondary education (2001)

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' salaries in lower secondary education after 15 years of experience and minimum training.
Source: OECD. Table D5.1. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

D5

Policy context

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.

Education systems employ a large number of professionals in an increasingly competitive market. Ensuring that there are 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 Hungary and the Slovak Republic, to over US$ 50 000 in Switzerland (Table D5.1).

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 (Indicator D6). 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$ 37 in primary, US$ 45 in lower secondary, and US$ 52 in upper secondary general education. In primary education, Hungary, Mexico, the Slovak Republic and Turkey have relatively low salary costs per teaching hour (US$ 19 or less). By contrast, costs are relatively high in Denmark, Germany, Japan and Korea (US$ 50 or more). There is even more variation in salary cost per teaching hour in general upper secondary schools, ranging from US$ 20 or less in Hungary, the Slovak Republic and Turkey to US$ 80 or more in Japan and Korea (Table D5.1).

The average statutory salary per teaching hour after 15 years of experience is US$ 37 in primary, US$ 45 in lower secondary, and US$ 52 in upper secondary general education.

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 among countries.

Comparing statutory salaries relative to GDP per capita reveals that…

Mid-career salaries for teachers in basic (primary and lower secondary) education relative to GDP per capita are lowest in Hungary (0.69), Iceland (0.64), Norway (0.88) and the Slovak Republic (0.55) and highest in Korea (2.69) and Turkey (2.12). In upper secondary general education, the lowest ratios are found in Hungary (0.87), Norway (0.88) and the Slovak Republic (0.55), and mid-career salaries relative to the GDP are highest in Korea (2.69) and Switzerland (2.11) (Table D5.1).

…mid-career salaries for teachers in basic education are low in Hungary, Iceland, Norway and the Slovak Republic, but relatively high in Korea and Turkey.

Some countries, such as the Czech Republic, Hungary, the Slovak Republic and Turkey 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 and Portugal). Iceland has relatively high GDP per capita and lower than OECD average teachers' salaries, whereas Switzerland and the United States have a high GDP per capita and high teachers' salaries (Chart D5.1 and Table D5.1).

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

When comparing an index of change between 1996 and 2001 for teachers' salaries and GDP per capita, teachers' salaries have, in general, grown more slowly than GDP per capita but the inverse situation is prevailing in some countries such as the Czech Republic, Germany, Italy, Japan, Mexico and New Zealand. In the French Community of Belgium, France, Ireland, the Netherlands and Switzerland, the index of change between 1996 and 2001 in teachers' salaries is even decreasing related to GDP per capita over the same period (Chart D5.2).

The International Standard Classification of Occupations (ISCO-88) identifies ten occupational groups, each of which is defined by a set of tasks and duties. Occupational groups are further defined in ISCO-88 by the skills needed by an individual to carry out the tasks and duties in a given job. Such skills could be acquired through formal education or through informal training and experience, and are divided into four broad skill levels. Skill levels 3 and 4 require tertiary-level qualifications (ISCED 5 and 6). These skill levels are required in occupations classified as ISCO Category 1 (legislators, senior officials and managers), Category 2 (professionals) and Category 3 (technicians

Comparing the average salaries of teachers with those in other professions in the public sector allows to gauge the competitiveness of the teaching profession in relation to other public sector professions.

and associated professionals). Twelve public sector occupations were selected from ISCO categories 1 to 3 in order to compare the salaries of teachers with those in other public sector professions.

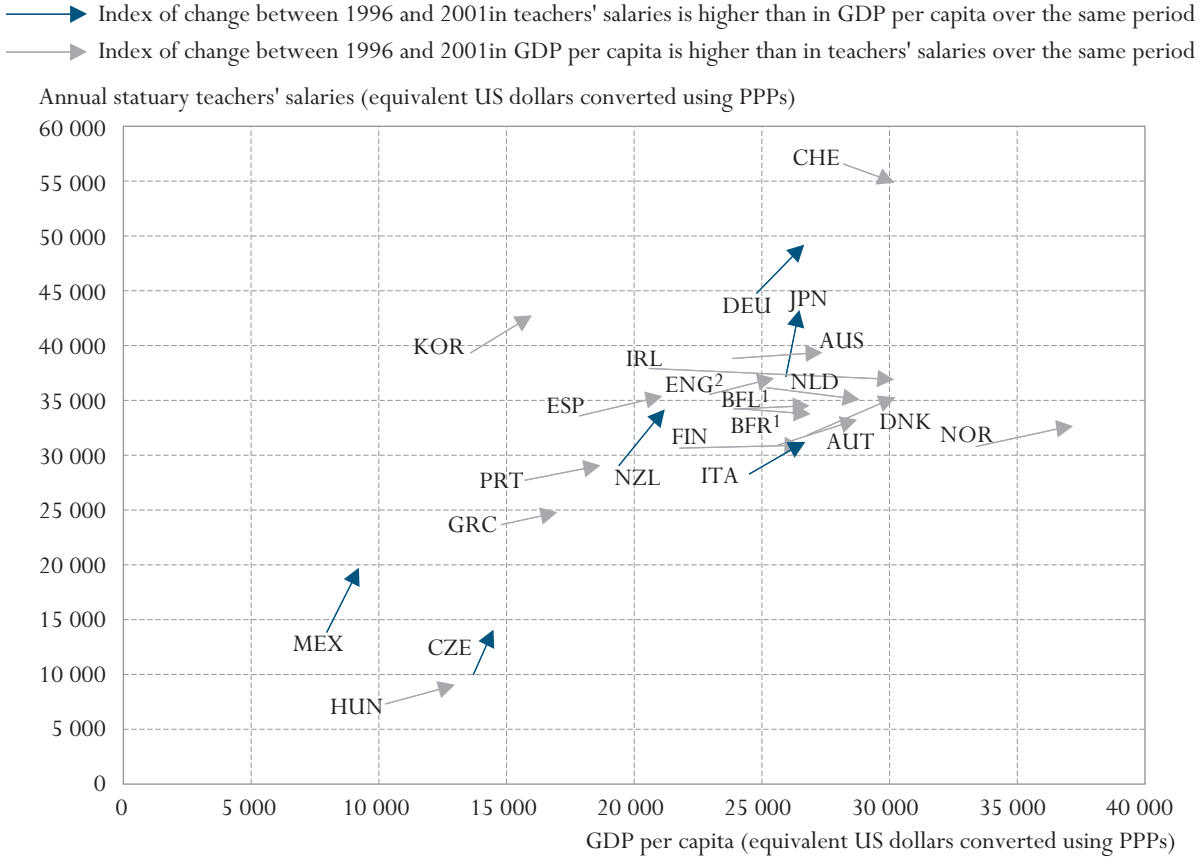
Teachers in secondary education tend to earn less than executive officials with a tertiary-type A qualification, town planners and civil engineers.

In half or more of the OECD countries, town planners, civil engineers, executive officials with tertiary qualifications and agricultural scientists earn more than secondary teachers. But secondary teachers tend to earn more than draughtspersons, pre-primary teachers, librarians or social workers. The data suggest two obvious career options for secondary teachers: for those who excel in their subject field university posts offer an alternative. For those who are more engaged in pedagogy and management, becoming a head teacher (principal) may be a career goal (Table D5.3). These data, however, consider

Chart D5.2.

Changes in annual statuary teachers' salaries in lower secondary education, in equivalent US dollars converted using PPPs, and national income

Change between 1996 and 2001 in annual statutory teachers' salaries after 15 years of experience in public institutions in lower secondary education compared with GDP per capita (2001 constant US dollars and 2001 constant PPPs)



Note: Please refer to the Reader's Guide for list of country codes and country names used in this chart.
The beginning of the arrow indicates spending per student and GPD per capita in 1996. The end of the arrow indicates the corresponding values for 2001.
1. Data on teachers' salaries (1996) and GDP per capita (1996, 2001) refer to Belgium as a whole.
2. Data on GDP per capita (1996, 2001) refer to the United Kingdom.
Source: OECD. Table D5.4 and Annex 2. See Annex 3 for notes on methodology *(www.oecd.org/edu/eag2003)*.

only employees in the public sector. The private sector offers a much bigger range of opportunities, and therefore plays a more important role in shaping the labour market for professionals qualified to teach in upper secondary education.

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

In Australia, England, Greece, Ireland, Japan, Korea, New Zealand, Norway, Portugal, Scotland, Turkey 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, Iceland, 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 D5.1).

An upper secondary teacher's salary per contact hour is, on average, 40 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 among countries, upper secondary teachers' salary per teaching hour exceeds that of primary teachers by 40 per cent. However, in Australia, New Zealand, Scotland, the Slovak Republic, Turkey and the United States, this difference is only 10 per cent or less, whereas it is around 60 per cent or more in the Flemish Community of Belgium, France, Hungary, Iceland, Korea, the Netherlands and Spain (Table D5.1).

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, among OECD countries, statutory salaries for primary and lower secondary teachers with 15 years of experience are 37 to 38 per cent higher than starting salaries.

Teachers in Australia, Denmark, England, New Zealand and Scotland reach the highest step on the salary scale within 7 to 11 years. In Belgium, Finland, Germany, Ireland, the Netherlands, Norway, Portugal, the Slovak Republic, Switzerland and Turkey 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 D5.1).

Teachers in Austria, Japan, Korea, Mexico and Portugal start with a relatively low salary level, but the ratio of the top to the starting salary is 2 to 1 or more. By contrast, top salaries of teachers in Denmark, Iceland and Norway 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 D5.1).

In addition, bonus schemes can compensate for permanent or temporary special duties and responsibilities that teachers take on.

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 into and stay in 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.

Reduction of required teaching hours is a compensation often used instead of additional pay.

A specific type of bonus is the reduction of required teaching hours. In some countries, this bonus is used to reward experience or long service (*e.g.* in Greece and Iceland), in others, rather than being paid for special duties, teachers are compensated by a reduction of teaching hours for carrying out special tasks or activities (e.g. leading a drama club, or acting as teacher supervisor of student teachers, etc.).

Reduction of teaching time in Greece

When a secondary education teacher is appointed the teaching time is 21 teaching hours per week. After 6 years the teaching time is 19 teaching hours per week. After 12 years the teaching time is 18 teaching hours per week and finally after 20 years the teaching time is 16 teaching hours per week. The remaining hours of the working time of teachers' obligation have to be spent within school

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In about half of the OECD countries, schools have at least some responsibility in deciding on levels and extent of compensation for special tasks and additional activities undertaken by teachers…

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, Austria, the Czech Republic, Denmark, England, Finland, France, Greece, Hungary, Iceland, Italy, New Zealand, Portugal, Scotland, the Slovak Republic and Sweden), schools have at least some responsibility in deciding on the levels and extent of compensation for such activities.

…but in many countries, there are fixed rates of compensation for management positions and administrative tasks…

In most countries management positions are filled by local, regional or national authorities depending on the type of school involved; and the appointee has a statutory right to a reduction of the teaching load (or exemption from teaching obligation) and to an allowance depending on the salary scale, seniority and the size of the school (with a supplement for long term exercise of the function). Teachers entrusted with more limited administrative or co-ordinating functions are remunerated by a flat-rate compensation or a reduction of teaching load, which are fixed centrally and apply whenever such a function is assigned

(normally by the principal). There is a certain pool of extra pay (flat rate remuneration) for extra duties available for assignment by the principal. For specific projects the Ministry for Education, Science and Culture may grant a reduction of the teaching load.

In England, from 1 September 2000 additional points on the scale for responsibility were replaced by flat-rate allowances for taking on significant specified management responsibilities beyond those common to the majority of classroom teachers. There were separate pay scales for head teachers and deputy heads.

In Portugal principals receive an increase in salary for the duration of their assignment, while heads of curricular departments, class tutors' co-ordinators and class tutors have their teaching time reduced, during the time they hold the position. The school board makes the decision regarding the reduction of teaching time for middle managers.

In Spain, in lower and upper secondary education there should be a head in each Didactical Department. When there is a teacher with a recognised senior teaching position (Catedrático condition), he/she is the Head of the Department. If there are more than one "catedrático", the Department may suggest to the school principal that one of these teachers be the Head but, in any case, the school principal makes the definitive nomination and the high local education authority makes the final decision. If there is not a teacher with the "catedrático condition" in a certain Department, any of the other teachers can become Head of Department (usually teachers rotate in this position). All the Department Heads receive a fixed salary supplement during the time they hold that responsibility. The standard duration of each "mandate" as Department Head is four years. In primary education any teacher can be the co-ordinator of the teachers in the cycle, but no salary supplement is awarded for this position (Table D5.2 and Annex 3 at *www.oecd.org/edu/eag2003*).

…while school principals tend to have more authority in awarding additional remuneration for professional development or outstanding performance.

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 D5.2).

In England, extra points on the main scale are awarded for excellent performance. Experienced teachers are also able to apply for the performance threshold, in which they are assessed against national standards. If successful, they are moved to the 'upper pay scale', with the prospect of further pay increases based on performance. In the Czech Republic, Denmark, Hungary, Mexico, New Zealand, Portugal, the Slovak Republic, Sweden, Turkey and the United States, allowances are also paid for outstanding performance. In Mexico bonuses awarded to teachers for outstanding performance are based on evaluations of learning achievement of students in the class or subject. In Portugal, after 15 years of teaching, and after receiving an appraisal of "Good" given by the head teacher, teachers may apply for a special appraisal of their curriculum vitae and

Promotion awarded for further qualification

In the Slovak Republic, two teacher qualification examinations exist, which are organised with the aim to promote the professional development of teachers. The first examination is designed for fully qualified teachers with a university degree who can show at least 5 years of professional teaching experience. The requirement for the second teacher qualification examination is a university degree and at least 10 years of professional teaching experience. To pass the qualification examination, teachers have to sit for an oral examination and write and defend a thesis. The holders of the certificate of the first examination have the right to be shifted into a higher salary grade. The completion of the second teacher qualification examination can be acknowledged by an increase in personal bonus to the basic salary. The examinations are organised by regional centres of methodology and the State Institute of Pedagogy.

receive an increase of two years in their career progression, although this rarely occurs. In Turkey extra salary for teachers with excellent performance are based on evaluations by the Provincial Directorate of Education and the Ministry (Table D5.2 and Annex 3 at *www.oecd.org/edu/eag2003*).

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

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.

Definitions and methodologies

Data are from the 2002 OECD-INES survey on Teachers and the Curriculum and refer to the school year 2000-2001.

Data on statutory teachers' salaries and bonuses (Table D5.1) are derived from the 2002 OECD-INES Survey on Teachers and the Curriculum. Data refer to the school year 2000-2001, and are reported in accordance with formal policies for public institutions.

Statutory salaries (Table D5.1) 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 2000 to 30 June 2001. The reference date for PPPs is 2000-2001. Data are adjusted for inflation with reference to January 2001. For countries with different financial years (*i.e.*, Australia and New Zealand) and countries with slightly different salary periods (*e.g.*, Hungary, Iceland, Norway and Spain) to the general OECD norm, a correction to the deflator is made only if this results in an adjustment of over 1 percent. Small adjustments have been discounted because even for salaries referring to 2000-2001, 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.

The index used to compare primary teachers' salaries with those of other employees derives from a 1999 Survey of Compensation of Employees for Selected Occupations in General Government conducted by the EUROSTAT-OECD PPP Programme (Table D5.3). The compensation costs of the selected occupations are intended to be representative of the compensation of employees recorded in the national accounts under government expenditure on general public services and education. Definitions of selected occupations have been taken form the 1988 version of the International Standard Classification of Occupations (ISCO) of the International Labour Office.

Table D5.1

Teachers' salaries (2001)

Annual statutory salaries of teachers in public institutions at starting salary, after 15 years of experience and at the top of the 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	27 980	39 715	39 715	1.45	28 025	39 668	39 668	1.44	28 024	39 668	39 668	1.44
Austria	23 384	31 124	46 833	1.09	24 251	33 187	50 428	1.16	24 742	34 516	52 692	1.21
Belgium (Fl.)	24 618	33 047	39 127	1.23	24 618	34 475	42 028	1.29	30 544	44 085	52 990	1.65
Belgium (Fr.)	23 430	31 984	38 380	1.19	23 865	33 684	41 264	1.26	29 741	43 328	52 263	1.62
Czech Republic	10 704	13 941	18 429	0.97	10 704	13 941	18 429	0.97	12 200	15 520	21 045	1.08
Denmark	31 165	35 297	35 297	1.17	31 165	35 297	35 297	1.17	30 103	40 019	42 734	1.33
England	23 297	36 864	36 864	1.46	23 297	36 864	36 864	1.46	23 297	36 864	36 864	1.46
Finland	19 835	27 175	28 075	1.03	22 320	30 945	32 429	1.17	23 104	32 429	34 314	1.23
France	21 702	29 193	43 073	1.14	24 016	31 507	45 501	1.23	24 016	31 507	45 501	1.23
Germany	38 412	46 459	49 839	1.75	39 853	49 053	51 210	1.84	43 100	52 839	55 210	1.99
Greece	20 422	24 716	29 798	1.46	20 422	24 716	29 798	1.46	20 422	24 716	29 798	1.46
Hungary	6 340	8 957	12 200	0.69	6 340	8 957	12 200	0.69	7 704	11 260	14 809	0.87
Iceland	16 883	18 717	19 373	0.64	16 883	18 717	19 373	0.64	23 282	29 546	32 306	1.02
Ireland	22 727	36 837	41 580	1.23	23 861	37 234	41 977	1.24	23 861	37 234	41 977	1.24
Italy	23 537	28 483	34 339	1.07	25 400	31 072	37 798	1.17	25 400	31 959	39 561	1.20
Japan	22 800	43 043	54 921	1.63	22 800	43 043	54 921	1.63	22 800	43 069	56 580	1.63
Korea	25 177	42 845	68 581	2.69	25 045	42 713	68 449	2.69	25 045	42 713	68 449	2.69
Mexico	11 703	15 455	25 565	1.69	14 993	19 588	32 240	2.14	m	m	m	m
Netherlands	27 464	32 750	39 645	1.14	28 498	35 055	43 552	1.22	28 773	48 889	57 808	1.70
New Zealand	17 544	33 941	33 941	1.61	17 544	33 941	33 941	1.61	17 544	33 941	33 941	1.61
Norway	28 942	32 621	35 502	0.88	28 942	32 621	35 502	0.88	28 942	32 621	35 502	0.88
Portugal	19 585	28 974	52 199	1.56	19 585	28 974	52 199	1.56	19 585	28 974	52 199	1.56
Scotland	22 388	35 872	35 872	1.42	22 388	35 872	35 872	1.42	22 388	35 872	35 872	1.42
Slovak Republic	5 319	6 604	7 581	0.55	5 319	6 604	8 377	0.55	5 319	6 604	9 267	0.55
Spain	26 875	31 357	39 123	1.50	30 228	35 215	43 790	1.68	31 345	36 500	45 345	1.74
Sweden	21 498	25 722	28 489	1.01	21 498	25 722	28 489	1.01	23 070	27 535	29 653	1.08
Switzerland	35 059	46 048	54 900	1.52	41 358	54 852	64 707	1.81	49 484	63 893	74 949	2.11
Turkey	10 014	12 031	17 325	2.12	a	a	a	a	9 162	11 180	16 473	1.97
United States	28 681	41 595	50 636	1.19	28 693	41 595	49 728	1.19	28 806	41 708	49 862	1.19
Country mean	*21 982*	*30 047*	*36 455*	*1.31*	*23 283*	*31 968*	*38 787*	*1.34*	*24 350*	*34 250*	*41 344*	*1.43*
NON-OECD COUNTRIES												
Argentina	8 181	11 362	13 568	0.92	10 617	15 249	18 454	1.23	10 617	15 249	18 454	1.23
Brazil	7 922	10 695	11 628	1.45	14 900	17 263	18 800	2.35	16 701	17 777	20 326	2.42
Chile	11 631	12 902	17 310	1.37	11 631	12 902	17 310	1.37	11 631	13 487	18 107	1.43
Egypt	2 222	4 961	m	1.37	2 222	4 961	m	1.37	2 222	4 961	m	1.37
Indonesia	1 172	1 855	3 535	0.61	1 172	1 855	3 535	0.61	1 219	2 234	3 535	0.73
Jamaica	7 345	8 751	8 751	2.38	7 345	8 751	8 751	2.38	7 345	8 751	8 751	2.38
Malaysia[1]	9 344	14 280	17 650	1.59	13 647	21 936	29 513	2.49	13 647	21 936	29 513	2.49
Paraguay	9 146	9 146	9 146	2.07	14 266	14 266	14 266	3.22	14 266	14 266	14 266	3.22
Peru[1]	5 597	5 597	5 597	1.22	5 536	5 536	5 536	1.20	5 536	5 536	5 536	1.20
Philippines	10 777	11 896	12 811	3.06	10 777	11 896	12 811	3.06	10 777	11 896	12 811	3.06
Thailand	6 057	14 886	28 390	2.49	6 057	14 886	28 390	2.49	6 057	14 886	28 390	2.49
Tunisia[2]	13 418	13 564	15 409	2.14	17 073	17 236	19 500	2.72	20 782	20 977	23 482	3.31
Uruguay[3]	5 734	6 872	8 295	0.76	5 734	6 872	8 295	0.76	6 240	7 378	8 801	0.82

1. Year of reference 2000.
2. Including additional bonuses.
3. Salaries for a position of 20 hours per week. Most teachers hold two positions.

See Annex 2 for reference statistics used in the calculation of teachers' salaries.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D5.1 (continued)

Teachers' salaries (2001)

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

		Ratio of salary after 15 years of experience to starting salary				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	Years from starting to top salary (lower secondary education)	Primary education	Lower secondary education	Upper secondary education, general programmes	
OECD COUNTRIES	Australia	1.42	1.42	1.42	10	44	48	49	1.09
	Austria	1.33	1.37	1.40	34	39	53	57	1.47
	Belgium (Fl.)	1.34	1.40	1.44	27	40	48	66	1.65
	Belgium (Fr.)	1.37	1.41	1.46	27	45	47	66	1.47
	Czech Republic	1.30	1.30	1.27	32	23	23	27	1.17
	Denmark	1.13	1.13	1.33	8	55	55	71	1.30
	England	1.58	1.58	1.58	8	a	a	a	a
	Finland	1.37	1.39	1.40	20	41	56	60	1.44
	France	1.35	1.31	1.31	34	32	49	52	1.60
	Germany	1.21	1.23	1.23	28	59	67	77	1.30
	Greece	1.21	1.21	1.21	33	32	39	39	1.24
	Hungary	1.41	1.41	1.46	40	12	16	20	1.76
	Iceland	1.11	1.11	1.27	18	30	30	53	1.79
	Ireland	1.62	1.56	1.56	22	40	51	51	1.26
	Italy	1.21	1.22	1.26	35	38	51	52	1.37
	Japan	1.89	1.89	1.89	31	68	77	90	1.33
	Korea	1.70	1.71	1.71	37	52	77	82	1.59
	Mexico	1.32	1.31	m	14	19	17	m	m
	Netherlands	1.19	1.23	1.70	22	35	40	56	1.60
	New Zealand	1.93	1.93	1.93	7	34	35	36	1.04
	Norway	1.13	1.13	1.13	28	46	52	65	1.41
	Portugal	1.48	1.48	1.48	26	38	45	54	1.45
	Scotland	1.60	1.60	1.60	11	38	40	40	1.06
	Slovak Republic	1.24	1.24	1.24	27	10	10	11	1.05
	Spain	1.17	1.16	1.16	39	36	62	67	1.87
	Sweden	1.20	1.20	1.19	a	a	a	a	a
	Switzerland	1.31	1.33	1.29	24	m	m	m	m
	Turkey	1.20	a	1.22	27	19	a	20	1.05
	United States	1.45	1.45	1.45	m	37	37	37	1.02
	Country mean	***1.37***	***1.38***	***1.41***	***25***	***37***	***45***	***52***	***1.38***
NON-OECD COUNTRIES	Argentina	1.39	1.44	1.44	21-24	16	19	21	1.37
	Brazil	1.35	1.16	1.06	25	m	m	m	m
	Chile	1.11	1.11	1.16	30	16	16	16	1.05
	Egypt	2.23	2.23	2.23	m	8	8	8	1.00
	Indonesia	1.58	1.58	1.83	32	1	3	3	2.20
	Jamaica	1.19	1.19	1.19	12	9	9	9	1.00
	Malaysia[1]	1.53	1.57	1.64	22	16	29	29	1.87
	Paraguay	1.00	1.00	1.00	a	11	16	14	1.25
	Peru[1]	1.00	1.00	1.00	22	9	m	10	1.19
	Philippines	1.10	1.10	1.10	22	10	10	12	1.20
	Thailand	2.46	2.46	2.46	37	20	23	23	1.17
	Tunisia[2]	1.01	1.01	1.01	30	24	41	50	2.09
	Uruguay[3]	1.20	1.20	1.18	24	a	a	a	a

1. Year of reference 2000.
2. Including additional bonuses.
3. Salaries for a position of 20 hours per week. Most teachers hold two positions.

See Annex 2 for reference statistics used in the calculation of teachers' salaries.

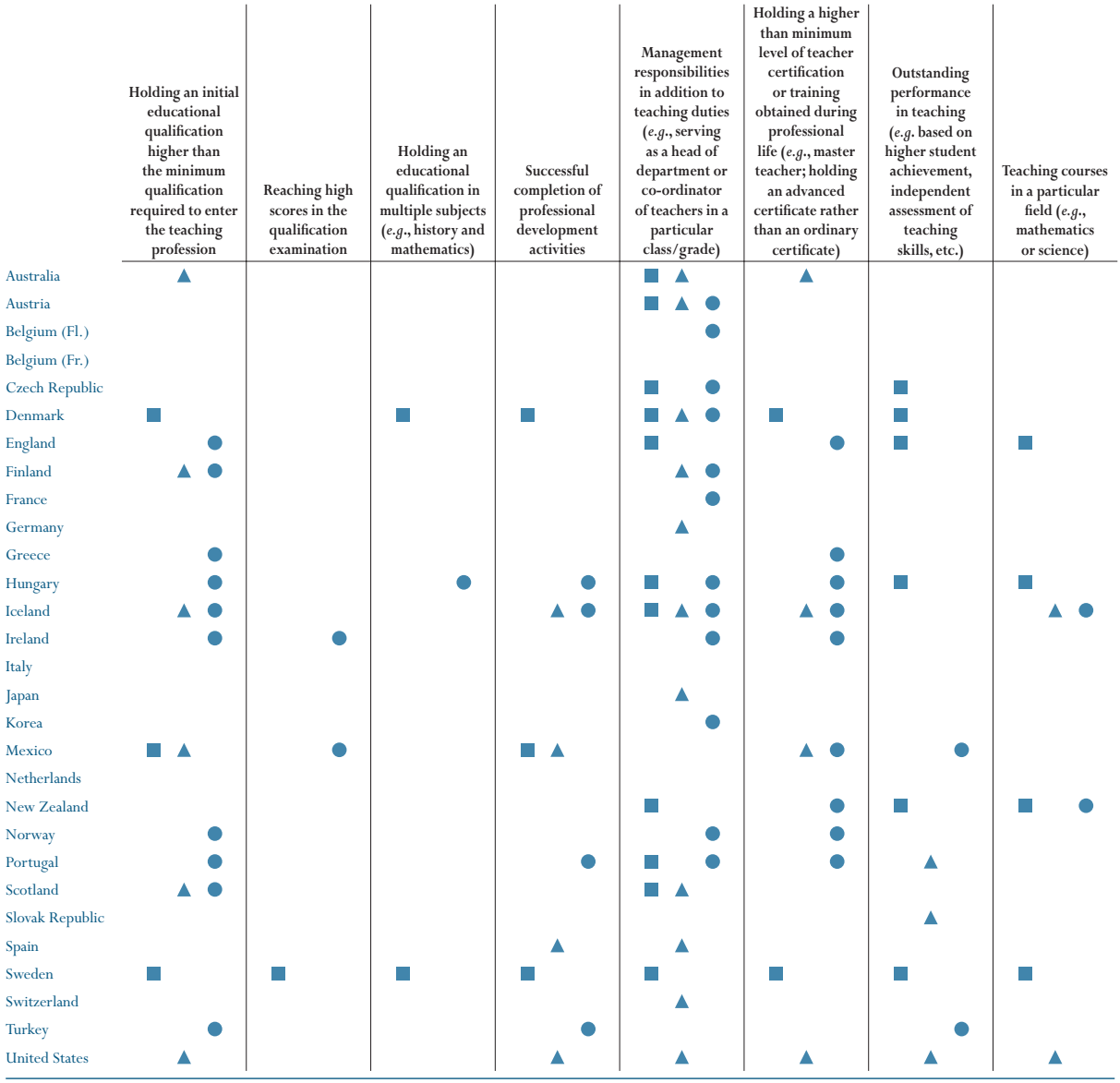
Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

Table D5.2

Adjustments to base salary for teachers in public schools (2001)

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



Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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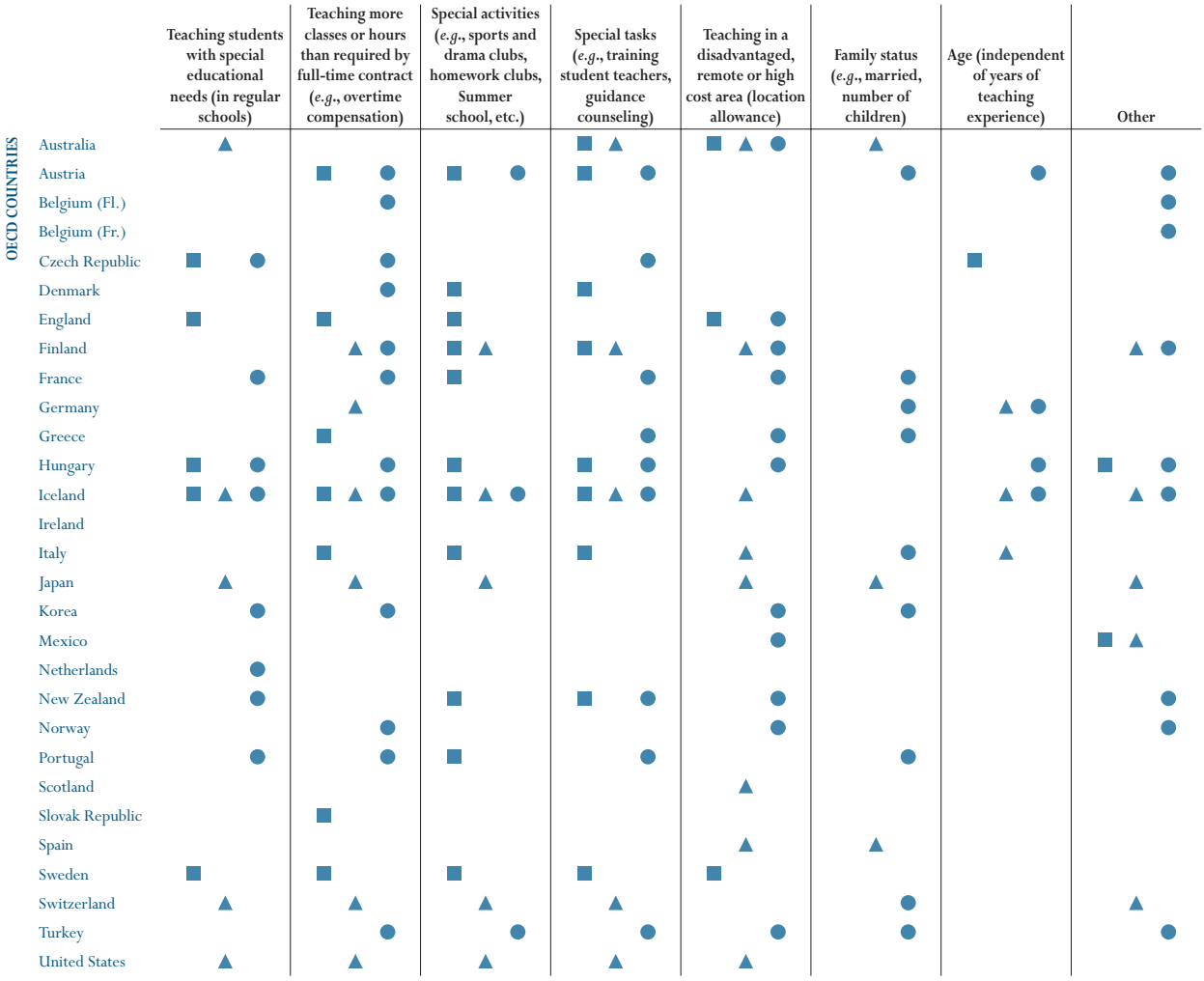
Table D5.2 (continued)

Adjustments to base salary for teachers in public schools (2001)

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



Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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Table D5.3

Comparison of average secondary teachers' salaries with those of other public sector employees (1999)

Average compensation of employees for selected occupations in the public sector (secondary teacher =100)

Comparison with a secondary teacher's salary

■ Between -10 and +10 per cent of a secondary teacher's salary
▼ More than 10 but less than 30 per cent lower than a secondary teacher's salary
▽ More than 30 per cent lower than a secondary teacher's salary
▲ More than 10 but less than 30 per cent higher than a secondary teacher's salary
△ More than 30 per cent higher than a secondary teacher's salary

OECD COUNTRIES	Draughts-person	Pre-primary teacher	Computer operator	Librarian	Social worker	Executive official II[1]	University lecturer	Town planner	Civil engineer	Executive official I[1]	Head teacher	Agri-cultural scientist	Primary teacher
Australia	■	▼	■	▼	▼	■	■	■	■	▲			▼
Austria	▽	▽	▽	▽	▼	▼	▲	△	△	▲	▲	■	▼
Canada	■	▼	▼	■	■	▼	△	▲	△	▲	△	▲	▼
Czeh Republic	■	▽	▼	▼	■	■	△	△	△	▲	△	△	▼
Denmark	▼	▼	■	■	▼	▼	▲	▲	▲	▼	△	▲	■
Finland	▽	▼	▽	▼	▼	▽	▲	■	▲	▽	△	■	▼
France	▼	▼	■	▲	▼	▼	△	▲	△	▲	△	▲	▼
Germany	▽	▽	▽	■	▼	▼	■		■	■	▲	■	▼
Greece	▼	▼	■	▼	▼	▽	△	■	■	▼	▲	▼	▼
Hungary	▼	▽	▼	▼	▽	▼	▲	△	△	△	△	△	▼
Iceland	▼	▼	■	■	▲	▼	△	△	△	▼	▲	■	■
Ireland	■		▽	■	△	▽	△	△	△	■	△	▼	■
Italy		■	■			■				▲			■
Japan	△	■	▼			△	△	△	△	△	△	△	■
Korea		■	▲	▲	▽	△	▲	△	△	△	△	△	■
Luembourg	▽	▼	▽		▼	▽			■	▼	▲		▼
Mexico	▽	▽	▼	▽	▽	△	△	△	△	△	△	■	▼
Netherlands	▼	■	■			■	△		△	△	■		■
New Zealand	▽	▽	▼	■	▼		△	■	▼		△		▼
Norway	■	▼		■	■	■	△	▲	▲	▲	▲		■
Poland	■	▼	■	▼	■		△	▲	△		△	▲	■
Portugal	■	■	■	△	△	■	△	△	△	△	△	△	■
Spain	▽	▼	▼	▲	▼	△	△	▼	△	△	△	△	▼
Sweden	■	▼	■	■	■	▼	▲		▲	■	△	▲	■
Turkey	▽	■	▽	▽	▼	▽	△	▼	▼	▽	▲	△	■
United Kingdom						▽				▼	△		■
United States	▼	▼	▽	■	■	△	△	△	△	△		▲	■

Note: Occupations are classified according to ISCO-88 (Categories 1 to 3).

1. Unlike Executive Official I, Executive Official II does not require a tertiary-type A qualification and sometimes works to an Executive Official I.

Source: EUROSTAT-OECD Purchasing Power Parities Programme (1999). See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D5

Table D5.4

Change in teachers' salaries (1996 and 2001)

Index of change[1] between 1996 and 2001 in teachers' salaries at starting salary, after 15 years of experience and at the top of the salary scale, by level of education, converted to 2001 price levels using GDP deflators (1996=100)

	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	Starting salary/ minimum training	Salary after 15 years of experience/ minimum training	Salary at top of scale/ minimum training	Starting salary/ minimum training	Salary after 15 years of experience/ minimum training	Salary at top of scale/ minimum training
OECD COUNTRIES									
Australia	131	102	102	131	102	102	131	102	102
Austria	102	106	101	102	107	102	98	102	95
Belgium (Fl.)[2]	103	103	102	101	101	101	101	101	101
Belgium (Fr.)[2]	98	99	100	98	98	99	98	99	99
Czech Republic	140	140	155	140	140	155	141	138	156
Denmark	119	111	108	119	111	108	106	99	101
England	98	103	103	98	103	103	98	103	103
Finland	101	105	105	101	101	101	102	101	101
France	m	m	m	m	m	m	m	m	m
Germany	119	114	113	113	111	109	115	113	102
Greece	106	108	110	103	105	107	103	105	107
Hungary	118	123	129	118	123	129	112	124	131
Iceland	m	m	m	m	m	m	m	m	m
Ireland	98	103	98	98	98	98	98	98	98
Italy	111	111	110	110	110	110	110	110	109
Japan	105	116	103	105	116	103	105	116	103
Korea	115	110	110	113	109	110	113	109	110
Mexico	136	136	137	137	141	144	m	m	m
Netherlands	101	98	97	99	97	97	99	97	97
New Zealand	103	117	117	103	117	117	103	117	117
Norway	115	106	114	115	106	114	106	103	105
Portugal	106	104	109	106	104	109	106	104	109
Scotland	103	99	99	m	m	m	103	99	99
Slovak Republic	m	m	m	m	m	m	m	m	m
Spain	94	93	91	106	105	102	94	94	93
Sweden	m	m	m	m	m	m	m	m	m
Switzerland	99	97	100	99	97	101	99	97	102
Turkey	m	m	m	m	m	m	m	m	m
United States	m	m	m	m	m	m	m	m	m

1. The index is calculated as teacher salary 2001 in national currency * 100 / Teacher salary 1996 in national currency * GDP deflator 2001 (1996=100).
2. The data for Belgium in 1996 are based on Belgium as a whole.
See Annex 2 for reference statistics used in the calculation of this indicator.
Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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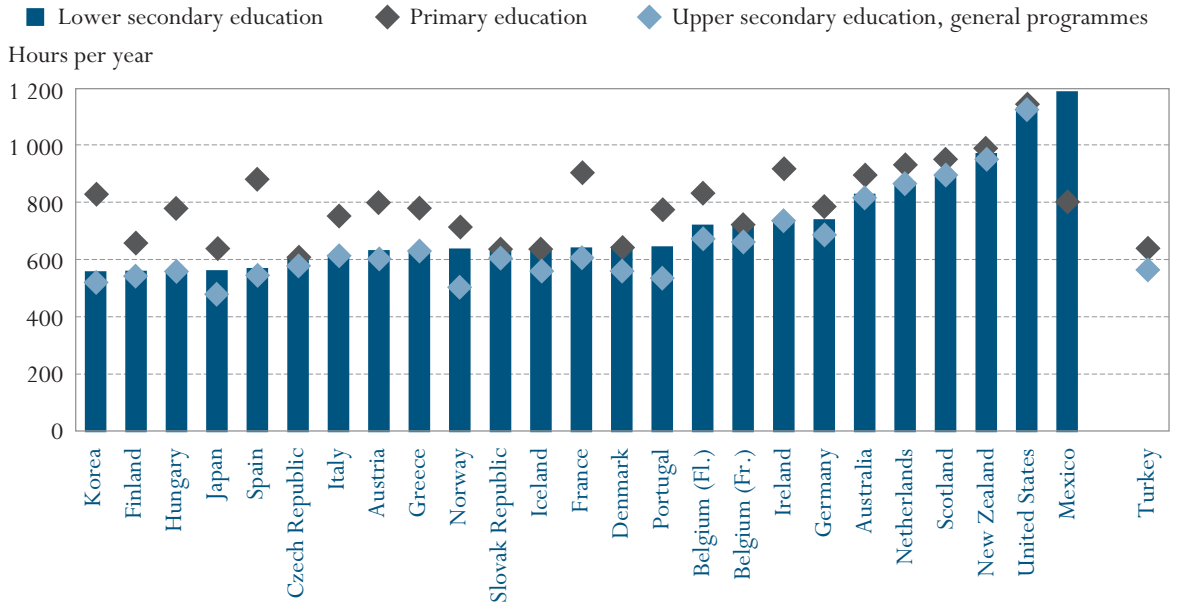
INDICATOR D6: TEACHING TIME AND TEACHERS' WORKING TIME

- The number of teaching hours per year in public primary schools averages 792 hours but ranges from 605 to 1 139 hours among OECD countries.
- The average number of teaching hours in lower secondary education is 714 hours but ranges from 553 to 1 182 hours among OECD countries.
- The average number of teaching hours in upper secondary education is 656 hours but ranges from 478 to 1 121 hours among OECD countries.
- Regulations of teachers' working time vary among countries. In most countries, teachers are formally required to work a specific number of hours; while in others just teaching time in lessons per week is specified.

Chart D6.1

Number of teaching hours per year (2001)

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 D6.1. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

D6

Policy context

In addition to class size and the ratio of students to teaching staff (Indicator D2), students' hours of instruction (Indicator D1) and teachers' salaries (Indicator D5), 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.

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.

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, Iceland, Japan, the Slovak Republic and Turkey to 950 hours or more in New Zealand, Scotland and the United States (Chart D6.1 and Table D6.2).

A public primary school teacher teaches an average of 792 hours per year.

In lower secondary education, a teacher teaches on average 714 hours per year. The teaching load here ranges from between 553 and 564 hours in Finland, Hungary, Japan, Korea and Spain to over 900 hours in Mexico, New Zealand and the United States (Chart D6.1 and Table D6.2).

A lower secondary teacher teaches an average of 714 hours per year, but this figure ranges from 553 hours to 1 182 hours.

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 656 hours per year among OECD countries. Teaching loads range from less than 500 hours in Japan to over 900 hours in New Zealand and the United States (Chart D6.1 and Table D6.2).

In France, Korea 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 Australia, the French Community of Belgium, the Czech Republic, Denmark, Germany, Iceland, the Netherlands, New Zealand, Scotland, the Slovak Republic, Turkey and the United States the difference is 100 hours or less (Chart D6.1).

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.

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 Austria, the French Community of Belgium, Hungary, Korea and Spain, teaching time did not change substantially between 1996 and 2001.

With the exception of Austria (primary education), the French Community of Belgium (primary education), Hungary, Korea (secondary education) and Spain (upper secondary education), teaching time in most OECD countries was about the same in 1996 and 2001. However, in Korea, teachers in secondary education were required to teach 21 per cent more in 2001 than in 1996, while in Spain net contact time dropped by 13 per cent in upper secondary education (Table D6.2).

Teachers' working time

Regulations of teachers' working time vary widely among countries.

The regulations of teachers' working time vary widely among 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, working time at school is also specified while …

In Australia, the French Community of Belgium (primary education), the Czech Republic, England, Greece, Iceland, Ireland, Mexico (primary and lower secondary education), New Zealand, Norway, Portugal, Scotland, Spain, Sweden, Turkey and the United States, the working time for which teachers are required to be available at school, for both teaching time and non-teaching time, is specified.

Working time in Australia

Teachers in Australia have to spend a certain number of working hours at school, which includes teaching and non-teaching activities. In addition to this there are other not defined (additional) non-teaching duties undertaken outside these specified hours. Therefore most Australian teachers work longer hours than those reported.

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… in others, just the total statutory working time in hours per year is defined.

In Denmark, Germany, Greece, Hungary, Iceland, Ireland (primary education), Japan, Korea, the Netherlands, Norway, Portugal, Scotland, the Slovak Republic, Spain, Sweden and Turkey, the total working time that teachers have to work per year is specified. In addition, in some countries the number of hours to be spent on non-teaching activities is also (partly) specified. However, it is not specified whether the teachers have to spend the non-teaching hours at school or outside school.

Allocation of working time in the Netherlands

In the Netherlands at all education levels, 10 per cent of the total annual required 1 659 working hours are available for professional development. In lower secondary and upper secondary (general programmes) education for example, in addition to 867 teaching hours per year, 173 hours per year are allowed for preparation, 166 hours for professional development, and 452 hours for other tasks.

In 12 out of 27 OECD countries for which data are available there are no formal requirements on non-teaching time.

In Australia, Austria, Belgium, the Czech Republic, England, Finland, France, Ireland (secondary education), Italy, Mexico, New Zealand and the United States there are no formal requirements for how much time should be spent on non-teaching duties. However, this does not mean that teachers are totally free in carrying out the other tasks. In Austria, provisions concerning teaching time are based on the assumption that the duties of the teacher (including preparing lessons and tests, marking and correcting papers, examinations, and administrative tasks) amount to a total working time of 40 hours per week. In the Flemish Community of Belgium, the additional non-teaching hours within the school are set at the school level. There are no regulations regarding lesson preparation, correction of tests and marking students' papers, etc. The government just defines the minimum and maximum number of teaching periods (of 50 minutes each) per week at each level of education. In Finland, although not formally set, teachers in primary and lower secondary education are, in addition to their teaching load, required to spend two hours per week on planning, meetings or co-operation with the homes. In upper secondary education Finnish teachers are required to reserve two to five hours per week on meetings and other tasks.

... while in the Czech Republic, Japan and Korea, teachers' working time is specified only in the general regulations on civil servants' working time.

In the Czech Republic, 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 D6.1).

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Teaching and working time in Korea

There is no policy on how many hours teachers should teach in a week or a month or a year. The data on teaching time is based on the annual administrative data collection and refer to the time teachers usually teach per week during the school year. Teachers are civil servants and their working time is regulated within that framework. Whereas there are national regulations on the length of the school year and on the working hours of civil servants, which apply to teachers during the school year period, during the summer and winter vacations teachers work on self-regulated schedules of professional development training.

Working time in the Czech Republic

In the Czech Republic teachers are public employees and their working time is set accordingly. Teachers are supposed to work 42 hours a week (excluding lunch breaks) over 40.2 weeks, of which only teaching time is further specified.

Definitions and methodologies

Teaching time

Data are from the 2002 OECD-INES Survey on Teachers and the Curriculum and refer to the school year 2000-2001.

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.

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.

D6

Table D6.1

The organisation of teachers' working time (2001)

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	Lower secondary education	Primary education	Lower secondary education	Primary education	Lower secondary education	Upper secondary education, general pro-grammes	Primary education	Lower secondary education	Upper secondary education, general pro-grammes	Primary education	Lower secondary education	Upper secondary education, general pro-grammes
OECD COUNTRIES	Australia	40	40	198	198	893	825	816	1 023	1 087	1 087	a	a	a
	Austria	38	38	184	184	799	627	602	a	a	a	a	a	a
	Belgium (Fl.)	37	37	178	179	831	716	671	m	m	m	a	a	a
	Belgium (Fr.)	37	37	162	180	717	720	661	962	m	m	a	a	a
	Czech Republic	39	39	192	192	605	605	576	1 746	1 746	1 746	a	a	a
	Denmark	42	42	200	200	640	640	560	m	m	m	1 680	1 680	1 680
	England	38	38	190	190	a	a	a	1 265	1 265	1 265	a	a	a
	Finland	38	38	190	190	656	555	542	a	a	a	a	a	a
	France	35	35	m	m	905	637	609	a	a	a	a	a	a
	Germany	40	40	189	189	784	735	684	a	a	a	1 708	1 708	1 708
	Greece	40	38	195	185	780	629	629	1 500	1 425	1 425	1 762	1 762	1 762
	Hungary	37	37	185	185	777	555	555	a	a	a	1 864	1 864	1 864
	Iceland	35	35	170	170	634	634	560	1 650	1 650	1 720	1 800	1 800	1 800
	Ireland	37	33	183	167	915	735	735	915	735	735	915	a	a
	Italy	34	34	m	m	748	612	612	a	a	a	a	a	a
	Japan	35	35	193	193	635	557	478	a	a	a	1 940	1 940	1 940
	Korea	37	37	220	220	828	553	519	a	a	a	1 613	1 613	1 613
	Mexico	42	42	200	200	800	1182	m	800	1 182	m	a	a	a
	Netherlands	40	40	195	195	930	867	867	a	a	a	1 659	1 659	1 659
	New Zealand	39	39	197	194	985	968	950	985	968	950	a	a	a
	Norway	38	38	190	190	713	633	505	903	823	695	1 718	1 718	1 718
	Portugal	36	36	175	175	772	641	533	875	770	640	1 526	1 526	1 526
	Scotland	38	38	190	190	950	893	893	1 075	1 075	1 075	1 153	1 153	1 153
	Slovak Republic	40	40	192	192	634	634	605	a	a	a	1 736	1 736	1 736
	Spain	37	36	176	171	880	564	548	1 140	1 140	1 140	1 425	1 425	1 425
	Sweden	a	a	a	a	a	a	a	1 360	1 360	1 360	1 800	1 800	1 800
	Switzerland	m	m	m	m	m	m	m	m	m	m	m	m	m
	Turkey	38	a	180	a	639	a	567	870	a	756	1 816	1 816	1 816
	United States	36	36	180	180	1 139	1 127	1 121	1 353	1 371	1 371	a	a	a
NON-OECD COUNTRIES	Argentina[1]	38	38	161	161	725	805	710	m	m	m	m	m	m
	Brazil	40	40	200	200	800	800	800	m	m	m	m	m	m
	Chile	40	40	191	191	860	860	860	m	m	m	m	m	m
	Egypt	36	36	187	187	748	748	748	m	m	m	m	m	m
	India	52	52	225	225	1 013	1 125	1 125	m	m	m	m	m	m
	Indonesia	44	44	252	164	1 260	738	738	m	m	m	m	m	m
	Jamaica	38	38	190	190	950	950	950	m	m	m	m	m	m
	Malaysia[1]	41	41	192	192	758	768	768	m	m	m	m	m	m
	Paraguay	41	42	203	203	812	903	1 015	m	m	m	m	m	m
	Peru[1]	36	36	174	174	783	626	626	m	m	m	m	m	m
	Philippines	40	40	196	196	1 176	1 176	980	m	m	m	m	m	m
	Russian Federation	45	45	215	215	860	774	774	m	m	m	m	m	m
	Sri Lanka	40	40	200	200	960	1 200	1 200	m	m	m	m	m	m
	Thailand	40	40	181	181	760	652	652	m	m	m	m	m	m
	Tunisia	36	32	147	137	735	548	548	m	m	m	m	m	m
	Uruguay[2]	38	38	183	183	732	488	488	m	m	m	m	m	m
	Zimbabwe	37	37	180	180	954	954	954	m	m	m	m	m	m

1. Year of reference 2000.
2. Teaching time for a position of 20 hours per week. Most teachers hold two positions.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D6

Table D6.2

Number of teaching hours per year (1996, 2001)

Net contact time in hours per year in public institutions by level of education, and index of change from 1996 to 2001

		Primary education			Lower secondary education			Upper secondary education general programmes		
		2001	1996	Index of change 1996-2001 (1996=100)	2001	1996	Index of change 1996-2001 (1996=100)	2001	1996	Index of change 1996-2001 (1996=100)
OECD COUNTRIES	Australia	893	m	m	825	m	m	816	m	m
	Austria	799	684	117	627	658	95	602	623	97
	Belgium (Fl.)	831	841	99	716	724	99	671	679	99
	Belgium (Fr.)	717	858	84	720	734	98	661	677	98
	Czech Republic	605	635	95	605	607	100	576	580	99
	Denmark	640	640	100	640	640	100	560	560	100
	England	a	780	m	a	720	m	a	m	m
	Finland	656	m	m	555	m	m	542	m	m
	France	905	900	101	637	647	98	609	m	m
	Germany	784	772	102	735	715	103	684	671	102
	Greece	780	780	100	629	629	100	629	629	100
	Hungary	777	m	m	555	473	117	555	473	117
	Iceland	634	m	m	634	m	m	560	m	m
	Ireland	915	915	100	735	735	100	735	735	100
	Italy	748	748	100	612	612	100	612	612	100
	Japan	635	m	m	557	m	m	478	m	m
	Korea	828	m	m	553	456	121	519	428	121
	Mexico	800	800	100	1182	1182	100	m	m	m
	Netherlands	930	930	100	867	867	100	867	867	100
	New Zealand	985	985	100	968	968	100	950	950	100
	Norway	713	713	100	633	633	100	505	505	100
	Portugal	772	783	99	641	644	99	533	574	93
	Scotland	950	975	97	893	m	m	893	917	97
	Slovak Republic	634	m	m	634	m	m	605	m	m
	Spain	880	900	98	564	a	m	548	630	87
	Sweden	a	624	m	a	576	m	a	528	m
	Switzerland	m	871	m	m	850	m	m	669	m
	Turkey	639	m	m	a	a	a	567	m	m
	United States	1139	m	m	1127	m	m	1121	m	m
	Country mean	***792***	***807***		***714***	***703***		***656***	***648***	
NON-OECD COUNTRIES	Argentina[1]	725	m	m	805	m	m	710	m	m
	Brazil	800	m	m	800	m	m	800	m	m
	Chile	860	m	m	860	m	m	860	m	m
	Egypt	748	m	m	748	m	m	748	m	m
	India	1013	m	m	1125	m	m	1125	m	m
	Indonesia	1260	m	m	738	m	m	738	m	m
	Jamaica	950	m	m	950	m	m	950	m	m
	Malaysia[1]	758	m	m	768	m	m	768	m	m
	Paraguay	812	m	m	903	m	m	1015	m	m
	Peru[1]	783	m	m	626	m	m	626	m	m
	Philippines	1176	m	m	1176	m	m	980	m	m
	Russian Federation	860	m	m	774	m	m	774	m	m
	Sri Lanka	960	m	m	1200	m	m	1200	m	m
	Thailand	760	m	m	652	m	m	652	m	m
	Tunisia	735	m	m	548	m	m	548	m	m
	Uruguay[2]	732	m	m	488	m	m	488	m	m
	Zimbabwe	954	m	m	954	m	m	954	m	m

1. Year of reference 2000.
2. Teaching time for a position of 20 hours per week. Most teachers hold two positions.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

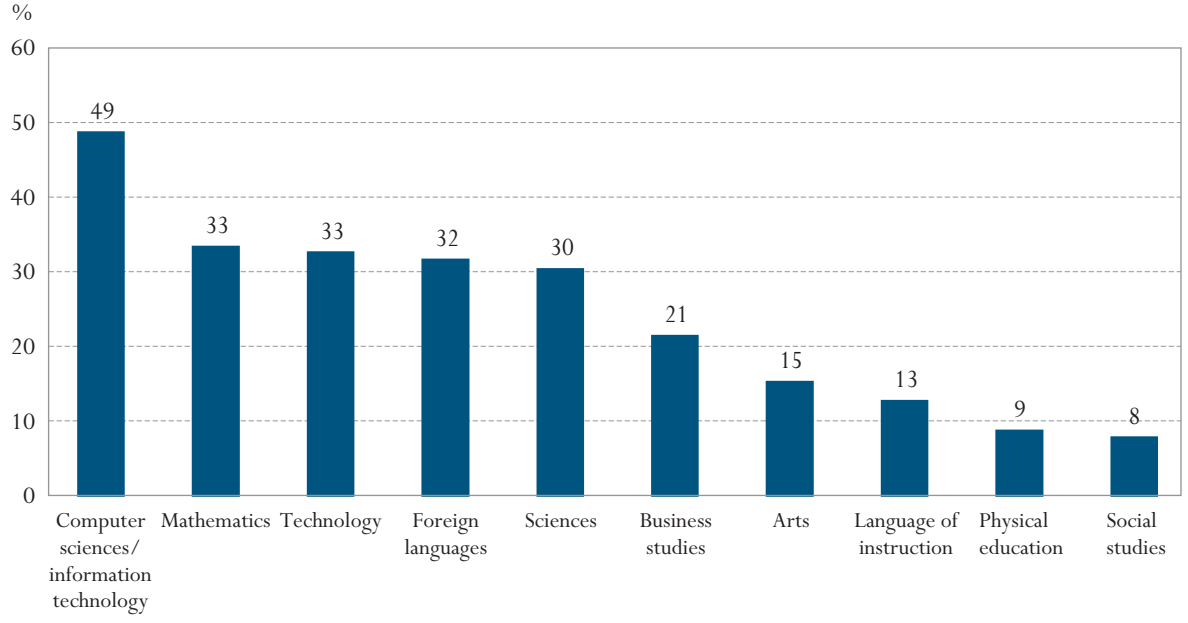
INDICATOR D7: TEACHER SUPPLY AND DEMAND

- The percentages of less than fully qualified teachers employed full-time ranges from 0.4 per cent in Ireland to 20 per cent or more in Mexico, Norway, Portugal, and Sweden.
- On average, about 12 per cent of teaching posts (full-time equivalent) were vacant and were to be covered at the beginning of school year 2001/2002 in the countries for which upper secondary schools were surveyed.
- Nearly two thirds of the teachers in Mexico and Switzerland, but only less than 1 per cent in Korea are employed on a part-time basis.
- In upper secondary education, teacher shortage is most pressing in computer science, mathematics, foreign languages, science, and technology, whereas it appears less problematic in the arts, physical education, social studies and language of instruction.

Chart D7.1

Average perceived difficulty of hiring qualified teachers in various study areas (2001)

Cross-country mean percentage of upper secondary students attending schools where the principal reported that hiring fully qualified teachers is difficult, by study area



Subjects are ranked in descending order of the cross-country mean percentage of upper secondary students attending schools where the principal reported that hiring fully qualified teachers is difficult.
Note: Proportions by study area are calculated for cross-country means.
Source: OECD ISUSS database, 2003. Table D7.3.

Policy context

Teachers are the key actors of school and classroom processes. Supply of sufficiently qualified teachers for each course is a major task school managers and school authorities are facing. On the system level, provisions for teacher training and teacher licensing, recruitment policies, statutory salary and bonus schemes, and statutory work conditions constitute the basic policy framework for teacher supply.

However, at the local level, demand for and supply of teachers with specific subject matter expertise depends on a series of other factors as well. Local labour market conditions influence teachers' career decisions, *e.g.* industries competing for skills and expertise that teachers dispose of can play a role in the 'brain drain' from schools and conversely, the absence of other local labour opportunities may influence the choice of a teaching career. Teacher flow in a school may also depend on the age composition of the teaching staff, and on the social composition of the student population as well as on the school's working climate.

Evidence and explanations

This indicator presents school level data on teacher supply and demand in 15 OECD countries. In the International Survey of Upper Secondary Schools (ISUSS), principals were asked about vacancies and modes of covering vacancies in their schools. Responses show that there are large differences among systems in the size of the teacher shortage problem. Also, besides evident similarities regarding relative shortages across study areas, countries appear to have characteristic national difficulties in certain areas of teacher expertise.

Less than fully qualified teachers constitute a substantial part of the teaching staff in several OECD countries at the upper secondary level.

Schools are sometimes compelled to assign to classes teachers who are less than fully qualified. This may be the case in subject areas where there is a chronic shortage of specific expertise. Also, in the case of longer leave, *e.g.* sick leave or study leave, the principal may temporarily have to assign classes to other teachers who have a different qualification area to cover a temporary vacancy (out of field teaching).

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Lack of full qualification does not mean that a person is teaching without any qualification. It can mean that a person has a qualification in teaching but not a qualification required at the upper secondary level, or a qualification in the subject matter but not a qualification in teaching. (For qualification requirements see Indicator D4.)

ISUSS data show that a substantial part of the teaching staff is less than fully qualified in several OECD countries. Except for Korea, where only fully qualified teachers are allowed to teach, the percentage of teachers who are not fully qualified ranges from 0.4 per cent in Ireland to 20 per cent or more in Mexico, Norway, Portugal and Sweden, if only full-time posts are considered (Chart D7.2 and Table D7.1).

In all 15 countries with available data, a distinction is made between tenured and temporary employment. Often, a tenure means civil servant status, which

is awarded on condition of a probation period (*e.g.,* Italy, Spain). Temporary employment is, therefore, a characteristic mode of the employment for starting teachers in these countries. Another reason for temporary employment is when a school hires a teacher who has less than full qualification for teaching at the upper secondary level. Such emergency solutions are usually accepted only on a temporary basis. Further, the labour cost of fixed term employment may be lower, if side benefits and favourable pension schemes are tied to tenure and the school or the local authority bears the cost of employing teachers.

On average among countries, 12 per cent of all full-time teachers are employed through temporary contracts. However, the frequency of this practice differs from country to country: according to the ISUSS study, 4 per cent or less of full-time teachers in the schools of upper secondary students are temporary staff in Denmark and Korea, whereas more than one out of five teachers is employed on a temporary basis in the Flemish Community of Belgium and Portugal.

On average among countries, 12 per cent of all full-time teachers are employed as temporaries, whereas four per cent or less are temporaries in Denmark and Korea.

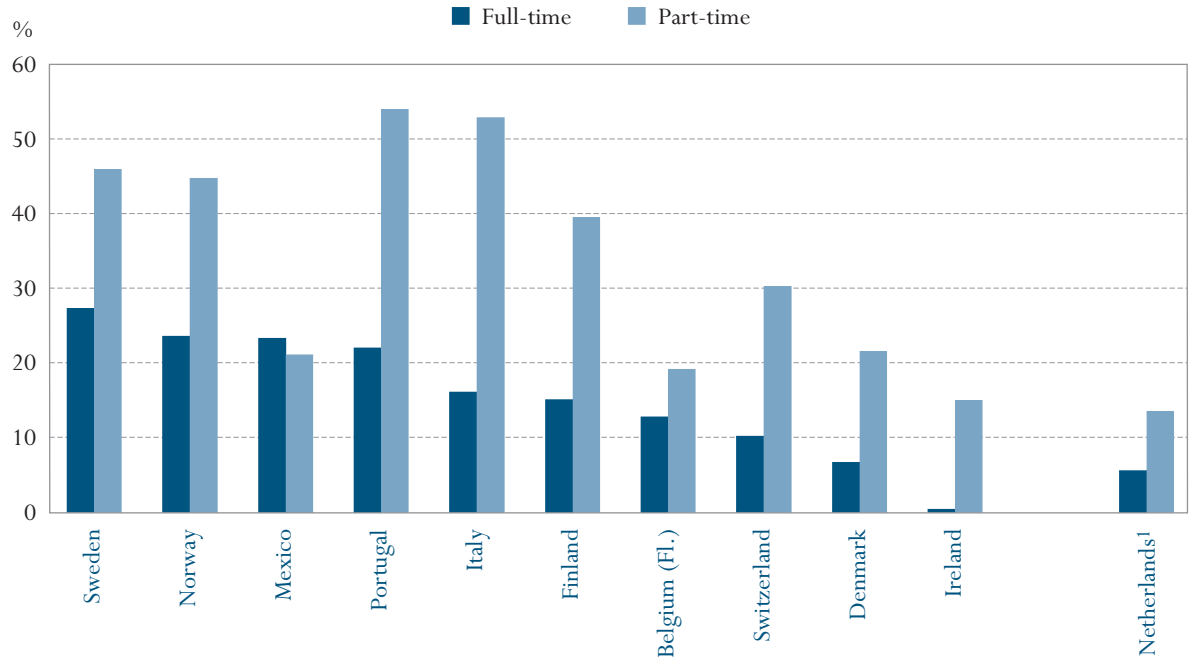
Many teachers are hired on a part-time basis among OECD countries, but this practice depends very much on the education system and on practical circumstances as well. The employment of part-time teachers may have organisational reasons: for example in small schools there may not be a

Nearly two-thirds of the teachers in Mexico and Switzerland, but only less than 1 per cent

Chart D7.2

Teachers who are not fully qualified (2001)

Full-time and part-time teachers who are not fully qualified as a percentage of all full-time and part-time teachers



Countries are ranked in descending order of percentage of full-time not fully qualified teachers.
Note: The number of teachers is calculated as head counts.
1. Country did not meet international sampling requirements. The reported data are unweighted.
Source: OECD ISUSS database, 2003. Table D7.1.

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in Korea are employed on a part-time basis.

sufficient number of classes in an area of specialisation to cover a full-time job. Another reason may be that it is difficult to find a qualified teacher who would take on a full-time post (for financial or family reasons for example), while it is possible to find applicants for part-time work. Employing part-time teachers may have financial reasons as well in countries where full-time employment and/or civil servant status offers higher wages or substantial side benefits that part-time teachers do not enjoy. The percentage of part-time teachers ranges between 0.6 per cent in Korea and over 60 per cent in Mexico and Switzerland (Table D7.1).

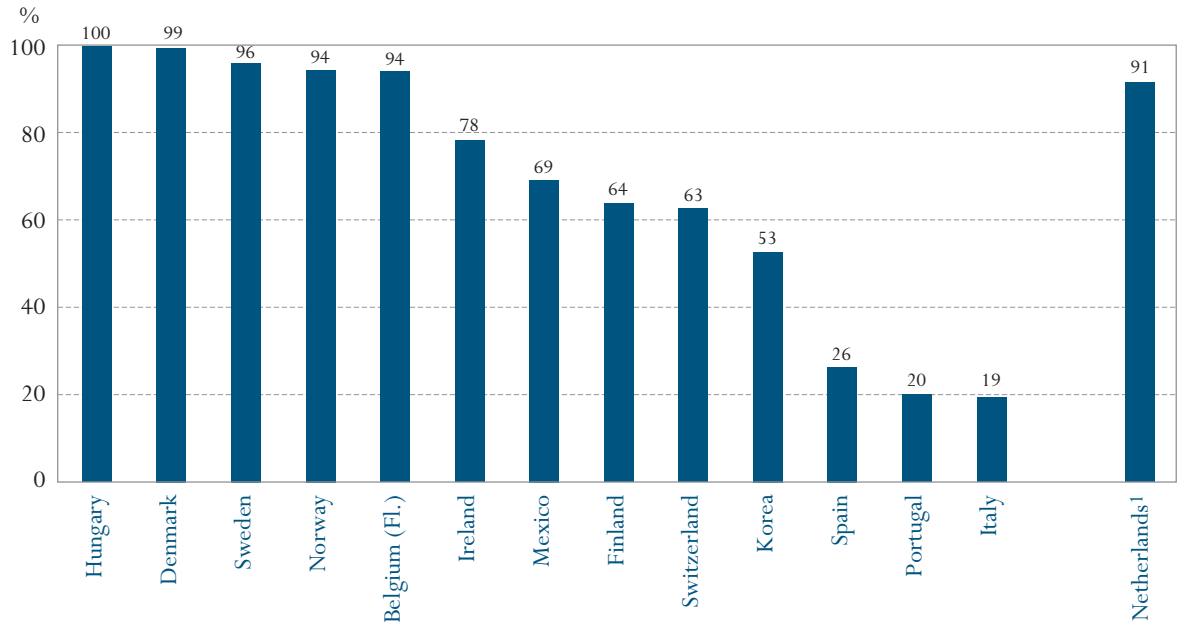
Hiring teachers is mostly the responsibility of schools in the Flemish Community of Belgium, Denmark, Hungary, Ireland, Mexico, Norway and Sweden. By contrast, in other countries, teachers are hired and placed in schools by professional authorities.

The ability to recruit and retain highly qualified teachers is one of the crucial school policy issues determining the quality of education. Teachers' morality, expertise and willingness to co-operate with each other and with their students (often referred to as the ethos of the school), appear to be the most important source of the social and human capital available in an institution. To be effective school leaders, principals may need at least some responsibility for appointing and dismissing teachers. At the upper secondary level, hiring teachers is a school responsibility in the schools of 9 out of 10 students in the Flemish Community of Belgium, Denmark, Hungary, Norway and Sweden. More than three quarters of students in Ireland, two thirds or more in Finland, Mexico and Switzerland, and about half of students or less in Italy, Korea, Portugal and Spain go to schools where the responsibility of hiring teachers lies with the school (Chart D7.3 and Table D7.2).

Chart D7.3

The school's responsibility in hiring teachers (2001)

Percentage of upper secondary students attending schools where principals reported that hiring new teachers is the school's responsibility



Countries are ranked in descending order of the percentage of upper secondary students attending schools where principals reported that hiring new teachers is the school's responsibility.

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. Table D7.2.

In a balanced school staff there are young, mid-career and elder teachers, males and females and a wide range of expertise and personal characteristics. Teacher flow is a natural part of a school's life: elder teachers retire, young teachers enter the profession, teachers change school or leave the profession, new teachers are hired. Problems occur when the normal speed of turnover is upset, *i.e.* there is no teacher mobility at all or many teachers retire at the same time (this can happen, when members of a school staff are of similar age). Fluctuation of the teaching staff can be an equally distressing problem, because it endangers the school's professional integrity. External factors including labour market conditions and local social climate may cause anomalies in the normal teacher flow threatening the age and gender balance of teachers in a school besides causing shortages in specific kinds of expertise. Within a school's life such situations call for emergency solutions.

Compared to the number of full-time equivalent teachers, on average about 12 per cent of vacancies were to be filled at the beginning of school year 2001/2002 in schools where upper secondary education was provided.

On average among the 14 countries with comparable data, the ratio of vacant posts to the total number of full-time equivalent teachers is equal to 12.3 per cent. At a constant level of teacher flow, this would mean that, theoretically, a full staff turnover could be expected in every 8 years. Aggregated on the country level, the percentage of vacant posts ranges from 2 per cent in Korea to 4 per cent in Denmark to around 30 per cent in Italy indicating that there is a considerable fluctuation of the teacher force in this latter country (Table D7.2).

How did schools fill the vacant posts? Over 90 per cent of students attend schools where the principal reported that a fully qualified teacher could be hired in the Flemish Community of Belgium, Denmark, Ireland, Italy, Mexico, Norway, Portugal, Spain and Sweden. This, however, was not always possible, and schools had to find other solutions to provide staff for all scheduled classes as well. Principals reported that they had employed a less than fully qualified teacher, extended class size, cancelled planned courses, or added to the workload of teachers with more or less frequency.

When in need, schools often hire teachers with less than a full qualification or add to qualified teachers' workload to cover vacancies....

About one third of students attended schools where the principal reported having hired a teacher with less than a full qualification. The principals of more than 50 per cent of upper secondary students in the Flemish Community of Belgium, Finland, Norway, Sweden and Switzerland, but only of 1 per cent in Korea and virtually none in Spain reported that they had hired a less than fully qualified teacher. Compared to the former practices, expanding class size appeared to be a relatively rare practice. Adding sections to other teachers' normal teaching hours is another common practice in dealing with vacancies. This practice in most common in Hungary, where this is done in almost all schools, and in Denmark and Switzerland, where it is practiced in the schools of more than half of the upper secondary students. By contrast, adding sections to other teachers' normal teaching hours is relatively rarely done in the Flemish Community of Belgium, Ireland, Portugal and Spain, where the principals of less than 20 per cent of upper secondary students reported this practice (Chart D7.4 and Table D7.2).

...whereas cancelling courses or expanding class size are relatively rare practices.

Schools rarely cancel courses due to the absence of the assigned teacher. On average among countries, the principals of hardly more than 3 per cent of students reported that a planned course had been cancelled because of vacant posts, ranging between nil in Italy and Hungary and 9 per cent in Denmark. More frequently than cancelling courses, school management decided to expand class size to be able to assign a teacher. On average, 9 per cent of students attend schools where this practice was reported, ranging between 3 per cent in Italy and 20 per cent in Mexico (Chart D7.4 and Table D7.2).

The actual frequency of these practices can be better estimated if one compares also the percentage of vacant posts that needed to be filled. Thus, for example, in Denmark, adding sections to other teachers' teaching hours should be interpreted in the light of the information that only 4 per cent of vacant posts had to be filled compared to the 30 per cent vacant posts in Italy (Table D7.2).

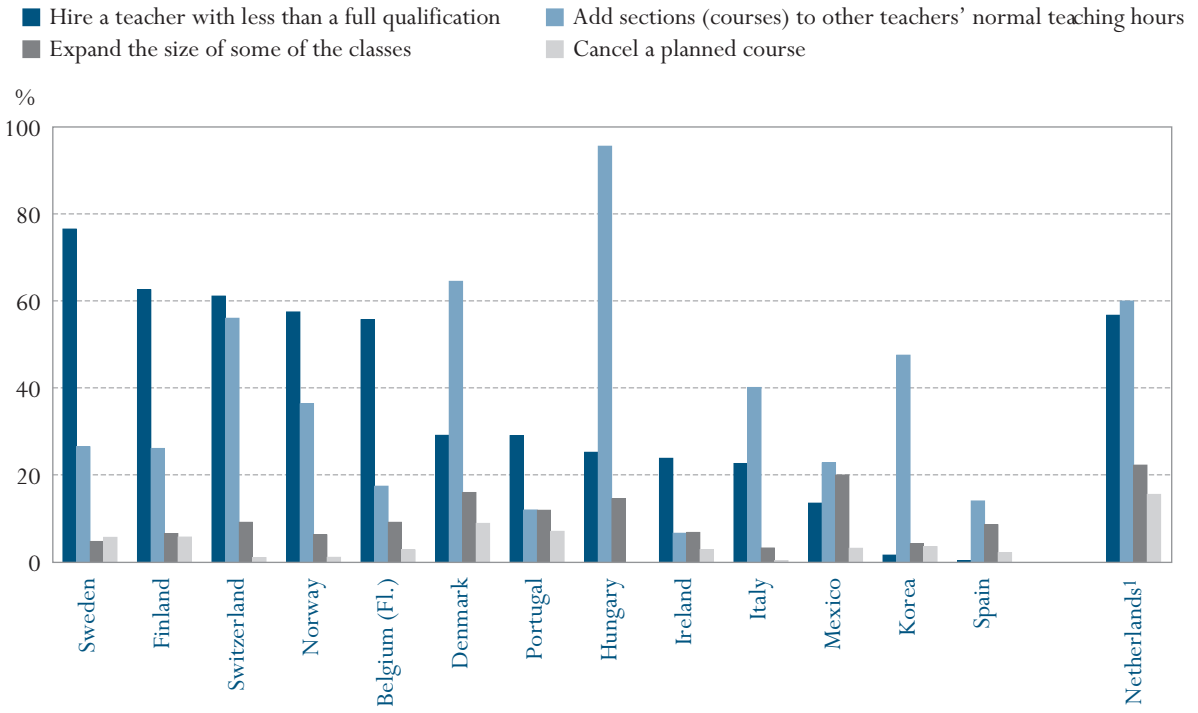
Frequency of teacher absence is an important indicator of school quality.

Absence of a teacher on duty has consequences both for students and the teaching staff: either classes have to be cancelled or classes have to be covered by other teachers who may or may not take over all functions of the originally assigned teacher with respect to the scheduled learning tasks. Frequency of

Chart D7.4

Methods used to respond to teacher vacancies (2001)

Percentage of upper secondary students attending schools that use different methods to respond to teacher vacancies, as reported by principals



Countries are ranked in descending order of the percentage of upper secondary students attending schools that hire a teacher with less than a full qualification to cover teaching vacancies, as reported by principals.

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. Table D7.2.

teacher absence is one indicator of school discipline, but may depend on outside constraints (*e.g.,* teacher shortages) as well as school leadership and work conditions in the school.

The percentage of classes cancelled or covered by another teacher ranges from six per cent in Finland and Sweden to 18 per cent in Ireland.

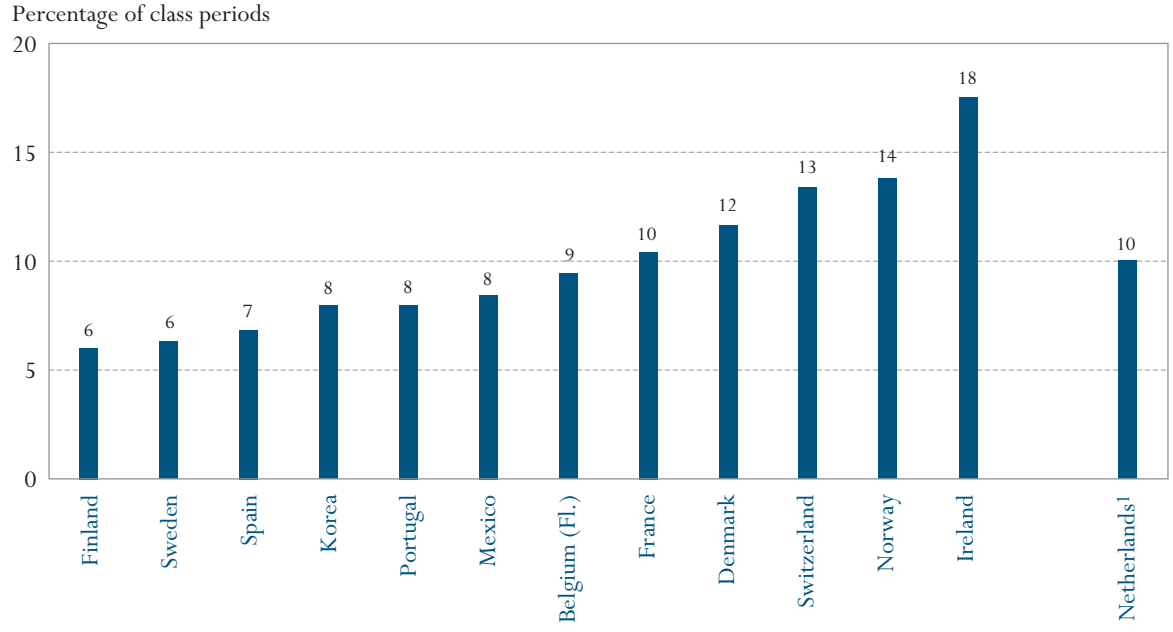
Principals in the ISUSS study were asked about the percentage of classes cancelled or covered by another teacher during the second month of the school year 2001/2002. Data suggest that schools rarely cancel classes because of the absence of the assigned teacher. On average among countries, principals reported that 3.5 per cent of classes had been cancelled and 6.6 per cent were covered by another teacher. However, the average number of classes cancelled ranges between 1 per cent in Finland and 6 per cent in Portugal, and the percentage of classes covered by another teacher ranges between 2 per cent in Portugal and 14 per cent in Ireland (Table D7.2). Taken together, in the 12 countries where data are available, on average, 10 per cent of classes were cancelled or covered by another teacher, ranging between 6 per cent in Finland and Sweden and 18 per cent in Ireland (Chart D7.5 and Table D7.2).

The ISUSS study made a first attempt to assess relative teacher shortages by subject areas.

The shortage of qualified teachers has been a concern of education policy makers in many OECD countries. Policy makers name the aging of the teaching force and unattractiveness of teaching as a job as the most frequent causes of teacher shortages. Teacher supply and demand from the point of

Chart D7.5

Percentage of class periods cancelled or covered by another teacher because of the absence of the assigned teacher (2001)



Countries are ranked in ascending order of the percentage of class periods cancelled or covered by another teacher because of the absence of the assigned teacher.

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. Table D7.2.

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view of the school depends on a complex set of conditions and constraints, including system-wide, regional and local conditions of the labour market, status of the profession, social conditions of the school's environment, teachers' work conditions and career structure, as well as school climate. Teacher shortages, therefore, rarely affect the whole system to an equal extent. Shortages usually appear at particular levels of education and in particular subject areas in most countries. How do countries compare in the level of the teacher shortage problem and in what areas are shortages most pressing? The ISUSS Study attempted to shed some light on these questions by asking school principals of upper secondary schools to indicate subject areas where they perceive difficulties in hiring fully qualified teachers.

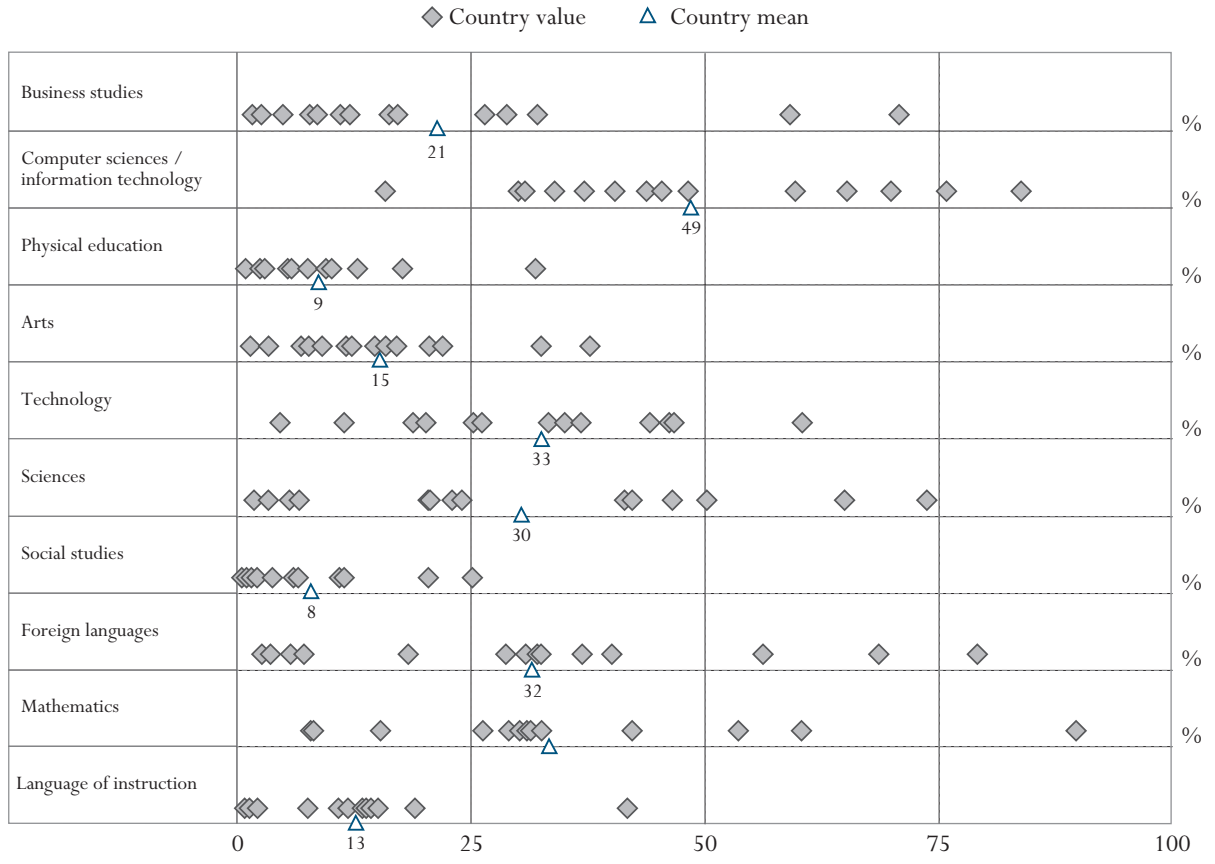
Among countries, teacher shortage appears to be most pressing in computer science,

On average among the 14 countries with comparable data, every second student attends schools reporting that it is difficult to hire a fully qualified teacher in computer science and information technology, and every third student attends schools reporting that it is difficult to hire teachers of mathematics, science,

Chart D7.6

Perceived difficulty of hiring qualified teachers in various study areas (2001)

Percentage of upper secondary students attending schools where the principal reported that hiring fully qualified teachers is difficult, by study area



Source: OECD ISUSS database, 2003. Table D7.3

technology and foreign languages. In all these areas, the labour market was expanding with the development of knowledge industries, internationalisation and political integration. However, on average, less than one student in ten attends a school where the principal thinks it is difficult to hire a qualified teacher for physical education or social studies (Chart D7.1, Chart D7.6 and Table D7.3).

mathematics, foreign languages, science and technology whereas it appears least problematic in social studies.

There are differences between countries both in the level of perceived teacher shortage and the study areas in which teacher shortages are perceived to be most pressing. In seven of the ten listed study areas in the Flemish Community of Belgium, the schools of more than half of the upper secondary students report difficulties in hiring qualified teachers. By contrast, less than 20 per cent of students attend schools where the principal perceived shortages in any of the ten listed study areas in Italy (Table D7.3).

Shortage of qualified secondary teachers appears to be more extensive in the Flemish Community of Belgium, whereas the scope of the problem appears less in Italy.

As indicated in Chart D7.6, countries experience different levels of difficulties in the same subject area. Shortage of teachers for business studies appears to be gravest in Switzerland, whereas principals in Italy or Korea do not report such difficulties. Principals in Finland reported higher than average difficulties in finding teachers for arts (38 per cent). Ireland reported shortages of technology teachers; science teachers were most sought after in the Flemish Community of Belgium and Ireland. There was a shortage in foreign language teachers in the Flemish Community of Belgium, Hungary and Mexico and in mathematics teachers in the Flemish Community of Belgium, Denmark, and Switzerland. Principals of more than half of the students reported difficulties hiring qualified teachers in these subjects (Chart D7.6 and Table D7.3).

Research suggests that the decision to become a teacher is the result of a complex set of considerations related to job alternatives, relative earnings, career structure, merit based incentives, status of the profession, and personal circumstances. The policy implications of the findings of OECD's International Survey of Upper Secondary Schools vary for different countries. Further analysis is required to find out how sufficient supply of teachers and relative shortages are related to the quality of the teacher force and how this can be influenced through teacher policies.

D7

Definitions and methodologies

Data on teacher supply and demand are derived from OECD's International Survey of Upper Secondary Schools implemented in the school year 2001/2002 in 15 countries.

Data are derived from OECD's International Survey of Upper Secondary Schools implemented in the 2001/2002 school year in 15 countries. For a brief description of the study see Annex 3 at *www.oecd.org/edu/eag2003*.

School in this indicator refers to 'school site' *i.e.* the education unit where service is provided. In the majority of cases school and school site is the same. However, in countries where schools as administrative units have several school sites, school refers only to one sampled school site within the school as an administrative unit.

Shortage of teachers in different study areas. ISUSS respondents (school principals) participants were asked to indicate whether they perceive difficulties in hiring fully qualified teachers in the following study areas: language of

instruction, mathematics, foreign languages, sciences, computer science and information technology, technology, business studies, social studies, the arts, and physical education.

Temporary employment. Fixed term employment not extended longer than one school year.

Teacher with less than a full qualification. Full qualification means that a teacher has fulfilled all the training requirements for teaching a certain subject at the upper secondary level and meets all other administrative requirements.

Vacant posts were calculated as full-time post, since no distinction could be made between full-time and part-time vacancies. This may mean an overestimation of the proportion of vacancies in countries where part-time posts are customary.

Table D7.1

Percentage of temporary, not fully qualified and part-time teachers in upper secondary education (2001)

Percentage of full-time and part-time teachers who are temporaries or not fully qualified, as reported by school principals

		Full-time temporaries as a percentage of full-time teachers	Full-time teachers who are not fully qualified as a percentage of full-time teachers	Part-time temporaries as a percentage of part-time teachers	Part-time teachers who are not fully qualified as a percentage of part-time teachers	Part-time teachers as a percentage of total teachers
OECD COUNTRIES	Belgium (Fl.)	20.9	12.8	27.8	19.2	34.9
	Denmark	4.0	6.6	37.0	21.6	11.8
	Finland	18.6	15.1	41.9	39.5	21.1
	France	m	m	m	m	m
	Hungary	12.1	m	76.8	m	10.2
	Ireland	8.6	0.4	100.0	15.0	19.0
	Italy	16.1	16.1	16.5	52.9	6.6
	Korea	3.0	n	38.8	n	0.6
	Mexico	14.4	23.3	32.0	21.1	63.1
	Norway	6.8	23.6	13.1	44.8	24.0
	Portugal	21.9	22.0	40.7	54.0	19.3
	Spain	m	m	m	m	m
	Sweden	12.3	27.3	31.7	45.9	22.1
	Switzerland	10.8	10.2	32.1	30.3	62.4
	Country mean	***12.4***	***14.3***	***40.7***	***31.3***	***24.6***
	Netherlands [1]	3.1	5.5	7.3	13.5	50.5

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

Table D7.2

Teaching vacancies and teacher absenteeism (2001)

Percentage of upper secondary students attending schools with no teaching vacancies, percentage of FTE vacant posts to total number of full-time equivalent teachers, percentage of upper secondary students attending schools which are responsible for hiring teachers, use of various methods to cover teaching vacancies, and percentage of class periods cancelled or covered by another teacher because of the absence of the assigned teacher, as reported by school principals

		Percentage of students attending schools where there are no teaching vacancies to be filled	Percentage of FTE teaching posts that needed to be filled in the 2001/2002 school year	Percentage of upper secondary students attending schools which are responsible for hiring teachers	Percentage of upper secondary students attending schools that use the following methods to cover teaching vacancies:					Percentage of class periods cancelled because of the absence of the assigned teacher	Percentage of class periods covered by another teacher because of the absence of the assigned teacher
					Hire a fully qualified teacher	Hire a teacher with less than a full qualification	Cancel a planned course	Expand the size of some of the classes	Add sections (courses) to other teachers' normal teaching hours		
OECD COUNTRIES	Belgium (Fl.)	5.3	10.0	94.0	95.0	55.7	2.8	9.1	17.4	4.6	4.9
	Denmark	3.4	3.9	99.5	91.4	29.2	8.9	15.9	64.5	3.5	8.2
	Finland	3.4	12.3	63.8	87.8	62.6	5.7	6.6	26.1	1.0	5.0
	France	m	m	m	m	m	m	m	m	5.4	5.0
	Hungary	3.6	7.8	99.8	80.7	25.2	n	14.5	95.6	4.4	m
	Ireland	3.5	9.3	78.2	98.6	23.8	2.8	6.8	6.6	3.4	14.1
	Italy	10.3	29.9	19.4	98.0	22.6	0.3	3.2	40.1	4.2	m
	Korea	1.2	2.0	52.6	56.6	1.5	3.5	4.1	47.6	1.5	6.5
	Mexico	6.1	16.0	69.1	90.8	13.5	3.1	20.0	22.7	4.2	4.3
	Norway	6.4	11.0	94.4	96.8	57.5	1.1	6.2	36.4	2.5	11.3
	Portugal	12.8	18.2	20.1	94.2	29.1	7.0	11.9	12.0	6.0	2.0
	Spain	7.7	14.9	26.4	97.5	0.3	2.1	8.5	14.0	3.4	3.4
	Sweden	7.9	10.4	95.9	98.2	76.5	5.7	4.7	26.5	2.4	3.9
	Switzerland	10.4	13.9	62.7	85.5	61.1	1.0	9.1	56.1	3.3	10.1
	Country mean	***6.3***	***12.3***	***67.4***	***90.1***	***35.3***	***3.4***	***9.3***	***35.8***	***3.5***	***6.6***
	Netherlands[1]	2.9	5.7	91.4	86.8	56.7	15.5	22.3	60.0	6.1	3.9

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

Table D7.3

Perceived difficulty of hiring qualified teachers in various study areas (2001)

Percentage of upper secondary students attending schools where principals reported that hiring fully qualified teachers is difficult, by study area

		Language of instruction	Mathematics	Foreign languages	Social studies	Sciences	Technology	Arts	Physical education	Computer sciences/ information technology	Business studies
OECD COUNTRIES	Belgium (Fl.)	41.8	89.9	68.7	20.5	73.8	46.3	11.7	2.4	84.0	59.2
	Denmark	1.3	53.7	5.8	3.8	41.6	25.3	3.4	13.0	48.3	4.8
	Finland	11.9	30.2	28.9	6.7	24.1	35.1	37.9	17.7	65.4	16.4
	France	19.0	26.4	32.2	25.2	46.6	36.9	20.6	6.0	34.0	26.5
	Hungary	14.6	31.5	79.2	6.1	23.0	4.6	9.1	5.5	70.1	32.1
	Ireland	10.9	42.2	40.1	11.9	65.1	60.5	17.1	31.9	45.5	28.9
	Italy	15.3	15.4	2.7	1.2	3.3	18.8	1.5	0.9	15.8	2.6
	Korea	7.6	8.2	37.0	11.4	6.6	11.5	15.8	3.0	30.3	1.6
	Mexico	13.6	29.2	56.3	11.0	20.6	33.3	32.5	10.2	30.8	8.7
	Norway	13.9	31.1	18.3	1.7	20.5	20.1	7.8	5.9	40.5	7.9
	Portugal	0.9	8.2	3.6	2.1	5.6	46.8	22.1	5.8	44.0	12.0
	Spain	2.3	7.9	7.2	0.6	1.8	26.3	14.8	2.5	37.2	11.1
	Sweden	11.9	32.7	30.9	1.2	42.3	44.2	12.4	9.5	59.8	17.3
	Switzerland	13.5	60.5	32.6	6.1	50.4	46.8	7.0	7.6	76.0	70.9
	Country mean	***12.7***	***33.4***	***31.7***	***7.8***	***30.4***	***32.6***	***15.3***	***8.7***	***48.7***	***21.4***
	Netherlands[1]	41.7	55.6	37.5	14.2	32.5	5.8	7.8	9.1	16.7	28.6

1. Country did not meet international sampling requirements. The reported data are unweighted.

Source: OECD ISUSS database, 2003. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

D7

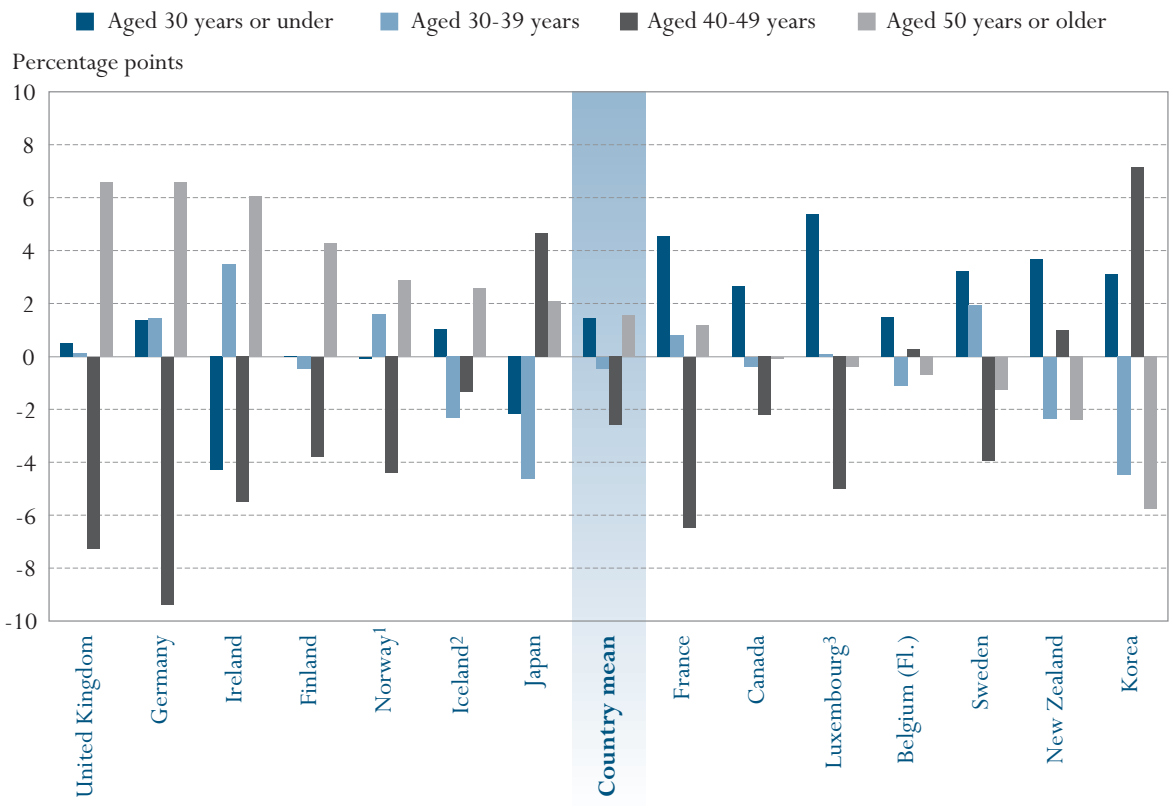
INDICATOR D8: AGE AND GENDER DISTRIBUTION OF TEACHERS, AND STAFF EMPLOYED IN EDUCATION

- In 15 out of 19 OECD countries, most primary teachers are at least 40 years old, and in Germany, Italy and Sweden, more than one third of teachers are older than 50 years.
- Compared with 1998, the average proportion of teachers aged 50 years or over increased on average by 6.2 per cent (1.8 percentage points) in secondary education. In Finland, Germany, Ireland and the United Kingdom, this proportion rose by more than 4 percentage points.
- The proportion of young teachers increased in 10 out of 14 OECD countries for which data are available. In France, Korea, Luxembourg, New Zealand and Sweden, the proportion of teachers aged under 30 years increased by more than 3 percentage points whereas Ireland and Japan are the only two countries showing a significant decrease between 1998 and 2001 in the proportion of teachers under 30 years.

Chart D8.1

Change in the age distribution of teachers (1998 and 2001)

Change in the age distribution of secondary teachers in public and private institutions between 1998 and 2001 (1998=0), based on head counts



Countries are ranked in descending order of the difference between 1998 and 2001 in the percentage of teachers aged 50 years or older.

1. Including primary education.
2. Excluding lower secondary education.
3. Public institutions only.

Source: OECD. Table D8.3. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

D8

Policy context

This indicator shows the age and gender distribution of teachers at the primary and secondary levels of education.

The demography of teachers is becoming a major concern in many OECD countries, particularly in those countries where student enrolment is expected to expand further. Ensuring that there will be enough skilled teachers to educate all children is an important policy issue. If a large proportion of teachers are concentrated in the older age cohorts, countries may have to develop effective policies to replace retired teachers and attract newly qualified teachers to the teaching profession (Indicator D7). With seniority as an important criterion in teachers' pay scales and additional financial incentives required to attract new teachers to the teaching profession (Indicator D5), the age distribution of teachers can also have a considerable impact on educational budgets.

Evidence and explanations

Age

There is increasing concern in many countries that a large number of teachers will retire at a time when student enrolments are continuing to expand.

General demographic trends, as well as the attractiveness of teaching relative to other professions at different points in time, can influence the age distribution of the teaching force. In many countries, the post-war baby boom, combined with increasing tertiary participation rates, created a large concentration of teachers between the ages of 40 and 50 during the 1990s. On one hand, in countries where the population of school age is projected to grow over the next decade (see Indicator A1), there is increasing concern that a large proportion of teachers will reach retirement age at a time when enrolments are continuing to expand. On the other hand, in countries where enrolment is about to decrease due to demographic change for instance, there is a risk that some teachers may lose their jobs.

In 15 out of 19 OECD countries, most primary teachers are at least 40 years old.

In most OECD countries, the majority of primary and secondary students are taught by teachers aged 40 years or older (Table D8.1). In Canada, Germany, Italy, Japan, the Netherlands, New Zealand, Portugal and Sweden, 60 per cent or more of primary teachers are over 40 years of age. On the other hand, Belgium, Korea and Poland seem to have a comparatively young teaching force; more than 50 per cent of primary teachers are younger than 40 years of age.

In 15 out of 19 countries, secondary teachers are older than primary teachers. Exceptions to this pattern are France, Japan, Portugal and Sweden. In Belgium, Finland, Iceland, Italy and the Netherlands, the proportion of secondary teachers aged 40 years or over is at least 13 percentage points higher than that of primary teachers. As teachers' salaries (Indicator D5) are typically linked to either age or years of employment, these countries are likely to face relatively high wage bills.

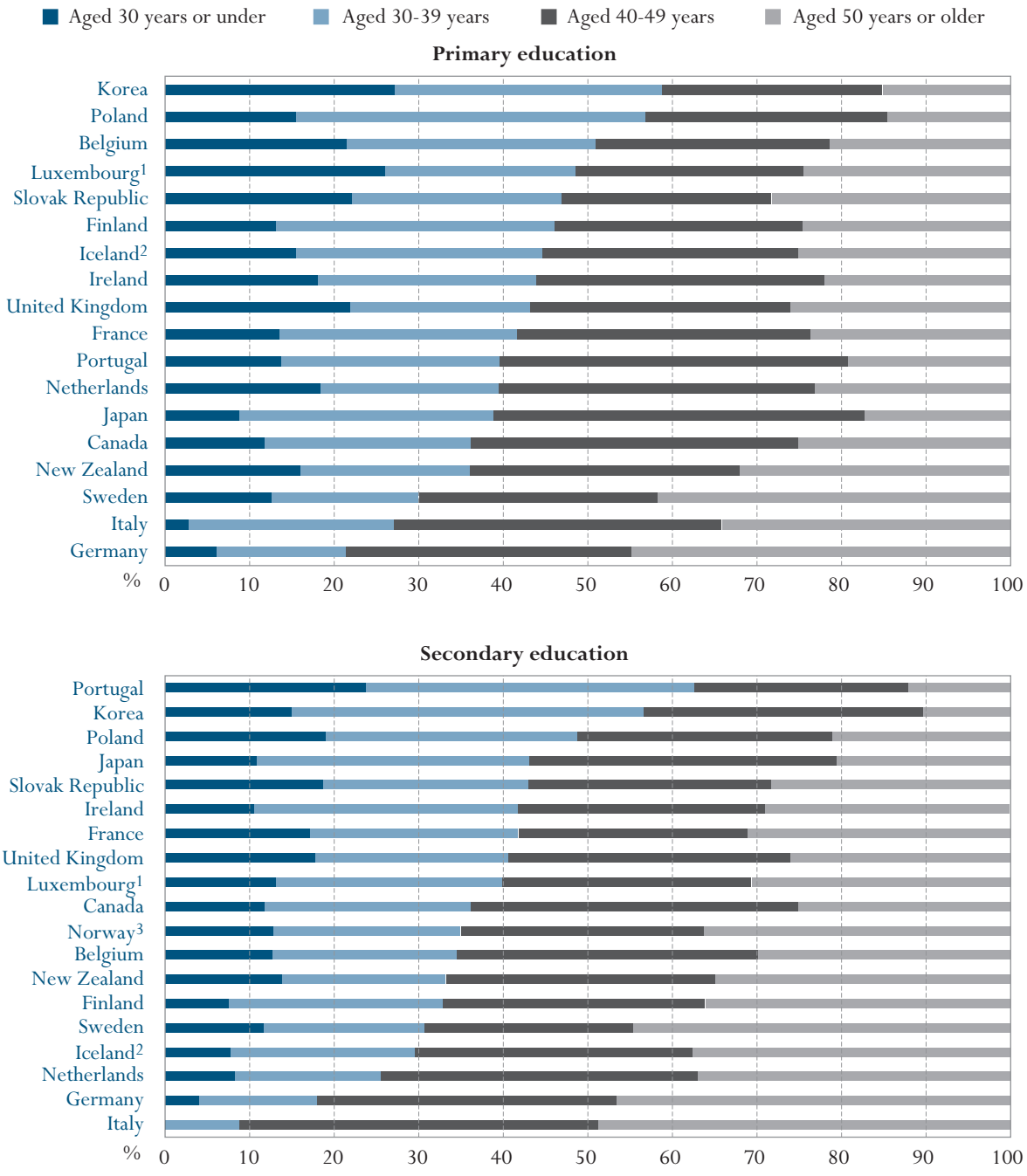
Countries vary in the degree to which they employ young teachers.

About one fifth or more of primary teachers in Belgium, Korea, Luxembourg, the Slovak Republic and the United Kingdom are under 30 years of age; fewer than 10 per cent of teachers in Germany, Italy and Japan are in this age group. Differences between countries in the proportion of young teachers can be explained in part by the typical completion ages of tertiary education (Annex 1), by prior retirement of older teachers and by entry requirements for the teaching profession (Chart D8.2).

Chart D8.2

Age distribution of teachers (2001)

Distribution of teachers in public and private institutions, by level of education and age group



Countries are ranked in ascending order of the percentage of teachers aged 40 years or older.

1. Public institutions only.
2. Excluding lower secondary education.
3. Including primary education.

Source: OECD. Tables D8.1 and D8.3. See Annex 3 for notes *(www.oecd.org/edu/eag2003)*.

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Several countries have a large proportion of teachers within a decade of retirement.

The potential for teacher shortage is highest in countries with the largest proportion of older teachers combined with projections of stable or growing enrolment. Germany, Italy and Sweden have with more than 40 per cent the largest proportions of secondary teachers over the age of 50. These countries also have a relatively large proportion of older primary teachers. These teachers will be reaching retirement age at about the time when student enrolments are expected to increase (Table D8.1).

Change in the age distribution of teachers between 1998 and 2001

In most countries, the teaching workforce continues to age…

In eight out of 14 countries for which comparable trend data are available for secondary education, the proportion of teachers over the age of 50 increased between 1998 and 2001. Compared with 1998, the average proportion of teachers aged 50 years or older increased on average by 1.8 percentage points in secondary education. In Finland, Germany, Ireland and the United Kingdom, this proportion rose by more than 4 percentage points which is partly explained by a significant decrease in the proportion of teachers aged 40 to 49 years between 1998 and 2001 (Chart D8.1).

…but the proportion of new teachers also increased in 10 out of 14 OECD countries

The entry of young teachers into the profession is crucial in order to compensate for the large number of teachers who will reach retirement age in the next decade. Over the period 1998 to 2001, the number of teachers aged under 30 years increased at approximately the same rate as the number of teachers aged over 50 years (Chart D8.1). In France, Korea, Luxembourg, New Zealand and Sweden, the proportion of teachers aged under 30 years increased by more than 3 percentage points whereas Ireland and Japan are the only two countries showing significant decrease between 1998 and 2001 in the proportion of teachers under 30 years. In Sweden and New Zealand, two countries with a high proportion of secondary teachers over 40 years of age, this renewal of teaching staff is important for the replacement of teachers taking retirement (Table D8.3 and Chart D8.1).

Gender

Teachers of pre-primary and primary and, to a lesser extent, lower secondary classes are predominantly female.

In all OECD countries, pre-primary and primary teachers are predominantly female. Canada and France are the only countries where more than 20 per cent of pre-primary teachers are male. With the exceptions of Denmark, Japan, Luxembourg and Mexico, 68 per cent or more of the primary teachers in OECD countries are female (Table D8.2).

The trend is less pronounced in lower secondary education. On average in OECD countries, one out of three teachers is male. The Czech Republic and Hungary have the lowest percentage of male teachers in lower secondary schools (16 per cent), while Japan, Luxembourg and Mexico have the highest (60, 59 and 50 per cent respectively).

The higher the level of education, the higher the proportion of male teachers.

Although females tend to dominate the profession in pre-primary and primary education, and less so in lower secondary education, in upper secondary education the percentages of male and female teachers are similar. In general, females are less well represented at higher levels of education than at lower levels. At the

upper secondary level, the proportion of teachers who are female ranges from 40 per cent or less in Denmark, Germany, Japan and Korea to between 59 and 68 per cent in Canada, Hungary, Italy, Poland, Portugal, the Slovak Republic and the United Kingdom. At the tertiary-type A and advanced research programmes level, male teachers are in the majority in all countries for which data are available. At this level, the proportion of female teachers ranges from less than 15 per cent in Japan to over 40 per cent in Finland, France, Iceland, Ireland, New Zealand and the United States (Table D8.2).

Definitions and methodologies

Data on age and gender derive from the UOE Questionnaire 2002, reference year 2000/2001. Characteristics are measured as the percentage of teachers in each of the five age groups, by level of education. Data for 1998 included in Chart D8.1 derive from the UOE Questionnaire 2001 and refer to the school year 1997/1998.

Data refer to the school year 2000/2001 and are based on the UOE data collection on education statistics administered in 2002 (for details see Annex 3).

Teachers are defined as "persons whose professional activity involves the transmitting of knowledge, attitudes and skills that are stipulated in a formal curriculum to students enrolled in formal educational institutions". This definition includes chairpersons of departments whose duties include some amount of teaching. The category does not include personnel with other titles, (e.g., dean, director, associate dean, assistant dean, chair or head of department), even if their principal activity is instruction or research. This definition of teachers does not include student teachers or teaching/research assistants.

Table D8.1

Age distribution of teachers (2001)

Percentage of teachers in public and private institutions by level of education and age group, based on head counts

	Primary education					Lower secondary education					Upper secondary education				
	< 30 years	30-39 years	40-49 years	50-59 years	>= 60 years	< 30 years	30-39 years	40-49 years	50-59 years	>= 60 years	< 30 years	30-39 years	40-49 years	50-59 years	>= 60 years
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
OECD COUNTRIES															
Australia	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Austria	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Belgium	21.5	29.5	27.7	20.7	0.7	x(11)	x(12)	x(13)	x(14)	x(15)	12.7	21.8	35.6	27.7	2.2
Canada	11.8	24.4	38.7	24.0	1.1	11.8	24.4	38.7	24.0	1.1	11.8	24.4	38.7	24.0	1.1
Czech Republic	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Denmark	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Finland	13.2	32.9	29.3	24.0	0.6	9.4	27.3	29.2	33.0	1.1	5.8	23.6	32.7	32.6	5.2
France	13.5	28.1	34.7	23.3	0.3	18.9	23.0	26.2	30.9	1.0	15.4	26.2	28.1	29.1	1.1
Germany	6.1	15.3	33.7	39.3	5.6	4.2	10.7	34.6	44.0	6.5	3.3	21.9	37.5	31.8	5.4
Greece	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Hungary	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Iceland	15.4	29.2	30.2	19.0	6.2	x(1)	x(2)	x(3)	x(4)	x(5)	7.7	21.9	32.8	26.0	11.5
Ireland	18.1	25.9	34.1	17.5	4.4	10.5	31.3	29.2	24.0	4.9	x(6)	x(7)	x(8)	x(9)	x(10)
Italy	2.8	24.3	38.7	29.8	4.3	n	5.0	39.2	51.7	4.1	0.1	11.5	45.0	39.2	4.3
Japan	8.8	30.1	43.9	17.0	0.2	11.6	35.8	39.0	13.0	0.5	10.3	29.0	34.0	24.0	2.7
Korea	27.2	31.6	26.1	14.5	0.6	17.6	45.0	28.8	8.3	0.4	12.7	38.9	36.7	11.2	0.5
Luxembourg[1]	26.0	22.5	27.0	23.7	0.8	13.1	26.8	29.5	29.1	1.6	x(6)	x(7)	x(8)	x(9)	x(10)
Mexico	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Netherlands	18.4	21.1	37.4	21.7	1.5	x(11)	x(12)	x(13)	x(14)	x(15)	8.3	17.2	37.5	34.5	2.6
New Zealand	16.0	20.1	32.0	26.0	5.9	15.0	19.7	31.6	27.3	6.4	12.4	18.9	32.2	29.5	7.0
Norway	x(6)	x(7)	x(8)	x(9)	x(10)	15.8	23.3	27.7	27.3	5.9	5.4	19.1	31.2	35.7	8.6
Poland	15.5	41.3	28.6	13.4	1.2	23.1	36.0	30.0	10.0	0.9	16.6	26.0	30.2	22.5	4.7
Portugal	13.8	25.8	41.2	16.5	2.7	24.2	38.3	25.4	10.0	2.2	23.5	39.3	25.2	9.8	2.2
Slovak Republic	22.1	24.9	24.8	22.6	5.7	22.1	24.9	24.8	22.6	5.7	14.4	23.4	33.9	22.5	5.8
Spain	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Sweden	12.7	17.3	28.2	35.5	6.2	16.8	21.5	23.3	31.2	7.2	7.2	16.9	25.8	40.9	9.2
Switzerland[1]	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Turkey	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
United Kingdom	21.9	21.3	30.8	25.3	0.7	17.8	22.8	33.4	25.1	0.9	17.8	22.8	33.4	25.1	0.9
United States	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Country mean	*16.2*	*26.0*	*32.4*	*22.8*	*2.6*	*14.5*	*26.0*	*30.7*	*25.7*	*3.2*	*11.1*	*23.7*	*33.7*	*27.3*	*4.3*
NON-OECD COUNTRIES															
Argentina[2]	30.3	31.2	27.5	10.1	0.9	24.3	34.5	27.2	11.7	2.3	24.4	34.6	26.9	11.7	2.4
Brazil[2]	35.1	36.5	21.3	6.7	0.3	26.2	37.5	26.2	9.1	1.0	23.2	36.1	26.7	12.3	1.8
Chile[2]	8.8	22.3	33.5	28.5	6.9	8.8	22.3	33.5	28.5	6.9	9.6	28.3	35.0	21.1	6.0
China	34.1	25.4	26.3	14.1	0.1	45.6	33.4	13.4	7.5	0.1	37.9	41.0	12.1	8.5	0.6
Indonesia	51.6	34.9	9.8	3.7	a	14.1	50.2	21.6	12.7	1.4	16.5	48.5	24.6	9.0	1.5
Israel	21.1	30.6	33.1	14.1	1.1	14.5	30.2	34.3	19.1	2.0	10.6	27.9	32.9	23.9	4.8
Jamaica	28.3	20.4	35.1	15.3	0.9	32.4	29.8	27.6	9.3	0.9	22.4	30.6	36.7	10.2	n
Malaysia[2]	20.1	46.7	22.2	9.8	1.2	x(11)	x(12)	x(13)	x(14)	x(15)	12.1	48.0	31.3	8.5	n
Philippines[2]	10.4	28.8	19.4	33.6	7.8	13.5	35.9	28.2	18.8	3.5	13.5	35.9	28.2	18.9	3.5

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. Public institutions only.

2. Year of reference 2000.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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Table D8.2

Gender distribution of teachers (2001)

Percentage of females among teaching staff in public and private institutions by level of education, based on head counts

		Pre-primary education	Primary education	Lower secondary education	Upper secondary education (all programmes)	Upper secondary education (general programmes)	Upper secondary education (vocational programmes)	Post-secondary non-tertiary education	Tertiary-type B	Tertiary-type A and advanced research programmes	All levels of education
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OECD COUNTRIES	Australia	m	m	m	m	m	m	m	m	37.3	m
	Austria	99.0	90.3	65.3	48.1	56.8	44.3	50.2	45.5	26.5	63.0
	Belgium	92.4	78.1	x(4)	58.0	x(4)	x(4)	x(4)	x(9)	38.0	65.3
	Canada	68.1	68.1	68.1	68.4	68.1	70.1	x(8)	47.6	33.9	60.2
	Czech Republic	99.7	84.4	84.1	53.2	54.5	52.9	50.3	56.4	33.4	70.9
	Denmark	84.0	64.0	64.1	34.1	39.3	27.8	m	m	m	65.6
	Finland	96.5	73.2	71.1	57.3	68.2	51.4	x(4)	x(4)	44.9	66.9
	France	79.8	79.8	64.5	55.4	58.3	50.6	m	50.6	44.7	65.0
	Germany	95.0	82.0	59.2	40.3	40.7	39.9	37.3	46.5	27.4	58.3
	Greece	m	m	m	m	m	m	m	m	m	m
	Hungary	99.9	86.2	84.2	60.1	60.1	60.1	60.1	49.9	37.1	75.3
	Iceland	98.1	78.3	x(2)	46.6	x(4)	x(4)	x(4,8,9)	50.4	49.2	74.2
	Ireland	94.0	82.2	58.6	x(3)	x(3)	x(3)	x(3)	35.0	48.2	63.4
	Italy	98.1	94.8	73.1	59.0	x(4)	x(4)	a	27.5	40.0	75.8
	Japan	98.0	65.0	40.0	24.6	x(4)	x(4)	x(4,8,9)	36.1	14.1	45.3
	Korea	99.6	71.6	61.0	32.0	31.4	33.0	a	30.9	25.3	49.5
	Luxembourg[1]	97.2	66.5	41.1	x(3)	x(3)	x(3)	m	a	a	58.1
	Mexico	94.4	65.8	49.7	40.6	39.5	46.3	a	m	m	60.9
	Netherlands	m	77.6	x(4)	41.1	38.5	46.0	a	x(9)	31.6	57.1
	New Zealand	98.8	83.9	65.8	56.1	58.5	50.7	50.5	50.9	43.4	68.0
	Norway	m	x(3)	72.6	45.0	x(4)	x(4)	x(9)	x(9)	36.2	60.3
	Poland	96.6	83.5	73.9	60.9	69.5	56.1	69.0	62.7	m	76.7
	Portugal	99.1	82.1	70.0	67.3	m	m	m	m	m	76.3
	Slovak Republic	100.0	93.3	76.5	67.3	70.8	66.4	68.8	67.7	37.6	75.8
	Spain	93.0	70.8	x(4)	52.2	x(4)	x(4)	x(4)	48.0	35.9	59.2
	Sweden	97.2	79.9	62.6	50.3	55.6	46.2	23.6	x(9)	39.1	68.7
	Switzerland[1]	m	m	m	m	m	m	m	m	26.6	m
	Turkey	m	m	m	m	m	m	m	m	m	m
	United Kingdom	97.2	81.8	59.4	59.2	59.4	59.0	x(4)	33.9	x(8)	65.3
	United States	94.7	86.5	60.3	50.8	50.8	a	41.4	41.4	41.4	65.8
	Country mean	***94.8***	***78.6***	***64.8***	***51.4***	***54.1***	***50.1***	***50.1***	***45.9***	***36.0***	***65.0***
NON-OECD COUNTRIES	Argentina[2]	96.0	89.1	71.2	65.5	65.5	65.5	a	67.4	46.4	75.7
	Brazil[2]	98.1	92.6	84.3	69.9	69.9	x(5)	a	x(9)	40.8	83.1
	Chile[2]	99.0	74.4	74.4	53.3	56.6	47.6	a	m	m	m
	China	97.5	52.2	43.8	40.2	37.5	48.8	m	m	45.4	50.6
	India[2]	84.0	35.6	34.8	33.5	33.5	46.3	40.0	40.0	37.0	39.4
	Indonesia	98.1	52.2	41.6	38.0	39.8	34.3	a	x(9)	40.8	48.3
	Israel	m	83.1	78.1	68.2	68.2	x(5)	m	m	m	77.2
	Jamaica	98.1	91.0	66.8	m	x(3)	42.9	x(8)	62.9	46.3	76.3
	Malaysia[1, 2]	100.0	64.6	x(4)	61.5	61.8	20.0	41.7	38.7	44.0	64.2
	Philippines[2]	96.9	87.3	76.4	76.4	76.4	a	m	m	m	m
	Russian Federation	m	98.7	89.3	x(3)	x(3)	x(3)	61.4	72.1	47.7	76.8
	Tunisia	95.8	49.8	42.4	m	x(3)	n	n	35.2	x(8)	46.4
	Zimbabwe	m	48.2	38.5	x(3)	x(3)	x(3)	17.4	26.2	m	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. Public institutions only.

2. Year of reference 2000.

Source: OECD. See Annex 3 for notes (*www.oecd.org/edu/eag2003*).

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Table D8.3

Age distribution of teachers (1998, 2001)

Percentage of teachers in public and private institutions in secondary education, based on head counts

	Secondary education (2001)					Secondary education (1998)				
	< 30 years	30-39 years	40-49 years	50-59 years	>= 60 years	< 30 years	30-39 years	40-49 years	50-59 years	>= 60 years
OECD COUNTRIES										
Australia	m	m	m	m	m	m	m	m	m	m
Austria	m	m	m	m	m	8.1	30.4	41.1	19.5	0.9
Belgium	12.7	21.8	35.6	27.7	2.2	m	m	m	m	m
Belgium (Fl.)	15.0	23.2	35.7	24.5	1.6	13.5	24.3	35.4	24.9	1.9
Canada	11.8	24.4	38.7	24.0	1.1	9.1	24.8	40.9	24.0	1.2
Czech Republic	m	m	m	m	m	m	m	m	m	m
Denmark	m	m	m	m	m	m	m	m	m	m
Finland	7.5	25.4	31.1	32.8	3.2	7.5	25.9	34.8	29.2	2.6
France	17.1	24.6	27.1	30.0	1.1	12.6	23.8	33.6	29.1	0.8
Germany	4.0	14.0	35.4	40.5	6.2	2.6	12.5	44.8	36.6	3.5
Greece	m	m	m	m	m	m	m	m	m	m
Hungary	m	m	m	m	m	m	m	m	m	m
Iceland [1]	7.7	21.9	32.8	26.0	11.5	6.7	24.2	34.2	23.9	11.1
Ireland	10.5	31.3	29.2	24.0	4.9	14.8	27.8	34.7	19.1	3.7
Italy	0.1	8.7	42.5	44.5	4.2	m	m	m	m	m
Japan	10.9	32.2	36.4	18.8	1.7	13.1	36.8	31.7	16.8	1.6
Korea	15.0	41.7	33.0	9.9	0.5	11.9	46.2	25.9	12.6	3.5
Luxembourg [2]	13.1	26.8	29.5	29.1	1.6	7.7	26.7	34.5	28.2	2.9
Mexico	m	m	m	m	m	m	m	m	m	m
Netherlands	8.3	17.2	37.5	34.5	2.6	m	m	m	m	m
New Zealand	13.8	19.4	31.9	28.2	6.7	10.1	21.7	30.9	28.9	8.4
Norway [3]	12.9	22.1	28.7	29.7	6.6	12.9	20.5	33.1	27.7	5.8
Poland	19.0	29.7	30.1	17.8	3.3	m	m	m	m	m
Portugal	23.8	38.8	25.3	9.9	2.2	m	m	m	m	m
Slovak Republic	18.7	24.2	28.8	22.5	5.7	m	m	m	m	m
Spain	m	m	m	m	m	m	m	m	m	m
Sweden	11.7	19.1	24.6	36.4	8.3	8.4	17.1	28.6	38.1	7.8
Switzerland [2]	m	m	m	m	m	10.1	27.1	35.1	24.2	3.5
Turkey	m	m	m	m	m	m	m	m	m	m
United Kingdom	17.8	22.8	33.4	25.1	0.9	17.3	22.6	40.7	18.5	0.9
United States	m	m	m	m	m	m	m	m	m	m
Country mean	12.6	24.5	32.4	26.8	3.8	10.4	25.8	35.0	25.1	3.7
NON-OECD COUNTRIES										
Argentina [4]	24.3	34.5	27.0	11.7	2.4	m	m	m	m	m
Brazil [4]	25.1	37.0	26.3	10.2	1.3	m	m	m	m	m
Chile [4]	9.3	26.2	34.5	23.7	6.3	m	m	m	m	m
China	43.7	35.3	13.1	7.8	0.2	m	m	m	m	m
Indonesia	15.1	49.5	22.8	11.2	1.4	m	m	m	m	m
Israel	12.2	28.8	33.4	21.9	3.7	30.6	1.1	33.3	12.2	28.8
Jamaica	32.4	29.8	27.6	9.3	0.9	m	m	m	m	m
Malaysia [2,4]	12.1	48.0	31.3	8.5	n	m	m	m	m	m
Philippines [4]	13.5	35.9	28.2	18.8	3.5	m	m	m	m	m

1. Excluding lower secondary education.
2. Public institutions only.
3. Including primary education.
4. Year of reference 2000.

Source: OECD. See Annex 3 for notes *(www.oecd.org/edu/eag2003).*

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